

NEET PG 2023 Question Paper with Solutions

Time Allowed :3 hour 30 minutes	Maximum Marks :800	Total questions :200
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General Instructions

Read the following instructions very carefully and strictly follow them:

1. The test is of 3 hours 30 minutes duration.
2. The question paper consists of 200 questions out of which 180 MCQs must be answered. The maximum marks are 800.
3. There are four parts in the question paper consisting of Biology, Physics, Chemistry and Mathematics.
4. Each subject will be divided into two sections, A and B which will have 35 and 15 questions respectively. Candidates will have to answer only 10 questions in Section B.
5. 4 marks are awarded for each correct answer and 1 mark is deducted for each wrong answer

1. A patient hailing from Delhi presents with fever, arthralgia, and extensive petechial rash for 3 days. Lab investigations revealed a hemoglobin of 9 g/dL, a white blood cell count of 9000 cells/mm³, a platelet count of 20000 cells/mm³, and a prolonged bleeding time. The clotting time was normal. What is the most likely diagnosis?

- (1) Dengue
- (2) Malaria
- (3) Scrub typhus
- (4) Typhoid

Correct Answer: (1) Dengue

Solution: The clinical presentation of the patient, which includes fever, arthralgia (joint pain), extensive petechial rash (small red or purple spots under the skin), and abnormal blood counts, points towards a diagnosis of Dengue fever.

- Dengue fever is caused by the Dengue virus, typically transmitted by Aedes mosquitoes.

The hallmark of Dengue is a high fever, severe headache, retro-orbital pain (behind the eyes), arthralgia, myalgia (muscle pain), and a petechial rash. Laboratory findings in Dengue often include low platelet count (thrombocytopenia), which is seen in this case with a platelet count of 20,000 cells/mm³. Additionally, the prolonged bleeding time is consistent with the effects of thrombocytopenia.

- **Option (1)** is correct. Dengue fever typically presents with the described symptoms and laboratory findings, including thrombocytopenia and prolonged bleeding time.

- **Option (2)** Malaria is caused by Plasmodium species and typically presents with cyclical fever (often with chills and sweating), which is not described here. Additionally, the platelet count in Malaria is generally normal or only mildly decreased.

- **Option (3)** Scrub typhus is a rickettsial infection transmitted by mite bites, typically presenting with fever, rash, and eschar at the site of the bite. It does not usually cause such a significant drop in platelet count or prolonged bleeding time.

- **Option (4)** Typhoid fever is caused by Salmonella typhi and typically presents with prolonged fever, abdominal pain, and gastrointestinal symptoms, not the petechial rash and low platelet count seen here.

Quick Tip

In cases of fever with petechial rash and low platelet count, always consider Dengue fever, especially in areas endemic to *Aedes* mosquitoes.

2. Which of the following statements is true about *Trichomonas vaginalis*?

- (1) It cannot be cultured
- (2) Twitching motility is seen on wet saline mount
- (3) Cysts are seen on wet saline mount of vaginal secretions
- (4) It is not a sexually transmitted infection

Correct Answer: (2) Twitching motility is seen on wet saline mount

Solution: *Trichomonas vaginalis* is a flagellated protozoan parasite that causes a sexually transmitted infection, commonly known as trichomoniasis.

- Option (1) is incorrect. *Trichomonas vaginalis* can indeed be cultured on specialized media, such as Diamond's medium, in the laboratory, making it possible to isolate and grow the organism.
- Option (2) is correct. *Trichomonas vaginalis* exhibits "twitching" or "jerky" motility, which can be observed on a wet saline mount under a microscope. This characteristic motility is a key diagnostic feature of the organism.
- Option (3) is incorrect. *Trichomonas vaginalis* does not form cysts in its life cycle, and cysts are not observed in vaginal secretions. The organism is typically in its trophozoite form when found in clinical samples.
- Option (4) is incorrect. *Trichomonas vaginalis* is indeed a sexually transmitted infection (STI), commonly transmitted through sexual contact.

Quick Tip

When diagnosing *Trichomonas vaginalis*, look for the characteristic "twitching" motility on wet saline mount preparations as a key diagnostic clue.

3. A lady from West Rajasthan presented with an ulcer surrounded by erythema on the right leg. Microscopy of the biopsy from the edge of the ulcer showed organisms with dark staining nuclei and kinetoplast. What is the most likely causative agent?

- (1) Leishmania tropica
- (2) Babesia
- (3) Trypanosoma
- (4) Histoplasma

Correct Answer: (1) Leishmania tropica

Solution: The clinical presentation of the lady, with an ulcer surrounded by erythema on the leg and the microscopic findings of organisms with dark staining nuclei and kinetoplast, is suggestive of a diagnosis of Leishmania tropica infection, which causes cutaneous leishmaniasis.

- Leishmania tropica is a protozoan parasite that causes cutaneous leishmaniasis, which often presents as a painless ulcer surrounded by erythema. The characteristic microscopic appearance of the organism is the presence of a kinetoplast and a dark staining nucleus, which can be seen in biopsies from the edge of the ulcer.

- Option (1) is correct. Leishmania tropica is the causative agent of cutaneous leishmaniasis, especially in areas like West Rajasthan, where sandflies (the vector) are prevalent. The presence of kinetoplast and dark-staining nuclei on microscopy is a hallmark of Leishmania species.

- Option (2) Babesia is a protozoan parasite that causes babesiosis, which is transmitted by ticks. It typically infects red blood cells and does not cause ulcers or erythematous lesions as described in this case.

- Option (3) Trypanosoma is another genus of protozoan parasites that causes diseases like African sleeping sickness and Chagas disease. However, Trypanosoma is not known to cause ulcers with erythema as seen in cutaneous leishmaniasis. Additionally, Trypanosoma organisms do not exhibit kinetoplasts in the same way Leishmania species do.

- Option (4) Histoplasma is a fungal pathogen that causes histoplasmosis. It does not cause ulcers with a characteristic kinetoplast appearance and is not typically associated with erythematous ulcers as seen here.

Quick Tip

In endemic areas, consider Leishmania as a potential cause of cutaneous ulcers with characteristic microscopic features, including kinetoplasts and dark-staining nuclei.

4. A child presents with a fever and a rash. Urine examination showed cells with owl's eye appearance. What is the most likely diagnosis?

- (1) Cytomegalovirus
- (2) Epstein-Barr virus
- (3) Herpes simplex virus
- (4) Toxoplasma gondii

Correct Answer: (1) Cytomegalovirus

Solution: The clinical presentation of a child with fever, rash, and the characteristic finding of owl's eye appearance of cells on urine examination points towards Cytomegalovirus (CMV) infection.

- Cytomegalovirus (CMV) is a member of the Herpesviridae family and is known to cause congenital and acquired infections, particularly in immunocompromised individuals. The owl's eye appearance refers to the characteristic cytopathic effect seen in infected cells, which exhibit large, intranuclear inclusion bodies that resemble an owl's eye. This finding can be observed in urine samples, especially in congenital CMV infections.
- Option (1) is correct. CMV infection is associated with the characteristic appearance of cells in the urine that have an owl's eye shape, which is diagnostic of the infection.
- Option (2) Epstein-Barr virus (EBV) is another member of the Herpesviridae family, but it is typically associated with infectious mononucleosis and does not cause owl's eye inclusions. EBV primarily affects lymphocytes, not the urinary tract cells.
- Option (3) Herpes simplex virus (HSV) typically causes oral and genital lesions and does not produce owl's eye inclusions in the cells of the urinary tract.
- Option (4) Toxoplasma gondii is a protozoan parasite that causes toxoplasmosis. It does not cause owl's eye inclusions in cells and typically presents with flu-like symptoms, lymphadenopathy, and can lead to congenital infections, but without the characteristic cell

appearance seen in CMV.

Quick Tip

When diagnosing CMV infection, remember that the owl's eye appearance of cells in urine is a key feature, especially in pediatric or immunocompromised patients.

5. Infection with *Clonorchis sinensis* is associated with an increased risk of?

- (1) Cervical cancer
- (2) Cholangiocarcinoma
- (3) Gastric carcinoma
- (4) Bladder carcinoma

Correct Answer: (2) Cholangiocarcinoma

Solution: *Clonorchis sinensis*, commonly known as the Chinese liver fluke, is a trematode parasite that infects humans primarily through the consumption of raw or undercooked freshwater fish. This infection is most prevalent in East and Southeast Asia. Clonorchiasis can lead to chronic inflammation of the bile ducts, which increases the risk of developing cholangiocarcinoma, a cancer of the bile ducts.

- Option (1) is incorrect. Cervical cancer is primarily associated with infection by high-risk types of Human Papillomavirus (HPV), not by *Clonorchis sinensis*.
- Option (2) is correct. Chronic infection with *Clonorchis sinensis* causes inflammation and fibrosis in the bile ducts, which increases the risk of cholangiocarcinoma. This cancer is commonly seen in individuals with long-term *Clonorchis sinensis* infections, especially in endemic areas.
- Option (3) is incorrect. Gastric carcinoma (stomach cancer) is not typically associated with *Clonorchis sinensis* infection. Stomach cancer is more often linked to factors like *Helicobacter pylori* infection, dietary factors, or genetic predisposition.
- Option (4) is incorrect. Bladder carcinoma is associated with infections like *Schistosoma haematobium*, which causes chronic irritation and squamous cell carcinoma of the bladder. It is not associated with *Clonorchis sinensis*.

Quick Tip

In endemic regions, consider *Clonorchis sinensis* as a potential risk factor for cholangiocarcinoma, especially in individuals with chronic liver fluke infections.

6. A patient presented with complaints of persistent cough and weight loss. He had a history of contact with multiple sexual partners. He was diagnosed as HIV positive 6 months back and is poorly adherent to his medications. The fungal culture of sputum was negative. On Gomori methamine silver staining, the cells showed darkly stained crescent-shaped cysts. What is the most likely causative organism?

- (1) *Paracoccidioides brasiliensis*
- (2) *Histoplasma capsulatum*
- (3) *Coccidioides immitis*
- (4) *Pneumocystis jirovecii*

Correct Answer: (4) *Pneumocystis jirovecii*

Solution: The patient is HIV positive, which places him at a significantly increased risk for opportunistic infections, especially those caused by fungi. The presentation of persistent cough, weight loss, and negative fungal culture, combined with the finding of crescent-shaped cysts on Gomori methamine silver staining, is highly suggestive of *Pneumocystis jirovecii* infection, which causes *Pneumocystis pneumonia* (PCP) in immunocompromised patients.

- Option (1) *Paracoccidioides brasiliensis* causes paracoccidioidomycosis, which presents with chronic granulomatous lesions, often affecting the lungs and mucous membranes. The organisms in this infection do not show the crescent-shaped cysts observed in this patient.
- Option (2) *Histoplasma capsulatum* is responsible for histoplasmosis, often presenting as pulmonary infections in immunocompromised individuals. However, it does not exhibit crescent-shaped cysts on Gomori methamine silver staining.
- Option (3) *Coccidioides immitis* causes coccidioidomycosis (Valley Fever), which typically presents with pulmonary symptoms and can disseminate in immunocompromised patients. The characteristic structures in *Coccidioides* infections are not crescent-shaped cysts, but

rather spherules containing endospores.

- Option (4) is correct. *Pneumocystis jirovecii* is an opportunistic fungal pathogen that commonly causes pneumonia in HIV-positive individuals, especially those with a CD4 count <200 cells/mm³. The organism is seen in tissue samples with a characteristic crescent shaped appearance on Gomori methamine silver staining, which is a diagnostic hallmark of PCP.

Quick Tip

In HIV-positive patients, particularly with low CD4 counts, always consider *Pneumocystis jirovecii* as a cause of pneumonia, and use Gomori methamine silver staining to identify its characteristic cysts.

7. A sewage worker presented with abdominal pain, jaundice, conjunctival injection, and blood in the urine for the past 5 days. Which of the following is the investigation of choice?

- (1) Widal test
- (2) Microscopic agglutination test
- (3) Weil-Felix reaction
- (4) Paul-Bunnell test

Correct Answer: (2) Microscopic agglutination test

Solution: The patient presents with symptoms of Leptospirosis, which is characterized by abdominal pain, jaundice, conjunctival injection, and blood in the urine. This disease is caused by infection with *Leptospira* bacteria, typically acquired through direct contact with water or soil contaminated by animal urine, which is common among sewage workers.

- Option (1) Widal test is used for the diagnosis of typhoid fever, caused by *Salmonella typhi*. It detects the presence of antibodies against *Salmonella* antigens in the serum but is not relevant for diagnosing leptospirosis.

- Option (2) is correct. The Microscopic agglutination test (MAT) is the gold standard for diagnosing Leptospirosis. This test detects antibodies against *Leptospira* species and is highly specific for the disease. It involves the use of live *Leptospira* organisms and helps

identify the serovar responsible for infection.

- Option (3) Weil-Felix reaction is used for diagnosing Rickettsial infections such as typhus, not Leptospirosis. The test detects cross-reacting antigens between *Proteus* species and rickettsial organisms, but it is not helpful for diagnosing Leptospirosis.
- Option (4) Paul-Bunnell test is used for diagnosing Infectious Mononucleosis, caused by the Epstein-Barr virus (EBV), and it detects heterophile antibodies. It is not relevant to the patient's presentation or diagnosis of Leptospirosis.

Quick Tip

In suspected cases of Leptospirosis, the Microscopic agglutination test (MAT) is the investigation of choice, as it helps confirm the presence of *Leptospira* species in the blood or urine.

8. Which of the following laboratory test is used to diagnose rotavirus diarrhea?

- (1) Antigen detection in the stool sample
- (2) Antigen detection in blood
- (3) Antibody detection in serum
- (4) Light microscopy of stool specimen

Correct Answer: (1) Antigen detection in the stool sample

Solution: Rotavirus is a leading cause of diarrhea in infants and young children worldwide. It primarily affects the gastrointestinal tract, causing acute gastroenteritis, characterized by diarrhea, vomiting, and fever. The diagnostic approach for rotavirus infection relies on detecting the presence of the virus in stool samples.

- Option (1) is correct. The antigen detection in the stool sample is the most commonly used laboratory test for diagnosing rotavirus infection. Immunoassays such as enzyme immunoassays (EIA) and rapid antigen tests can identify rotavirus antigens in stool samples. These tests are quick, non-invasive, and highly sensitive for detecting rotavirus.
- Option (2) is incorrect. While rotavirus primarily affects the gastrointestinal tract, antigen detection in blood is not used for diagnosing rotavirus infection. Blood tests may be used to

assess dehydration or electrolyte imbalances but are not specific for detecting rotavirus

- Option (3) is incorrect. Antibody detection in serum is generally used to assess past infection or immunity to rotavirus rather than diagnosing an active infection. The presence of antibodies would indicate a previous exposure, not current infection.
- Option (4) is incorrect. Light microscopy of stool specimens is not effective in diagnosing rotavirus. Rotavirus particles are too small to be observed under light microscopy, and therefore, antigen detection methods are preferred for diagnosis.

Quick Tip

For rapid diagnosis of rotavirus diarrhea, antigen detection in stool is the most reliable and commonly used method.

9. A boy presented with a fever and chills. Rapid test was positive for specific antigen HRP-2. Which of the following species of Plasmodium is the most likely causative agent?

- (1) Plasmodium falciparum
- (2) Plasmodium malariae
- (3) Plasmodium vivax
- (4) Plasmodium ovale

Correct Answer: (1) Plasmodium falciparum

Solution: The patient presents with fever and chills, common symptoms of malaria caused by Plasmodium species. The rapid diagnostic test (RDT) showing a positive result for the specific antigen HRP-2 is a critical clue to identify the causative species. HRP-2 (Histidine-rich protein 2) is a protein produced by Plasmodium falciparum and is the key antigen detected in RDTs.

- Option (1) is correct. Plasmodium falciparum is the species most commonly associated with severe malaria and is the only species that consistently produces the HRP-2 antigen. This makes it the most likely causative agent when HRP-2 is detected in the rapid test. It is also responsible for the majority of malaria-related deaths worldwide.

- Option (2) is incorrect. *Plasmodium malariae* does not produce HRP-2. While it can cause malaria, it typically presents with less severe symptoms and is not detected by HRP-2 based tests.
- Option (3) is incorrect. *Plasmodium vivax* is another common cause of malaria, but it produces a different set of antigens, primarily *P. vivax*-specific antigens, and is not detected by HRP-2. It can be diagnosed using other tests, such as those detecting the PfMSP-1 antigen.
- Option (4) is incorrect. *Plasmodium ovale* causes a mild form of malaria, and while it shares some similarities with *P. vivax*, it also does not produce HRP-2 and is not detected by HRP-2 based tests.

Quick Tip

When diagnosing malaria using rapid diagnostic tests, a positive result for HRP-2 points towards *Plasmodium falciparum* as the causative agent.

10. A child was brought with complaints of high fever, multiple seizures, headache, and neck rigidity. CSF analysis showed low glucose, high protein, and many polymorphs. The CSF culture showed pleomorphic gram-negative bacilli. What is true about the causative organism?

- (1) It is bacitracin sensitive.
- (2) Produces non-lactose fermenting colonies on MacConkey agar
- (3) Exhibits satellitism around *Staphylococcus aureus* colonies
- (4) It exhibits alpha hemolysis on sheep blood agar

Correct Answer: (3) Exhibits satellitism around *Staphylococcus aureus* colonies

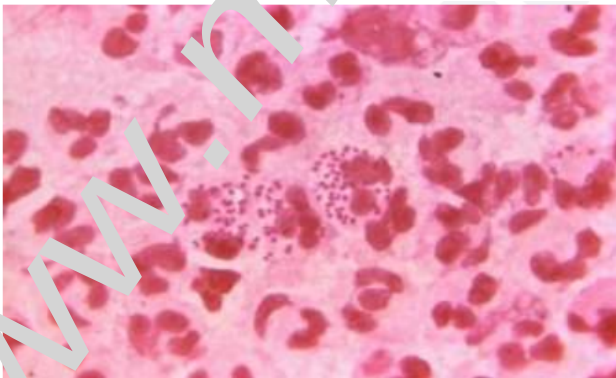
Solution: The child presents with symptoms suggestive of meningitis, as evidenced by high fever, multiple seizures, headache, and neck rigidity. The CSF findings, including low glucose, high protein, and many polymorphs, are classic for bacterial meningitis. The pleomorphic gram-negative bacilli in the CSF culture suggest an infection caused by *Haemophilus influenzae* type b (Hib), a common cause of bacterial meningitis in children.

- Option (1) is incorrect. *Haemophilus influenzae* is not bacitracin sensitive. Bacitracin sensitivity is used for differentiating Group A *Streptococcus* (*S. pyogenes*) from other species, but it is not a feature of *H. influenzae*.
- Option (2) is incorrect. *Haemophilus influenzae* typically produces non-lactose fermenting colonies on MacConkey agar, but this feature is not as specific for diagnosis as the presence of satellitism around *Staphylococcus aureus*.
- Option (3) is correct. *Haemophilus influenzae* exhibits satellitism when grown on blood agar in the presence of *Staphylococcus aureus*. The *Staphylococcus aureus* produces α -hemolysin, which creates an environment with increased local concentration of factor V (nicotinamide adenine dinucleotide or NAD), allowing *Haemophilus* to grow around the colonies of *S. aureus*. This is a key diagnostic feature.
- Option (4) is incorrect. *Haemophilus influenzae* typically produces no hemolysis on sheep blood agar (gamma hemolysis), not alpha hemolysis, which is associated with *Streptococcus pneumoniae*.

Quick Tip

In cases of bacterial meningitis with pleomorphic gram-negative bacilli, *Haemophilus influenzae* is a strong candidate, and its satellitism around *Staphylococcus aureus* is a distinguishing feature.

11. A man presents with a history of dysuria and urethral discharge after having unprotected sexual intercourse. Gram-staining of the purulent discharge is seen in the following image. What is the treatment of choice for this infection?



(1) Erythromycin

- (2) Azithromycin
- (3) Ceftriaxone
- (4) Penicillin G

Correct Answer: (3) Ceftriaxone

Solution: The man presents with dysuria and urethral discharge following unprotected sexual intercourse, which is suggestive of a gonococcal infection, commonly caused by *Neisseria gonorrhoeae*. The Gram stain shows gram-negative diplococci inside polymorphonuclear leukocytes (PMNs), which is characteristic of *Neisseria gonorrhoeae*.

- Option (1) Erythromycin is incorrect. Erythromycin is used for treating certain types of bacterial infections, but *Neisseria gonorrhoeae* is not typically treated with erythromycin.
- Option (2) Azithromycin is incorrect. Azithromycin is used in the treatment of various bacterial infections, but it is usually combined with ceftriaxone for treating gonococcal infections, rather than being used alone.
- Option (3) Ceftriaxone is correct. Ceftriaxone, a third-generation cephalosporin, is the treatment of choice for gonorrhea. It is highly effective against *Neisseria gonorrhoeae* and is usually administered as an intramuscular injection. It is often combined with azithromycin or doxycycline to treat potential co-infection with *Chlamydia trachomatis*.
- Option (4) Penicillin G is incorrect. Penicillin G was historically used for treating *Neisseria gonorrhoeae* infections, but due to increasing resistance, it is no longer a first-line treatment for gonorrhea.

Quick Tip

In cases of gonococcal urethritis, ceftriaxone is the first-line treatment, often in combination with azithromycin to cover potential co-infection with *Chlamydia trachomatis*.

12. A 2-month-old infant is brought to the OPD with a parietal swelling present since birth. The X-ray image is given below. What could be the probable diagnosis?



- (1) Subgaleal hematoma
- (2) Cephalhematoma
- (3) Caput succedaneum
- (4) Encephalocele

Correct Answer: (2) Cephalhematoma

Solution: The infant presents with a parietal swelling present since birth. Upon examination of the X-ray image, it is crucial to differentiate between the various types of birth-related head injuries or congenital anomalies.

- Option (1) Subgaleal hematoma is incorrect. A subgaleal hematoma occurs due to bleeding between the scalp and the galea aponeurotica, often due to the pressure exerted during delivery (especially with the use of forceps). This is characterized by a diffuse, fluctuant swelling that crosses suture lines and is more widespread than the localized swelling seen in the image.
- Option (2) Cephalhematoma is correct. A cephalhematoma is a collection of blood between the periosteum and the skull bone, typically caused by trauma during delivery, especially with the use of forceps or a prolonged labor. It is localized and does not cross the suture lines, which corresponds with the X-ray image showing a confined parietal swelling. This is the most likely diagnosis.
- Option (3) Caput succedaneum is incorrect. Caput succedaneum refers to swelling of the

soft tissues of the head, often seen at the top of the skull in newborns after delivery. It is caused by pressure during passage through the birth canal. Unlike cephalhematoma, it does not involve blood accumulation between bone and periosteum and is more diffuse, often crossing suture lines.

- Option (4) Encephalocele is incorrect. An encephalocele is a congenital condition where part of the brain and its membranes protrude through an opening in the skull, leading to a visible swelling. The X-ray image does not show any features consistent with an encephalocele, such as the presence of brain tissue or a defect in the skull.

Quick Tip

When evaluating a newborn with head swelling, remember that cephalhematoma is localized and does not cross suture lines, while caput succedaneum is more diffuse and crosses the suture lines. Subgaleal hematoma can be distinguished by its extensive, fluctuant nature.

13. A patient presented with abdominal pain and sterile pyuria, and the x-ray showed the following features. What is the likely diagnosis?



- (1) Polycystic kidney
- (2) Nephrocalcinosis

- (3) Staghorn calculus
- (4) Peas calcification

Correct Answer: (1) Putty kidney

Solution: The given X-ray image shows typical findings of **putty kidney**, which is characterized by calcifications in the renal parenchyma. This condition is most commonly associated with chronic infections, including tuberculosis. The following analysis of the options is provided:

- **Option (1) Putty kidney** is correct. **Putty kidney** is a condition where there are extensive calcifications in the kidney parenchyma due to chronic infection, usually tuberculosis. The X-ray features show large areas of calcification that can resemble a "putty-like" appearance. The patient with abdominal pain and sterile pyuria also suggests a chronic infection, further supporting this diagnosis.
- **Option (2) Nephrocalcinosis** is incorrect. **Nephrocalcinosis** refers to the deposition of calcium in the renal parenchyma, but it is typically seen in conditions such as hypercalcemia, hyperparathyroidism, and renal tubular acidosis. The X-ray findings here are more suggestive of putty kidney rather than nephrocalcinosis.
- **Option (3) Staghorn calculus** is incorrect. **Staghorn calculus** is a large renal stone that fills the renal pelvis and calyces, resembling the shape of a stag's antlers. While this condition can also cause abdominal pain and pyuria, it would be seen as a large stone on the X-ray rather than diffuse calcifications in the renal tissue as seen in putty kidney.
- **Option (4) Peas calcification** is incorrect. **Peas calcification** refers to small calcifications in the kidney, often seen in conditions like renal papillary necrosis or due to the presence of stones in the renal calyces. However, the X-ray image in this case does not show the scattered, small calcifications typical of peas calcification, making it less likely.

Quick Tip ♦

In renal radiology, **putty kidney** should be suspected when diffuse calcifications are seen in the kidney parenchyma, particularly in cases of chronic infections such as tuberculosis. Always differentiate it from staghorn calculus, which appears as a large stone within the renal pelvis.

14. A defect in which of the following forms the structure marked below?

- (1) Internal oblique
- (2) External oblique
- (3) Parietal peritoneum
- (4) Fascia transversalis

Correct Answer: (4) Fascia transversalis

Solution: The image shows a defect in the lower abdominal wall, likely pointing to a hernia. The structure involved here is the inguinal canal, where the fascia transversalis forms the posterior wall of the canal. Here's a breakdown of the options:

- **Option (1) Internal oblique** is incorrect. The internal oblique muscle forms part of the lateral and anterior wall of the inguinal canal, not the posterior wall. The defect seen in the image is related to the posterior wall of the canal, which is formed by the fascia transversalis.
- **Option (2) External oblique** is incorrect. The external oblique muscle contributes to the anterior wall of the inguinal canal through its aponeurosis. It does not contribute to the posterior wall, which is relevant to the defect seen in the image.
- **Option (3) Parietal peritoneum** is incorrect. The parietal peritoneum lines the abdominal cavity but is not directly involved in the formation of the structure marked in the image. It is important in the development of hernias, but it is not the immediate cause of the defect.
- **Option (4) Fascia transversalis** is correct. The fascia transversalis forms the posterior wall of the inguinal canal, and a defect in this fascia is a common cause of direct inguinal hernias. The image likely depicts a hernia through this defect, which is the most likely diagnosis.

Quick Tip

The fascia transversalis forms the posterior wall of the inguinal canal, and a defect here leads to direct inguinal hernias. Remember, the internal oblique and external oblique contribute to the walls but not the posterior wall of the canal.

15. A student had his jaw locked while yawning. Which of the following muscles is attached to the articular disc of the temporomandibular joint?

- (1) Lateral pterygoid
- (2) Temporalis
- (3) Medial pterygoid
- (4) Masseter

Correct Answer: (1) Lateral pterygoid

Solution: The temporomandibular joint (TMJ) is a hinge-type synovial joint between the temporal bone of the skull and the mandible. The joint is unique due to the presence of an articular disc (a fibrocartilaginous structure) that divides the joint into two compartments: the upper and lower. The lateral pterygoid muscle plays a significant role in the movement of the mandible, and it has a special anatomical relationship with the articular disc of the TMJ.

- Option (1) is correct. The lateral pterygoid muscle is the primary muscle that is attached to the articular disc of the TMJ. It helps in the protrusion and depression of the mandible. Its contraction can also cause the jaw to shift forward or to one side. In cases of jaw locking (also known as TMJ dislocation), it is the lateral pterygoid muscle that is usually involved, as its attachment to the articular disc can pull the disc anteriorly and cause the jaw to become displaced.

- Option (2) is incorrect. The temporalis muscle is responsible for elevation and retraction of the mandible but does not attach to the articular disc. It attaches to the coronoid process of the mandible.

- Option (3) is incorrect. The medial pterygoid muscle is involved in elevation and protrusion of the mandible, but like the temporalis, it does not attach to the articular disc. It attaches to the medial surface of the mandible.

- Option (4) is incorrect. The masseter muscle, which is responsible for elevating the mandible during chewing, does not attach to the articular disc. It attaches to the angle and ramus of the mandible.

Quick Tip

In TMJ disorders, the lateral pterygoid muscle is the key muscle involved in the dislocation of the jaw, as it is attached to the articular disc of the joint.

16. The given histology image is of ?

- (1) Leydig cells of testis
- (2) Pancreatic islet cells
- (3) Hassall's corpuscles
- (4) Glomerulus

Correct Answer: (4) Glomerulus

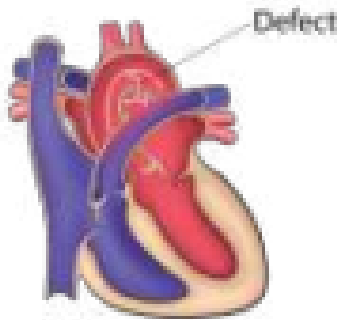
Solution: The histology image shows a structure resembling a glomerulus. The glomerulus is a network of capillaries in the kidney that is involved in the filtration of blood. The characteristic features of a glomerulus include a round shape with a central area of capillary loops surrounded by a basement membrane. The cells of the glomerulus are supported by mesangial cells, which can be seen in the image.

- Option (1) is incorrect. Leydig cells are located in the testes and are responsible for the production of testosterone. They do not resemble the structure seen in the image. - Option (2) is incorrect. Pancreatic islet cells are found in the pancreas, and their histology would show clusters of cells surrounded by a capillary network. However, they are not as distinct in appearance as the glomerulus. - Option (3) is incorrect. Hassall's corpuscles are found in the thymus, not the kidney, and they do not have the capillary network seen in the image. - Option (4) is correct. The image clearly depicts the glomerulus with its characteristic capillary loops and mesangial cells.

Quick Tip

To identify glomerular structures, look for a compact cluster of capillaries, typically found in kidney tissue, surrounded by a clear space.

17. A defect in which of the following aortic arches causes the defect shown in the image?



- (1) 4th right
- (2) 4th left
- (3) 6th right
- (4) 6th left

Correct Answer: (4) 6th left

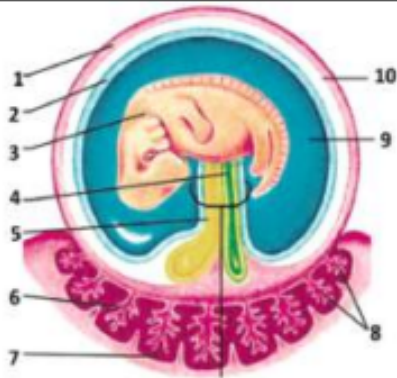
Solution: The image shows a congenital defect related to the aortic arches, specifically the aortic arch and its associated vessels. The defect seen in the image is commonly associated with a 6th left aortic arch defect. This condition leads to abnormal development of the left-sided aortic arch, which can result in malformations like vascular rings or other defects that affect the passage of air and food. The most typical clinical manifestation is esophageal and tracheal compression, causing breathing or swallowing difficulties.

- Option (1) is incorrect. The 4th right aortic arch typically forms the right side of the aortic arch and does not cause the defect seen in the image. - Option (2) is incorrect. A 4th left aortic arch contributes to the formation of the aortic arch, but it does not cause this specific defect. - Option (3) is incorrect. A 6th right aortic arch does not produce the defect shown in the image. - Option (4) is correct. A defect in the 6th left aortic arch is associated with the characteristic clinical features shown in the image, leading to developmental issues with the aortic arch system.

Quick Tip

When studying congenital defects related to the aortic arches, remember that defects in the 6th left aortic arch often lead to vascular ring formation, which causes respiratory and digestive tract symptoms.

18. Which of the following structures develops from the structure marked 4?



- (1) Medial umbilical ligament
- (2) Median umbilical ligament
- (3) Meckel's diverticulum
- (4) Ligamentum teres

Correct Answer: (2) Median umbilical ligament

Solution: The structure marked 4 in the image refers to the Median Umbilical Ligament, which is a remnant of the urachus, a structure that connects the fetal bladder to the umbilicus during development. After birth, it degenerates into the median umbilical ligament, which runs from the bladder to the umbilicus on the anterior abdominal wall.

- Option (1) is incorrect. The medial umbilical ligament is formed from the obliterated umbilical arteries and is different from the structure marked in the image. - Option (2) is correct. The median umbilical ligament is the correct answer, derived from the urachus. - Option (3) is incorrect. Meckel's diverticulum is a remnant of the vitelline duct and is not associated with the structure shown in the image. - Option (4) is incorrect. The ligamentum teres is the remnant of the umbilical vein, located in the liver, and is not related to the structure shown in the image.

Quick Tip

The median umbilical ligament is important for understanding fetal development and is easily confused with other umbilical remnants like the medial umbilical ligament and ligamentum teres.

19. A patient comes with abdominal pain, jaundice, and portal hypertension.

Anastomosis between which of the following veins is seen?

- (1) Left colic vein and middle colic veins
- (2) Esophageal veins and left gastric veins
- (3) Superior rectal and phrenic veins
- (4) Sigmoid and superior rectal veins

Correct Answer: (2) Esophageal veins and left gastric veins

Solution: Portal hypertension occurs when there is increased pressure within the portal venous system, which can be caused by liver diseases such as cirrhosis. One of the key features of portal hypertension is the development of portosystemic anastomoses, which are abnormal connections between the veins of the portal system and systemic veins. These anastomoses help relieve pressure in the portal venous system by diverting blood flow into other veins.

The veins involved in these anastomoses include the esophageal veins and the left gastric veins, which are part of the portosystemic shunt. When portal hypertension occurs, the blood from the portal vein can flow into the esophageal veins via the left gastric vein, causing esophageal varices. These varices are at risk of rupturing, leading to significant bleeding.

- Option (1) is incorrect. The left colic vein and middle colic veins are branches of the inferior mesenteric vein and do not form anastomoses involved in portal hypertension.
- Option (2) is correct. The esophageal veins and left gastric veins are key sites for portosystemic anastomoses. The left gastric vein (which drains into the portal vein) communicates with the esophageal veins, which drain into the systemic circulation. This anastomosis is particularly important in the context of portal hypertension and leads to the formation of esophageal varices.

- Option (3) is incorrect. The superior rectal vein drains into the portal system, while the phrenic veins are part of the systemic venous return. These veins do not typically form anastomoses in the context of portal hypertension.
- Option (4) is incorrect. The sigmoid vein drains into the inferior mesenteric vein, and the superior rectal vein drains into the portal system, but they do not form a significant anastomosis relevant to portal hypertension.

Quick Tip

In portal hypertension, look for esophageal varices due to the anastomosis between the esophageal veins and left gastric vein, which can result in life-threatening bleeding.

20. Which of the following clotting factors is needed for gamma-glutamyl carboxylase?

- (1) Factors II, VIII, IX, X
- (2) Factors II, VII, IX, and X
- (3) Factors II, VII, IX, X
- (4) Factors II, VIII, X, XI

Correct Answer: (2) Factors II, VII, IX, and X

Solution: Gamma-glutamyl carboxylase is an enzyme crucial for the post-translational modification of certain proteins, specifically the vitamin K-dependent clotting factors. This enzyme catalyzes the carboxylation of glutamic acid residues in these factors, converting them into gamma-carboxyglutamic acid (Gla), which is essential for their biological activity. The carboxylation process requires vitamin K as a cofactor.

The vitamin K-dependent clotting factors include: - Factor II (Prothrombin) - Factor VII - Factor IX - Factor X

These factors undergo carboxylation by gamma-glutamyl carboxylase to enable them to bind calcium, which is essential for their role in the coagulation cascade.

- Option (1) is incorrect. While factors II, IX, and X are vitamin K-dependent, factor VIII is not a vitamin K-dependent factor. Factor VIII is an important cofactor for factor IXa in the intrinsic pathway but is not involved in gamma-glutamyl carboxylase activity.

- Option (2) is correct. Factors II, VII, IX, and X are the clotting factors that require gamma-glutamyl carboxylase for their carboxylation process. This carboxylation is essential for their role in the coagulation cascade.
- Option (3) is incorrect. Factor VII and Factor IX are correct, but Factor II and Factor X are missing. The correct factors involved in this process are factors II, VII, IX, and X.
- Option (4) is incorrect. Factor VIII and Factor XI are not vitamin K-dependent and do not require gamma-glutamyl carboxylase.

Quick Tip

When studying vitamin K-dependent factors, remember the mnemonic: "1972" (Factors II, VII, IX, and X) as these are the key factors requiring gamma-glutamyl carboxylase for carboxylation.

21. A patient presented with diarrhea, dermatitis, and dementia. Which of the following vitamin deficiencies would you suspect in this patient?

- (1) Vitamin B3 deficiency
- (2) Vitamin B1 deficiency
- (3) Vitamin B6 deficiency
- (4) Vitamin B12 deficiency

Correct Answer: (1) Vitamin B3 deficiency

Solution: The patient presents with the classic triad of symptoms: diarrhea, dermatitis, and dementia. These are the hallmark signs of pellagra, a disease caused by Vitamin B3 (niacin) deficiency. Vitamin B3 is crucial for energy production, and its deficiency leads to the development of these symptoms.

- Diarrhea occurs due to inflammation in the gastrointestinal tract. - Dermatitis manifests as a scaly, erythematous rash, often seen in areas exposed to sunlight. - Dementia presents as confusion, memory loss, and cognitive impairment.

Pellagra is commonly associated with a poor diet, often in cases of malnutrition or alcoholism, where there is inadequate intake or absorption of niacin or its precursor,

tryptophan.

Vitamin B1 (thiamine) deficiency leads to beriberi or Wernicke-Korsakoff syndrome, which is characterized by symptoms like muscle weakness, neuropathy, and confusion but does not present the triad of diarrhea, dermatitis, and dementia.

Vitamin B6 (pyridoxine) deficiency can cause symptoms like peripheral neuropathy, irritability, and depression but does not present the classic triad seen in this case.

Vitamin B12 deficiency causes megaloblastic anemia and neurological symptoms like numbness, tingling, and ataxia, but it does not lead to diarrhea or dermatitis.

Quick Tip

For diagnosing vitamin deficiencies, remember the classic symptom triads that help distinguish between them. Pellagra (B3) is associated with the three Ds: Diarrhea, Dermatitis, and Dementia.

22. A young boy presents to the OPD with hypoglycemia and muscle cramps, on exertion or while playing. Then he becomes normal after resting for a while. These episodes are recurrent after a period of activity. He has decreased serum lactate and glucose levels. Which of the following diseases is he most likely to be suffering from?

- (1) McArdle disease
- (2) Hers disease
- (3) Con's disease
- (4) Andersen disease

Correct Answer: (1) McArdle disease

Solution: The patient's symptoms suggest McArdle disease, a glycogen storage disease that primarily affects skeletal muscle. The key features of McArdle disease include:

- Hypoglycemia: This occurs because the body cannot release glucose from glycogen stores during exercise.
- Muscle cramps: The boy experiences muscle cramps during exertion due to the inability of muscles to break down glycogen into glucose, which is needed for energy during activity.
- Decreased serum lactate: Unlike other glycogen storage diseases, McArdle

disease shows decreased lactate levels during exertion. This is because the defective enzyme muscle glycogen phosphorylase prevents the conversion of glycogen to glucose, impairing anaerobic glycolysis and lactate production. - Recurrent episodes: The episodes are triggered by activity and relieved with rest, as rest allows the body to resume normal glucose metabolism.

Other diseases:

- Hers disease: This involves liver glycogen phosphorylase deficiency leading to liver-related symptoms like hepatomegaly and mild hypoglycemia, but muscle cramps are not a characteristic feature. - Con's disease: This is a condition related to excess aldosterone production and does not present with muscle cramps or hypoglycemia. - Andersen disease: This is a glycogen storage disease caused by a deficiency in branching enzyme, leading to abnormal glycogen structure. It typically presents with hepatomegaly, cirrhosis, and failure to thrive in infants, not with the recurrent muscle cramps and hypoglycemia seen in this case.

Quick Tip

In glycogen storage diseases, the hallmark of McArdle disease is the inability to break down muscle glycogen due to muscle phosphorylase deficiency, leading to hypoglycemia, muscle cramps, and decreased lactate levels during exercise.

23. A family consumes only polished rice. Which of the following combinations of vitamin deficiency and enzymatic defect will be present in this family?

- (1) Riboflavin-glutathione reductase
- (2) Thiamine-transketolase
- (3) Thiamine-transaminase
- (4) Riboflavin-transketolase

Correct Answer: (B) Thiamine-transketolase

Solution: The consumption of only polished rice leads to a deficiency in essential nutrients, specifically thiamine (Vitamin B1), because polishing rice removes the outer layers (bran) where thiamine is most concentrated. This type of diet can result in beriberi, a disease

characterized by thiamine deficiency.

- Thiamine is a cofactor for several enzymes, including transketolase, which plays a crucial role in the pentose phosphate pathway, involved in carbohydrate metabolism.
- The deficiency of thiamine impairs the activity of transketolase, leading to symptoms like muscle weakness, neuropathy, and cardiovascular issues, which are characteristic of beriberi.
- The enzymatic defect associated with thiamine deficiency is transketolase deficiency, which leads to impaired glucose metabolism, causing energy deficits in cells, especially in the nervous and muscular systems.

Other combinations:

- Riboflavin (Vitamin B2) deficiency, while leading to issues like cheilosis and sore throat, is not associated with the transketolase enzyme. The glutathione reductase enzyme is involved in maintaining the antioxidant system, but not directly related to riboflavin deficiency in the context of polished rice consumption.
- Thiamine-transaminase is not a typical combination for thiamine deficiency and does not accurately describe the enzymatic defects related to beriberi.
- Riboflavin-transketolase does not describe a common metabolic defect, as riboflavin supports different enzymatic functions than thiamine.

Thus, the correct combination is thiamine transketolase deficiency due to the lack of thiamine from the polished rice diet.

Quick Tip

When dealing with vitamin deficiencies, transketolase deficiency due to thiamine deficiency (as in beriberi) is a key diagnostic indicator, especially in diets like polished rice that lack thiamine.

24. A chronic alcoholic patient presented to the casualty with confusion, ataxia, and painful eye movements. What could be the vitamin deficiency seen in this patient?

- (1) Vitamin B deficiency
- (2) Vitamin A deficiency
- (3) Vitamin D deficiency

(4) Vitamin C deficiency

Correct Answer: (1) Vitamin B deficiency

Solution: The patient's presentation with confusion, ataxia, and painful eye movements is highly suggestive of Wernicke's encephalopathy, a disorder most commonly associated with thiamine (Vitamin B1) deficiency in chronic alcoholics.

- Thiamine deficiency occurs in chronic alcoholics due to poor dietary intake, impaired absorption in the gastrointestinal tract, and liver dysfunction that impairs thiamine metabolism.

- Wernicke's encephalopathy is a neurological emergency that typically presents with:

- Confusion (altered mental status),

- Ataxia (lack of muscle coordination),

- Ophthalmoplegia (painful eye movements, often involving the extraocular muscles).

Wernicke's encephalopathy can progress to Korsakoff's syndrome if untreated, leading to severe memory impairment and confabulation.

Other vitamin deficiencies:

- Vitamin A deficiency can cause night blindness and dry eyes, but it is not associated with confusion, ataxia, or painful eye movements.

- Vitamin D deficiency leads to rickets in children and osteomalacia in adults, manifesting as bone pain and weakness but not confusion or ataxia.

- Vitamin C deficiency leads to scurvy, with symptoms like bleeding gums, bruising, and poor wound healing, but it does not typically cause confusion, ataxia, or painful eye movements.

Therefore, Vitamin B deficiency (specifically thiamine) is the most likely cause in this case.

Quick Tip

In chronic alcoholics, Wernicke's encephalopathy is a classic presentation of thiamine (Vitamin B1) deficiency, and it requires urgent treatment with thiamine supplementation to prevent permanent neurological damage.

25. A 4-year-old child presents with easy fatigability. The mother also complains that the child has increased hunger between meals, which is relieved after food. Liver examination revealed no glycogen. The enzyme most likely deficient is?

- (1) Glycogen phosphorylase
- (2) Glycogen synthase
- (3) Debranching enzyme
- (4) Glucose 6 phosphatase

Correct Answer: (2) Glycogen synthase

Solution: The child presents with easy fatigability and increased hunger between meals, which is relieved by food. Additionally, liver examination revealed no glycogen. These signs and symptoms are characteristic of Glycogen storage disease type 0 (GSD 0), which is caused by a deficiency in glycogen synthase.

- Glycogen synthase is the enzyme responsible for the synthesis of glycogen from glucose. A deficiency in this enzyme prevents the liver from storing glycogen, leading to hypoglycemia between meals, which causes the child to feel hungry and fatigued.
- The lack of glycogen in the liver is a hallmark of this condition. - After food is consumed, the blood glucose levels rise, relieving the symptoms of hunger and fatigue.

Other conditions:

- Glycogen phosphorylase is involved in the breakdown of glycogen to glucose. A deficiency would lead to GSD type V (McArdle disease), which typically presents with muscle cramps during exertion, not with the symptoms described in this case.
- Debranching enzyme deficiency leads to GSD type III, which presents with hepatomegaly, hypoglycemia, and sometimes muscle weakness, but it does not fit the exact presentation of this child.
- Glucose 6-phosphatase deficiency is seen in GSD type I (Von Gierke's disease), where the liver cannot convert glucose-6-phosphate to glucose, causing hypoglycemia and hepatomegaly, but it is not associated with the absence of glycogen in the liver as in this case. Thus, Glycogen synthase deficiency is the most likely diagnosis.

Quick Tip

In GSD type 0, the lack of glycogen synthase leads to the inability to store glycogen, resulting in recurrent hypoglycemia between meals and the need for frequent food intake.

26. A child was brought with pedal edema and cheilosis. Cardiomegaly was present. What is the vitamin deficiency associated with this clinical presentation?

- (1) Riboflavin
- (2) Thiamine
- (3) Pyridoxine
- (4) Niacin

Correct Answer: (2) Thiamine

Solution: The clinical presentation of pedal edema, cheilosis, and cardiomegaly is strongly indicative of thiamine (Vitamin B1) deficiency. This deficiency leads to a condition called beriberi, which can present in two forms: wet beriberi and dry beriberi.

- Wet beriberi is characterized by cardiomegaly (enlarged heart), pedal edema (swelling of the feet and legs), and symptoms of heart failure. The swelling and heart enlargement are due to impaired energy production, resulting in fluid retention and reduced cardiac output.

- Cheilosis (cracking of the corners of the mouth) is a hallmark sign of B vitamin deficiencies, particularly riboflavin (Vitamin B2) and thiamine. However, when it is accompanied by cardiomegaly and edema, it is more suggestive of thiamine deficiency.

Other vitamin deficiencies:

- Riboflavin deficiency can cause cheilosis, but it does not cause pedal edema or cardiomegaly as seen in this case.

- Pyridoxine (Vitamin B6) deficiency may cause peripheral neuropathy and irritability, but it does not typically present with edema or cardiomegaly.

- Niacin (Vitamin B3) deficiency causes pellagra, which presents with the three Ds: dermatitis, diarrhea, and dementia, but it is not associated with pedal edema or cardiomegaly.

Therefore, the vitamin deficiency associated with the clinical features of pedal edema,

cheilosis, and cardiomegaly is thiamine deficiency.

Quick Tip

In wet beriberi, thiamine deficiency leads to heart failure and edema, while dry beriberi affects the nervous system, leading to symptoms like peripheral neuropathy.

27. A chronic alcoholic patient is diagnosed with gouty arthritis. What biochemical changes will be seen in this patient?

- (1) Decreased NADH/NAD⁺ ratio
- (2) Increased urea and urate levels
- (3) Increased urate and lactate levels
- (4) Increased level of alkaline phosphatase

Correct Answer: (3) Increased urate and lactate levels

Solution: In chronic alcoholics, gouty arthritis is commonly associated with increased urate levels due to hyperuricemia, which results from impaired renal excretion and increased production of uric acid. Additionally, alcohol consumption can lead to lactic acidosis, which further reduces the renal clearance of uric acid, contributing to the development of gout.

The biochemical changes observed in this patient include:

- Increased urate levels: Chronic alcohol consumption leads to increased production of lactic acid and reduced renal clearance of urate. This results in the deposition of urate crystals in the joints, causing gouty arthritis. Hyperuricemia is a key feature of gout.
- Increased lactate levels: Alcohol metabolism in the liver produces large amounts of lactate, which can accumulate in the blood, leading to lactic acidosis. The elevated lactate levels further reduce the excretion of uric acid by the kidneys, exacerbating hyperuricemia.

Other options:

- Decreased NADH/NAD⁺ ratio: This is seen in conditions like alcohol-induced liver disease, but it is not directly related to the development of gouty arthritis in this case.
- Increased urea and urate levels: Urea levels may be increased in chronic alcoholics due to liver dysfunction, but urate levels are specifically associated with increased lactate levels in

this scenario. Hence, this option does not completely describe the changes seen in gouty arthritis. - Increased level of alkaline phosphatase: This enzyme is usually elevated in bone diseases, liver diseases, or bone metastases. It is not directly linked to the biochemical changes in gouty arthritis.

Therefore, the correct biochemical changes in a chronic alcoholic patient with gouty arthritis are increased urate and lactate levels.

Quick Tip

In gouty arthritis, hyperuricemia (high urate levels) and lactic acidosis (high lactate levels) are key biochemical changes, often exacerbated by alcohol consumption.

28. A child presents with erythematous scaly patches in the perioral region, mucosal ulcers, and impaired epithelial wound healing. The most likely mineral deficiency associated with this condition is?

- (1) Iron deficiency
- (2) Zinc deficiency
- (3) Calcium deficiency
- (4) Copper deficiency

Correct Answer: (2) Zinc deficiency

Solution: The clinical presentation of erythematous scaly patches in the perioral region, mucosal ulcers, and impaired epithelial wound healing is most consistent with a deficiency of zinc.

Zinc is an essential trace element required for numerous physiological functions, including:

- Protein synthesis and wound healing: Zinc plays a vital role in cellular proliferation and collagen synthesis, both of which are necessary for wound healing. Its deficiency leads to impaired epithelial wound healing.
- Skin integrity: Zinc deficiency can cause dermatitis and erythematous scaly patches, often affecting the perioral region.
- Mucosal integrity: Mucosal ulcers, especially in the mouth, are commonly seen in zinc deficiency due to its role in maintaining the integrity of epithelial tissues.

- Immune function: Zinc deficiency can also impair immune responses, leading to increased susceptibility to infections.

Other deficiencies:

- Iron deficiency typically leads to anemia and fatigue but does not cause the skin or mucosal changes seen in this child.

- Calcium deficiency leads to rickets in children and osteomalacia in adults, which affect bone mineralization but do not present with the symptoms described in this case.

- Copper deficiency can cause anemia and neurological symptoms, but it is not typically associated with the skin and wound healing issues seen with zinc deficiency.

Therefore, zinc deficiency is the most likely cause of the clinical features in this child.

Quick Tip

Zinc is crucial for skin health and wound healing, and its deficiency can lead to characteristic dermatitis, mucosal ulcers, and delayed wound healing.

29. A patient presenting with bleeding gums and easy bruisability was diagnosed with scurvy. This is due to

- (1) Low calcium
- (2) Defective collagen formation
- (3) Inhibition of clotting factors
- (4) Increased keratinization of epithelium

Correct Answer: (2) Defective collagen formation

Solution: Scurvy is caused by vitamin C deficiency, which is essential for the synthesis of collagen, an important structural protein in connective tissues, skin, blood vessels, and bones. Collagen formation is defective in the absence of vitamin C, leading to symptoms like bleeding gums and easy bruisability, as well as poor wound healing.

- Defective collagen formation: Vitamin C (ascorbic acid) is a cofactor for the enzyme prolyl hydroxylase, which is necessary for the hydroxylation of proline residues in collagen.

Without vitamin C, collagen fibers cannot form properly, leading to weakened blood vessels,

resulting in the clinical symptoms seen in scurvy.

Other options:

- Low calcium is not directly related to scurvy. Calcium deficiency typically leads to bone and muscle problems, not bleeding or bruising.
- Inhibition of clotting factors can be seen in certain vitamin K deficiencies but is not the primary cause of scurvy.
- Increased keratinization of epithelium is more associated with vitamin A deficiency, not vitamin C deficiency.

Thus, scurvy is primarily due to defective collagen formation due to vitamin C deficiency.

Quick Tip

Vitamin C is crucial for collagen synthesis, and its deficiency leads to scurvy, characterized by bleeding gums, bruising, and poor wound healing.

30. Which of the following is seen in low insulin: glucagon ratio?

- (1) Activation of lipoprotein lipase
- (2) Activation of glycogen synthase
- (3) Activation of phosphofructokinase
- (4) Activation of hormone-sensitive lipase

Correct Answer: (4) Activation of hormone-sensitive lipase

Solution: The insulin to glucagon ratio plays a critical role in regulating metabolic processes. When the insulin: glucagon ratio is low, typically observed in fasting or prolonged exercise, the body is in a catabolic state, and energy reserves are mobilized.

- Activation of hormone-sensitive lipase (HSL): Low insulin levels (often in the fasting state) lead to the activation of hormone-sensitive lipase, an enzyme responsible for the breakdown of stored triacylglycerols (fat) into fatty acids and glycerol. These fatty acids are then used as an energy source. In contrast, high insulin levels (as seen after meals) inhibit this process.

Quick Tip

In a low insulin: glucagon ratio, the body enters a catabolic state, promoting the breakdown of stored fat by hormone-sensitive lipase.

31. An infant is brought by his parents with complaints that his urine turns black on standing. Which of the following metabolic disorders is likely?

- (1) Phenylketonuria
- (2) Alkaptonuria
- (3) Homocystinuria
- (4) Maple syrup urine disease

Correct Answer: (2) Alkaptonuria

Solution: The clinical manifestation of urine turning black on standing is characteristic of Alkaptonuria, a rare inherited disorder of tyrosine metabolism. In this condition, homogentisic acid accumulates in the body due to a deficiency of the enzyme homogentisate 1,2-dioxygenase.

- Alkaptonuria: The buildup of homogentisic acid is excreted in the urine and undergoes oxidation when exposed to air, causing the urine to turn black. This is the hallmark feature of the disease. - In addition to urine discoloration, patients with alkaptonuria may also develop ochronosis, a condition where pigmented deposits form in connective tissues, particularly in cartilage and skin.

Other metabolic disorders. - Phenylketonuria (PKU): This disorder leads to a buildup of phenylalanine in the body, resulting in developmental delays, intellectual disability, and other neurological symptoms. However, it does not cause blackening of the urine. -

Homocystinuria: This condition results from a deficiency in the enzyme cystathionine beta-synthase, leading to elevated homocysteine levels and associated cardiovascular, skeletal, and neurological problems. It does not cause black urine. - Maple syrup urine

disease: This disorder is characterized by a sweet-smelling urine due to the accumulation of branched-chain amino acids. It does not cause blackening of the urine.

Thus, Alkaptonuria is the most likely cause of the black urine.

Quick Tip

The characteristic feature of Alkaptonuria is black urine upon standing due to the oxidation of homogentisic acid.

32. A child presents with thinning of hair and scaling of the scalp. On taking further history, it is found that she consumes raw eggs in her diet regularly. The given manifestations are due to the deficiency of which of the following vitamins?

- (1) Niacin
- (2) Pyridoxine
- (3) Biotin
- (4) Thiamine

Correct Answer: (3) Biotin

Solution: The clinical signs of thinning of hair and scaling of the scalp, along with the history of raw egg consumption, suggest a biotin deficiency, also known as vitamin B7 deficiency.

- Biotin deficiency: Biotin is a water-soluble vitamin that plays a critical role in the metabolism of fatty acids, amino acids, and glucose. It is commonly associated with dermatological manifestations like alopecia (thinning of hair), seborrheic dermatitis (scaling of the scalp), and conjunctivitis.
- Raw eggs contain a protein called avidin, which binds to biotin and prevents its absorption in the gut. Regular consumption of raw eggs can lead to a biotin deficiency, causing these symptoms.

Other vitamin deficiencies:

- Niacin (Vitamin B3) deficiency leads to pellagra, characterized by dermatitis, diarrhea, and dementia, but it does not cause hair thinning or scaling of the scalp.
- Pyridoxine (Vitamin B6) deficiency causes peripheral neuropathy, seizures, and dermatitis, but it is not typically associated with hair thinning or scaling of the scalp.
- Thiamine (Vitamin B1) deficiency leads to beriberi, characterized by neurological and cardiovascular symptoms, but does not cause hair thinning or scalp issues.

Thus, the most likely cause of these symptoms is biotin deficiency.

Quick Tip

Biotin deficiency can occur with raw egg consumption due to the binding of biotin by avidin in eggs, leading to alopecia and seborrheic dermatitis.

33. A child presents with mental retardation, bone pain, and inability to walk. On fundusoscopic examination, a cherry red spot is seen. There is no organomegaly. What is the most likely diagnosis?

- (1) Tay-Sachs disease
- (2) Niemann-Pick disease
- (3) Hurler syndrome
- (4) Gaucher disease

Correct Answer: (1) Tay-Sachs disease

Solution:

The most likely diagnosis in this case is Tay-Sachs disease, a lysosomal storage disorder caused by the deficiency of the enzyme hexosaminidase A, leading to the accumulation of GM2 ganglioside in the brain and other tissues. The characteristic features of this disease include mental retardation, bone pain, inability to walk, and the presence of a cherry red spot on the fundusoscopic examination, which is a hallmark of Tay-Sachs disease.

Other key features often include progressive neurodegeneration and muscle weakness, which develop in infancy and progress rapidly. The absence of organomegaly helps differentiate it from diseases like Niemann-Pick disease or Gaucher disease, which can involve organ enlargement.

Explanation of other options: - Niemann-Pick disease: This disease is characterized by sphingomyelinase deficiency leading to sphingomyelin accumulation. It typically presents with organomegaly, particularly hepatosplenomegaly, which is not seen in this case. - Hurler syndrome: This mucopolysaccharidosis is caused by alpha-L-iduronidase deficiency and is associated with developmental delay, coarse facial features, and organomegaly.

(hepatosplenomegaly). The absence of organomegaly in this patient rules out Hurler syndrome. - Gaucher disease: This is another lysosomal storage disorder caused by glucocerebrosidase deficiency, leading to the accumulation of glucocerebroside in organs like the spleen, liver, and bone marrow. It presents with organomegaly and bone pain which is not consistent with this patient's presentation.

Quick Tip

The cherry red spot on fundoscopic examination is a key diagnostic feature of Tay-Sachs disease, which is a lysosomal storage disorder. It is characterized by neurodegeneration and absence of organomegaly.

34. A female presents with loss of vision in the right halves of both eyes. Where is the lesion located in the optic pathway?

- (1) Left optic tract
- (2) Optic radiation
- (3) Optic chiasma
- (4) Right optic tract

Correct Answer: (1) Left optic tract

Solution:

The most likely location of the lesion is the left optic tract. The patient's presentation of loss of vision in the right halves of both eyes is indicative of a homonymous hemianopia. This type of visual field defect occurs when the optic tract or further downstream visual pathways are involved. Specifically, in this case, the left optic tract is the most probable location because the visual field from both the right eye and left eye's right halves is processed by the right side of the brain, which receives input from the left optic tract.

Explanation of other options: - Optic radiation: Lesions in the optic radiation typically cause visual field defects that correspond to quadrantanopia (loss of one quadrant of the visual field), which is different from the patient's complaint of losing the right halves of both eyes.

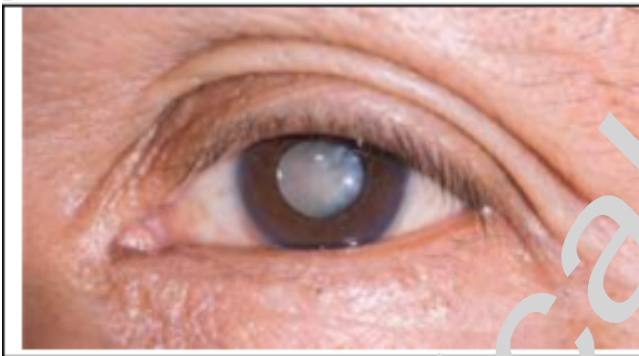
- Optic chiasma: Lesions in the optic chiasma would cause bitemporal hemianopia,

characterized by loss of vision in the outer halves of both eyes (not the right halves as in this case). - Right optic tract: A lesion in the right optic tract would cause visual loss in the left halves of both eyes (contrary to the patient's presentation).

Quick Tip

Homonymous hemianopia with vision loss in the right halves of both eyes suggests a lesion in the left optic tract, affecting the visual pathway.

35. A 65-year-old diabetic woman presents with painless loss of vision. The ocular findings are shown in the image. What is the likely diagnosis and management for this patient?



- (1) Zonular cataract and lens extraction
- (2) Rosette cataract and sugar control
- (3) Sunflower cataract and lens extraction
- (4) Immature senile cataract and phacoemulsification with IOL

Correct Answer: (4) Immature senile cataract and phacoemulsification with IOL

Solution: The image shows **lens opacification**, characteristic of **immature senile cataract**. The clinical presentation of *painless progressive loss of vision* in an elderly diabetic patient supports this diagnosis. The central grayish-white appearance of the lens indicates the **immature stage**, where some clear lens fibers are still present.

- **Senile cataract** results from age-related degeneration of lens proteins, common in elderly individuals.

- Diabetic patients are predisposed to early cataract formation due to sorbitol accumulation in the lens.
- Management is via **phacoemulsification** (modern cataract surgery technique) with **intraocular lens (IOL)** implantation.

Quick Tip

In elderly patients, **painless gradual vision loss** with lens opacity suggests **senile cataract**. The treatment of choice is **phacoemulsification with IOL implantation**.

36. A 5-year-old boy presents with a small nodular lesion on the sclera at the limbus, as shown in the image below. What is the likely diagnosis?



- (1) Pterygium
- (2) Pinguecula
- (3) Dermolipoma
- (4) Dermoid

Correct Answer: (4) Dermoid

Solution: A **limbal dermoid** is the most common epibulbar choristoma seen in children. It appears as a well-defined, yellow-white, dome-shaped mass at the inferotemporal limbus and may contain fine hair follicles, as visible in the image.

- **Pathogenesis:** Congenital ectodermal choristoma containing dermal elements such as epidermis, hair follicles, sebaceous glands, and sometimes adipose tissue.

- **Clinical clues:**

- Present at or soon after birth, non-progressive.
- Located classically at the inferotemporal limbus.
- Smooth surface & pale yellow colour; may have hair.
- May induce with-the-rule astigmatism and amblyopia if large.

- **Management:**

- Small, non-vision-threatening lesions — observation.
- Large lesions causing astigmatism, irritation or cosmetic concern — **excision with lamellar keratoplasty**/amniotic membrane grafting required.
- Refractive correction & amblyopia therapy post-operatively when indicated.

Quick Tip

A **hair-bearing limbal mass** in a child is virtually pathognomonic of a **limbal dermoid**.
Excision is reserved for visual or cosmetic indications.

37. The eye examination of a 20-year-old male shows a golden ring on the iris. What is the next investigation to diagnose the condition?

- (1) Alpha-1-antitrypsin
- (2) Alpha-fetoprotein
- (3) Serum iron
- (4) Serum ceruloplasmin

Correct Answer. (4) Serum ceruloplasmin

Solution: A golden ring seen on the iris is a classical sign of Kayser-Fleischer rings, which are associated with Wilson's disease. This disease is caused by defective copper metabolism, leading to copper accumulation in tissues, including the cornea. The golden ring appears due to copper deposits in the Descemet's membrane of the cornea.

- Serum ceruloplasmin: The best next investigation is to measure serum ceruloplasmin, a copper-carrying protein that is typically low in Wilson's disease. This test helps confirm the diagnosis of Wilson's disease.

Other tests:

- Alpha-1-antitrypsin: This is a test for alpha-1 antitrypsin deficiency, which causes lung and liver diseases but is not associated with Kayser-Fleischer rings.

- Alpha-fetoprotein: This is used for monitoring liver diseases or cancers, particularly in hepatocellular carcinoma, and is not related to Wilson's disease.

- Serum iron: While iron studies are useful in diagnosing iron overload conditions like hemochromatosis, they are not relevant for diagnosing Wilson's disease.

Thus, serum ceruloplasmin levels are the most specific test to confirm the diagnosis of Wilson's disease.

Quick Tip

Kayser-Fleischer rings are characteristic of Wilson's disease and can be confirmed with serum ceruloplasmin measurement.

38. What is the dye and filter used to diagnose corneal ulcers?

- (1) Lissamine dye - green filter
- (2) Lissamine dye - cobalt blue filter
- (3) Fluorescein dye - visualized under green filter
- (4) Fluorescein dye - visualized under cobalt blue filter

Correct Answer: (4) Fluorescein dye - visualized under cobalt blue filter

Solution: The diagnosis of corneal ulcers can be assisted by fluorescein dye. The dye stains the corneal epithelium and is particularly helpful in identifying defects such as ulcers, abrasion, and foreign bodies.

- Fluorescein dye - visualized under cobalt blue filter: Fluorescein dye, when applied to the cornea, highlights the area of epithelial defect, and is best visualized under a cobalt blue filter. This filter enhances the fluorescence of the dye, making it easier to detect corneal

ulcers.

Other combinations:

- Lissamine dye is used to detect dead or damaged cells but is not the dye of choice for diagnosing corneal ulcers.
- Green filter is not the standard filter used for fluorescein-stained corneal examinations.
- Cobalt blue filter is the correct filter to visualize fluorescein dye for corneal ulcers, but green filter is not as effective.

Thus, the correct combination for diagnosing corneal ulcers is fluorescein dye visualized under a cobalt blue filter.

Quick Tip

Fluorescein dye under a cobalt blue filter is the gold standard for diagnosing corneal ulcers.

39. A 55-year-old male presented with verrucous carcinoma around the glans of the penis. Examination reveals that the inguinal lymph nodes are not enlarged. What is the appropriate management for this patient?

- (1) Total penectomy
- (2) CO₂ laser excision
- (3) Topical 5-fluorouracil
- (4) Partial penectomy

Correct Answer: (D) Partial penectomy

Solution: Verrucous carcinoma of the penis is a well-differentiated, slow-growing variant of squamous cell carcinoma. It typically presents as a warty lesion around the glans or shaft of the penis. In this case, the fact that the inguinal lymph nodes are not enlarged suggests that the cancer is still localized and has not metastasized. The treatment approach depends on the stage of the disease and the presence of lymph node involvement.

Partial penectomy: This is the treatment of choice for localized verrucous carcinoma of the

penis. The goal is to remove the tumor while preserving as much of the penile tissue as possible to maintain function and appearance. A partial penectomy involves removing the affected part of the penis, including the tumor, while sparing the remainder of the organ.

Other options:

- Total penectomy: This would involve removal of the entire penis and is typically reserved for cases with extensive involvement of the penis or metastasis, which is not the case here since there is no lymph node involvement.
- CO2 laser excision: While this technique can be used for superficial lesions, it is not the standard treatment for verrucous carcinoma, especially when it involves deeper tissues.
- Topical 5-fluorouracil: This is used for superficial basal cell carcinomas or other non-invasive skin lesions, but it is not appropriate for invasive verrucous carcinoma as it does not provide sufficient tissue removal.

Thus, the most appropriate management for this patient is partial penectomy.

Quick Tip

Partial penectomy is preferred for localized verrucous carcinoma of the penis, as it preserves function while removing the tumor.

40. Identify the procedure being performed in the image given below.



- (1) Intraosseous cannula for pain relief
- (2) Bone marrow aspiration
- (3) Intraosseous route access for giving IV fluids
- (4) Intraosseous abscess drainage

Correct Answer: (3) Intraosseous route access for giving IV fluids

Solution: The procedure shown is the insertion of an intraosseous (IO) cannula, typically into the proximal tibia, used for emergency vascular access when intravenous (IV) access is not feasible. This route allows rapid infusion of fluids, medications, and blood products directly into the bone marrow, which communicates with the central circulation.

This technique is especially useful in:

- Cardiac arrest
- Severe dehydration
- Hypovolemic shock
- Pediatric emergencies where venous access is difficult

Common insertion sites include:

- Proximal tibia (most common in children)
- Distal femur
- Sternum (mainly in adults using specific IO devices)

Contraindications include:

- Fracture of the bone at insertion site
- Infection at the insertion site
- Bone disorders like osteogenesis imperfecta

Quick Tip

Intraosseous access is a quick and reliable route for vascular access during emergencies when IV access fails, especially in children. Proximal tibia is the preferred site.

41. A diabetic patient presents with sudden-onset perineal pain. On examination, foul-smelling discharge, and necrotic tissue as seen in the image is noted. Which of the following is true about the given condition?



- (1) Anti-gas gangrene serum indicated for all cases
- (2) Urinary diversion is the next step
- (3) Bilateral orchidectomy must be done
- (4) Mixed aerobic and anaerobic infection

Correct Answer: (4) Mixed aerobic and anaerobic infection

Solution: The clinical presentation and image are consistent with **Fournier's gangrene**, a rapidly progressive and potentially fatal necrotizing fasciitis of the perineal, perianal, or genital regions. It is more common in patients with underlying comorbidities like **diabetes mellitus**.

- The infection is polymicrobial involving both **aerobic and anaerobic organisms**, including: - *Escherichia coli* - *Klebsiella* - *Streptococcus* - *Bacteroides* - *Clostridium species*

Key features: - Rapid onset of pain, swelling, crepitus, and foul-smelling discharge - Necrotic black or grey tissue with systemic signs of sepsis - Requires immediate and aggressive surgical debridement

Management includes: - Broad-spectrum IV antibiotics covering both aerobic and anaerobic bacteria - Emergency surgical debridement - Supportive care for sepsis and comorbidities - Repeated wound inspection and possible re-debridement

Quick Tip

Fournier's gangrene is a surgical emergency caused by mixed aerobic and anaerobic bacteria. Early recognition and aggressive surgical debridement are life-saving.

42. Which of the following is the most common complication following ligation of the first vessel during abdominoperineal resection for rectal carcinoma (APR)?

- (1) Parasympathetic-bladder dysfunction and retrograde ejaculation.
- (2) Sympathetic-bladder dysfunction and impotence.
- (3) Sympathetic- retrograde ejaculation and bladder dysfunction.
- (4) Sympathetic- Impotence and loss of cutaneous sensation in the perineal region.

Correct Answer: (3) Sympathetic- retrograde ejaculation and bladder dysfunction.

Solution: Abdominoperineal resection (APR) is a surgical procedure typically performed for rectal carcinoma, where both the rectum and anus are removed along with the surrounding tissues, including some of the pelvic lymph nodes. A common complication following ligation of the first vessel during APR is the involvement of the sympathetic nerve fibers, leading to specific sexual and urinary dysfunctions.

- Sympathetic- retrograde ejaculation and bladder dysfunction: The most common complications after the ligation of the first vessel in APR are retrograde ejaculation and bladder dysfunction, both of which are linked to the sympathetic nervous system. The sympathetic nervous system controls functions such as ejaculation and bladder function, and its injury during the procedure can cause:

- Retrograde ejaculation: The inability to ejaculate normally, leading to sperm entering the bladder rather than exiting through the urethra.
- Bladder dysfunction: This may include issues like urinary retention or incontinence due to the disruption of sympathetic nerve pathways.

Other options:

- Parasympathetic-bladder dysfunction and retrograde ejaculation: The parasympathetic nervous system is less involved in causing these complications after APR, as it is more associated with functions like erection and bladder filling.
- Sympathetic-bladder dysfunction and impotence: While bladder dysfunction is common, impotence is more directly related to parasympathetic and vascular damage rather than sympathetic injury.
- Sympathetic- Impotence and loss of cutaneous sensation in the perineal region: Although

impotence can occur after APR due to sympathetic damage, loss of cutaneous sensation in the perineum is not as directly linked to the ligation of the first vessel and more related to surgical injury.

Therefore, the most common complications following the ligation of the first vessel during APR are sympathetic-mediated retrograde ejaculation and bladder dysfunction.

Quick Tip

Sympathetic nerve damage during abdominoperineal resection often leads to retrograde ejaculation and bladder dysfunction.

43. A patient presents to the clinic with the lesion given in the image. He had a traumatic injury to the chest one year ago. What is the most likely diagnosis?



- (1) Haemangioma
- (2) Hypertrophic scar
- (3) Keloid
- (4) Neurofibroma

Correct Answer: (3) Keloid

Solution: The image shows a raised, firm, shiny lesion extending beyond the original site of trauma, which is typical of a **keloid**. Keloids are a type of abnormal wound healing characterized by excessive collagen deposition.

Key features of keloids: - Extend **beyond the boundaries** of the original wound - Often **itchy, painful, or cosmetically disfiguring** - Occur more commonly in individuals with

darker skin - Common sites include: chest, shoulders, earlobes, and upper back - Do not regress spontaneously and may recur after excision

Etiology: - Trauma, burns, surgery, ear piercing - Genetic predisposition (autosomal dominant in some cases)

Management: - First-line: **Intralesional corticosteroids** (e.g., triamcinolone) - Other options: Silicone gel sheets, cryotherapy, laser therapy, surgical excision (often followed by adjunct therapy to prevent recurrence)

Quick Tip

Keloids grow **beyond the original wound margin** and do not regress spontaneously, unlike hypertrophic scars. Management typically involves intralesional steroids.

44. A 45-year-old male underwent bilateral laparoscopic hernia repair for inguinal hernia. Postoperatively, he complained of pain in the right thigh. Which of the following nerve entrapment leads to this symptom?

- (1) Ilioinguinal nerve
- (2) Hypogastric nerve
- (3) Femoral nerve
- (4) Lateral cutaneous nerve of thigh

Correct Answer: (4) Lateral cutaneous nerve of thigh

Solution: After laparoscopic hernia repair, nerve entrapment is a known complication that can cause postoperative pain, particularly in the thigh region. The lateral cutaneous nerve of the thigh is the most likely nerve to be involved in this case.

- Lateral cutaneous nerve of thigh:

The lateral cutaneous nerve of the thigh is commonly affected following inguinal hernia repair, especially with laparoscopic techniques. The nerve runs close to the inguinal ligament and can be compressed or entrapped during surgery, causing pain or paresthesia in the lateral aspect of the thigh. This is often referred to as meralgia paresthetica. The pain is usually localized to the outer part of the thigh, and the patient may also experience numbness or

tingling.

Other options:

- Ilioinguinal nerve: The ilioinguinal nerve can be involved in hernia repairs, but it typically causes pain in the groin or lower abdomen, not the thigh.
- Hypogastric nerve: The hypogastric nerve is more commonly associated with pelvic and abdominal pain and is unlikely to cause isolated thigh pain after laparoscopic hernia surgery.
- Femoral nerve: The femoral nerve lies deeper in the pelvic region and is less likely to be involved in postoperative thigh pain from laparoscopic hernia repair, unless there is significant surgical injury.

Thus, the most common cause of right thigh pain postoperatively in this patient is entrapment of the lateral cutaneous nerve of the thigh.

Quick Tip

Meralgia paresthetica, caused by lateral cutaneous nerve entrapment, can lead to thigh pain following inguinal hernia repair.

45. A patient was brought to the ER following a road traffic accident. On examination, the patient opens his eyes to a painful stimulus, speaks inappropriately, and withdraws his limbs to a painful stimulus. What is his GCS score?

- (1) E2V2M3
- (2) E3V3M3
- (3) E2V3M3
- (4) E3V2M2

Correct Answer: (3) E2V3M3

Solution: The Glasgow Coma Scale (GCS) is used to assess the level of consciousness in patients, particularly after trauma, and is based on three components: Eye opening (E), Verbal response (V), and Motor response (M). Each component is scored from 1 to 5 (eye opening), 1 to 5 (verbal response), and 1 to 6 (motor response), and the total score ranges from 3 to 15.

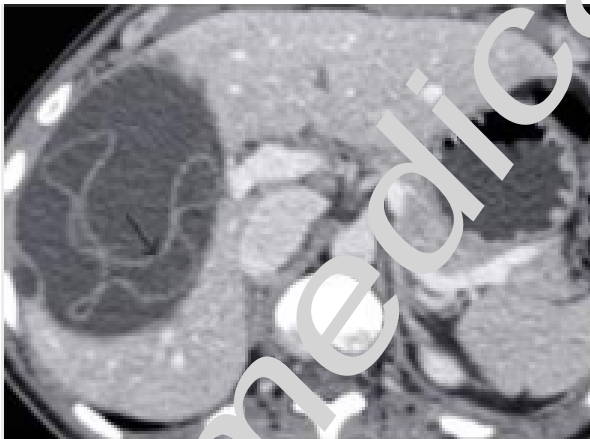
- Eye opening (E): The patient opens his eyes to a painful stimulus, which corresponds to a score of E2 (eyes open to pain).
- Verbal response (V): The patient speaks inappropriately, which corresponds to a score of V3 (inappropriate words).
- Motor response (M): The patient withdraws his limbs to a painful stimulus, which corresponds to a score of M3 (withdrawal from pain).

Thus, the total GCS score is $E2 + V3 + M3 = 8$. The correct option is (C) E2V3M3.

Quick Tip

In the Glasgow Coma Scale, remember that motor response (M) refers to how the patient reacts to pain, while verbal response (V) and eye opening (E) assess the patient's awareness and communication abilities.

46. A patient presented with fever and abdominal pain with jaundice. Investigations showed the given findings. Which of the following statements is true regarding this condition?



- (1) Surgery is mandatory
- (2) Fine-needle aspiration cytology is diagnostic
- (3) Angiembolization is the treatment of choice
- (4) Echinococcus species is involved in etiology

Correct Answer: (4) Echinococcus species is involved in etiology

Solution: The radiological image shows a classic **hydatid cyst** in the liver, characterized by

a well-defined lesion with daughter cysts and internal septations, often described as a “wheel spoke” or “honeycomb” appearance on CT scan.

This condition is caused by the larval stage of the parasite **Echinococcus granulosus** leading to **hydatid disease** or **echinococcosis**. It is a **zoonotic infection**, commonly transmitted through contact with infected dogs or contaminated food/water.

Key features: - Common in liver (75%), lungs, and rarely in other organs - Clinical signs include: **hepatomegaly, pain, fever, jaundice** (especially if cyst compresses biliary tree) - Complications: rupture, infection, anaphylaxis

Diagnosis: - Imaging: USG and CT scan are mainstays - Serological tests (e.g., ELISA) are supportive - **FNAC is contraindicated** due to risk of anaphylaxis

Treatment: - **Medical:** Albendazole (especially for smaller or inoperable cysts) -

Interventional: PAIR (Puncture, Aspiration, Injection, Re-aspiration) - **Surgery:** Indicated for large, complicated, or multiple cysts

Quick Tip

A hepatic cyst with daughter cysts on imaging should raise suspicion for **hydatid disease**, caused by **Echinococcus species**. **FNAC is avoided** due to risk of anaphylaxis.

47. A patient who is a known case of alcohol dependence syndrome presents with sudden and unintentional weight loss. What is the most likely diagnosis?

- (1) Hepatic adenoma
- (2) Cholangiocarcinoma
- (3) Hepatocellular carcinoma
- (4) Alcoholic hepatitis

Correct Answer: (C) Hepatocellular carcinoma

Solution: This patient, with a history of alcohol dependence syndrome, presents with unintentional weight loss, which could indicate a serious underlying liver condition. The laboratory findings further support the possibility of hepatocellular carcinoma (HCC):

- Alpha-fetoprotein (AFP): The significantly elevated AFP level of 600 ng/mL is highly

indicative of hepatocellular carcinoma (HCC). AFP is a tumor marker commonly elevated in HCC, making it a strong diagnostic clue.

- Liver function tests:
- The elevated alkaline phosphatase (ALP) suggests possible liver or biliary obstruction, commonly associated with HCC or other liver pathology.
- The AST/ALT ratio of 0.5 further supports liver dysfunction, although not specific to any one condition. In HCC, AST and ALT levels can be mildly elevated.
- Direct bilirubin of 1 mg/dL is also indicative of liver dysfunction but does not directly confirm HCC.

Quick Tip

Elevated AFP in a patient with chronic liver disease, especially one with a history of alcohol dependence, is a strong indicator of hepatocellular carcinoma (HCC).

48. A lady developed a skin reaction, as shown in the image, after using a hair dye.

Which of the following chemicals is responsible for this condition?



- (1) Pollen
- (2) Chromates
- (3) Balsam of Peru
- (4) p-Phenylenediamine

Correct Answer: (4) p-Phenylenediamine

Solution: The image and clinical context are suggestive of allergic contact dermatitis secondary to a chemical in hair dye. The most common and well-known allergen in hair dyes is p-Phenylenediamine (PPD).

Key points: - p-Phenylenediamine (PPD) is an aromatic amine used in permanent hair dyes.

- It is a potent allergen and sensitizer, causing a Type IV hypersensitivity reaction (delayed type).

- Symptoms include itching, erythema, scaling, and oozing or crusting in areas of contact—commonly the scalp, hairline, neck, or ears.

- Patients with previous exposure are more likely to develop reactions on re-exposure.

Quick Tip

Hair dye dermatitis is commonly due to p-Phenylenediamine (PPD), a chemical that causes a Type IV hypersensitivity reaction. Always confirm with patch testing.

49. A female patient presented with acne that is not resolving on oral isotretinoin and antibiotics therapy. Which of the following is the next best investigation?

- (1) Look for dietary triggers
- (2) Evaluate for hyperandrogenism
- (3) Check for antibiotic resistance
- (4) Look for drug triggers

Correct Answer: (2) Evaluate for hyperandrogenism

Solution: This patient has acne that has not responded to standard treatments like oral isotretinoin and antibiotics. In such cases, the next step is to evaluate for underlying

conditions that could be contributing to persistent acne. The most likely diagnosis in this scenario is hyperandrogenism, which is a common cause of acne that does not resolve with conventional treatment.

- Hyperandrogenism is often seen in conditions like polycystic ovary syndrome (PCOS), where excess androgens (male hormones) can lead to acne. The presence of hirsutism (excess body hair), irregular periods, and ovarian cysts may further support this diagnosis. Laboratory tests to check for elevated testosterone and other androgenic hormones are warranted.

Other options:

- Look for dietary triggers: While diet can contribute to acne, especially high glycemic foods, this is usually a secondary factor. Investigating diet would be appropriate if no underlying hormonal imbalances are found, but it is not the first step.

- Check for antibiotic resistance: While antibiotic resistance can occur, it is rare for acne to become resistant to all oral antibiotics, especially after using isotretinoin, which is effective in most cases. This is not the most likely cause of treatment failure.

- Look for drug triggers: Certain medications can exacerbate acne (e.g., corticosteroids, anticonvulsants), but if the patient is already on isotretinoin (which is a potent acne treatment), it is unlikely that a drug trigger is the cause of persistent acne.

Therefore, the next best investigation is to evaluate for hyperandrogenism and investigate potential underlying endocrine disorders, particularly PCOS.

Quick Tip

If acne does not resolve with standard treatment, consider evaluating for hyperandrogenism or PCOS in females. Elevated testosterone and other androgenic markers can be diagnostic.

50. Identify the maneuver being performed in the given image.



- (1) Head tilt, chin lift
- (2) Jaw thrust
- (3) Head extension
- (4) In-line manual stabilization

Correct Answer: (1) Head tilt, chin lift

Solution: The maneuver shown in the image is the head tilt, chin lift technique, a basic airway opening method used in unresponsive patients without suspected spinal injury.

Key points:

- It is the first-line airway management maneuver in basic life support (BLS) when airway obstruction due to the tongue is suspected.
- The procedure involves:
 - Tilting the head backward by applying pressure on the forehead.
 - Lifting the chin upwards using two fingers under the mandible.
- This technique helps lift the tongue away from the posterior pharyngeal wall, thereby relieving airway obstruction.

Quick Tip

Use the head tilt, chin lift technique to open the airway in unresponsive patients unless cervical spine injury is suspected. In such cases, opt for the jaw thrust maneuver instead.

51. A patient presented with features of chronic pancreatitis with recurrent attacks and has a 10 mm dilatation of the pancreatic duct with intraductal calculi present. Which of the following is the surgery of choice?

- (1) Pancreaticoduodenectomy
- (2) Longitudinal pancreaticojejunostomy
- (3) ERCP and sphincterotomy
- (4) Coring of pancreas head

Correct Answer: (2) Longitudinal pancreaticojejunostomy

Solution: This patient has chronic pancreatitis with recurrent attacks and a dilated pancreatic duct (10 mm) with intraductal calculi, which suggests pancreatic duct obstruction. In such cases, the surgery of choice is a longitudinal pancreaticojejunostomy, also known as a Puestow procedure.

- The longitudinal pancreaticojejunostomy involves creating a surgical connection between the pancreatic duct and the jejunum, allowing drainage of pancreatic secretions and relieving ductal obstruction caused by calculi or strictures. It is typically performed when there is a dilated pancreatic duct with intraductal stones, as seen in chronic pancreatitis.

Other options:

- Pancreaticoduodenectomy is more appropriate for conditions like pancreatic cancer or severe head involvement, not for chronic pancreatitis.

- ERCP and sphincterotomy can be used for bile duct or pancreatic duct stones but is not a definitive surgical solution for chronic pancreatitis with significant duct dilation and intraductal calculi.

- Coring of pancreas head is not commonly used in current practice as it involves removing the diseased portion of the pancreas but may be associated with higher morbidity.

Thus, the best approach for this patient is longitudinal pancreaticojejunostomy.

Quick Tip

In chronic pancreatitis with ductal dilation and calculi, longitudinal pancreaticojejunostomy (Puestow procedure) is the preferred surgery to relieve ductal obstruction and improve symptoms.

52. A young woman complains of a painless ulcer in the genital region associated with non-tender inguinal lymphadenopathy. What is the most likely diagnosis?

- (1) Chancroid
- (2) Syphilis
- (3) Herpes genitalis
- (4) Granuloma inguinale

Correct Answer: (2) Syphilis

Solution: This young woman presents with a painless genital ulcer and non-tender inguinal lymphadenopathy, which are classical signs of syphilis, specifically primary syphilis.

- Syphilis typically begins with a painless ulcer (chancre) at the site of infection, and the inguinal lymph nodes may be enlarged but are usually non-tender. The ulcer heals spontaneously within 3 to 6 weeks, but without treatment, the infection progresses to secondary syphilis.

Other options:

- Chancroid presents with a painful ulcer and tender inguinal lymphadenopathy, which is the opposite of this patient's presentation.
- Herpes genitalis is typically associated with painful vesicular lesions and tender lymphadenopathy, which differs from the painless ulcer seen here.
- Granuloma inguinale (donovanosis) presents with painless ulcers but is usually characterized by granulation tissue at the ulcer base and progressive tissue destruction, which is not typical in this case.

Therefore, the most likely diagnosis is syphilis.

Quick Tip

A painless ulcer with non-tender inguinal lymphadenopathy is characteristic of primary syphilis. A positive dark-field microscopy or serology confirms the diagnosis.

53. Which of the following is associated with the clinical condition shown in the image?



- (1) Cataract
- (2) Glaucoma
- (3) Malignant melanoma
- (4) Basal cell carcinoma

Correct Answer: (4) Basal cell carcinoma

Solution: The image shows a nodular skin lesion with a pearly appearance and central ulceration, typical of Basal Cell Carcinoma (BCC) — the most common skin malignancy.

Key features of Basal Cell Carcinoma:

- Usually arises in sun-exposed areas, especially the face, neck, and arms.
- Common in elderly individuals and those with chronic sun exposure or immunosuppression.
- Presents as a pearly or translucent papule/nodule, often with telangiectasia and sometimes central ulceration ("rodent ulcer").
- Very low metastatic potential, but locally invasive if untreated.

Quick Tip

Basal cell carcinoma typically presents as a pearly nodule with rolled edges and central ulceration, especially in sun-exposed areas. Though it grows slowly, early diagnosis and excision are key to preventing local destruction.

54. Which of the following is the drug of choice for preoperative antibiotic prophylaxis in a patient undergoing cardiac surgery?

- (1) Penicillin G
- (2) Erythromycin
- (3) Azithromycin
- (4) Cefazolin

Correct Answer: (4) Cefazolin

Solution: In patients undergoing cardiac surgery, antibiotic prophylaxis is crucial to prevent postoperative infections, particularly wound infections and endocarditis. The drug of choice for preoperative antibiotic prophylaxis in cardiac surgery is Cefazolin.

- Cefazolin is a first-generation cephalosporin that is effective against Gram-positive cocci, particularly *Staphylococcus aureus* and *Streptococcus* species, which are common causes of infections following cardiac surgeries.

- It has a broad spectrum of activity against skin and soft tissue pathogens, making it an excellent choice for preventing surgical site infections in patients undergoing cardiac procedures.

Other options:

- Penicillin G is effective against Gram-positive bacteria, but it is not the first-line choice for prophylaxis in cardiac surgery due to its narrower spectrum compared to cefazolin.

- Erythromycin and Azithromycin are macrolides, primarily used in respiratory infections, and are not typically used for preoperative antibiotic prophylaxis in cardiac surgeries.

Thus, Cefazolin is the most appropriate choice for preoperative prophylaxis in this scenario.

Quick Tip

For cardiac surgery, Cefazolin is preferred for antibiotic prophylaxis due to its efficacy against common Gram-positive pathogens and its favorable safety profile.

55. A 30-year-old male presents with nonaxial proptosis of the left eye. The patient gives a history of a road traffic accident 15 years back. The CT image is given below. What is the most likely diagnosis?



- (1) Frontal mucocoele
- (2) Frontal meningioma
- (3) Juvenile nasopharyngeal angiofibroma
- (4) Pseudotumor of orbit

Correct Answer: (1) Frontal mucocoele

Solution: The image demonstrates an expansile, cystic lesion arising from the frontal sinus with bone thinning and orbital displacement, characteristic of a frontal sinus mucocoele.

Key Features: - A mucocoele is a mucus-filled cystic lesion that results from obstruction of the sinus drainage pathway, leading to accumulation of secretions and expansion of the sinus.

- Commonly occurs in the frontal or ethmoid sinuses.
- Can present years after trauma or surgery due to scarring or blockage of sinus outflow.
- Symptoms include:
 - Proptosis (nonaxial) due to pressure on the orbit,
 - Headache or facial pressure,
 - Visual changes in severe cases.

Radiological findings:

- Well-defined, expansile lesion in the frontal sinus.
- Non-enhancing, fluid-density lesion on CT.
- Can cause thinning or erosion of adjacent bone.
- Causes displacement of orbital structures — often inferior and lateral.

Quick Tip

Frontal sinus mucocoele should be suspected in patients with nonaxial proptosis, history of trauma or surgery, and an expansile cystic lesion on CT/MRI in the frontal sinus region.

56. A woman presented with a BIRADS-5 breast lesion. Which of the following is a good prognostic factor for this lesion?

- (1) BRCA-1 positive
- (2) p53 positive
- (3) ER positive
- (4) High Ki-67

Correct Answer: (3) ER positive

Solution: BIRADS-5 is a classification indicating a highly suspicious lesion for malignancy in breast imaging. It typically represents a 95% likelihood of malignancy. However, the prognostic factors associated with breast cancer help in predicting the outcome and guide treatment strategies.

In this case, the best prognostic factor for a BIRADS-5 lesion is ER (Estrogen Receptor)

positivity.

- ER positive breast cancer cells have receptors for estrogen, which can stimulate the growth of cancer. These cancers tend to respond better to hormonal therapy, which targets the estrogen receptors and can significantly reduce the risk of recurrence. Therefore, ER positivity is generally considered a good prognostic factor, indicating a better overall survival and response to treatment.

Other options:

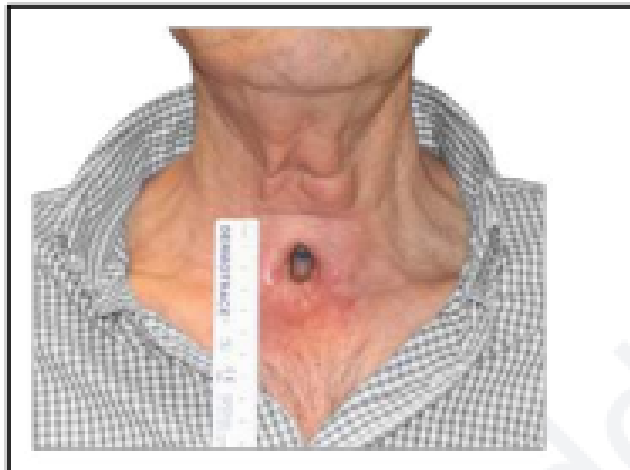
- BRCA-1 positive is associated with increased risk of breast cancer, particularly triple-negative breast cancers, which are more aggressive and have a worse prognosis.
- p53 positive generally indicates the presence of a mutated tumor suppressor gene, which is linked to poor prognosis, as it is associated with more aggressive cancer behavior.
- High Ki-67 is a marker for cell proliferation. A high Ki-67 index is associated with aggressive cancer behavior and typically indicates a worse prognosis.

Thus, ER positivity is the favorable prognostic factor in this scenario.

Quick Tip

In breast cancer, ER positivity is a key favorable prognostic factor, as it suggests responsiveness to hormonal therapies, which can improve outcomes.

57. A 55-year-old patient comes with hoarseness of voice and difficulty swallowing. The patient was diagnosed with laryngeal carcinoma, and surgical management was done. The post-operative image of the patient is given below. Which of the following surgery was done on this patient?



- (1) Partial laryngectomy
- (2) Proximal tracheostomy
- (3) Standard tracheostomy
- (4) Total laryngectomy

Correct Answer: (4) Total laryngectomy

Solution:

The clinical history of progressive hoarseness and dysphagia in a 55-year-old patient, along with a confirmed diagnosis of laryngeal carcinoma, indicates an advanced stage of the disease. In such cases, total laryngectomy is often the definitive treatment.

The post-operative image shows a permanent stoma in the neck region, which is characteristic of a total laryngectomy. In this procedure, the entire larynx (voice box) is removed, and the airway is redirected permanently through a tracheal stoma in the neck. This eliminates the connection between the mouth and the lungs, requiring the patient to breathe through the neck opening.

Partial laryngectomy procedures, on the other hand, aim to preserve part of the larynx and hence voice and airway continuity. In standard and proximal tracheostomies, the stoma is usually temporary and a tube is visible, unlike the permanent open stoma seen here.

Quick Tip

A permanent stoma in the neck following surgery for laryngeal carcinoma typically indicates a total laryngectomy, as it involves complete removal of the larynx and rerouting of the airway.

58. A patient presents with sudden onset of chest pain shooting to the neck and interscapular region. X-ray shows widened mediastinum. BP is 110/90 mmHg in the right upper limb and 160/100 mmHg in the left upper limb. What is the most likely diagnosis?

- (1) Acute coronary syndrome
- (2) Acute pulmonary embolism
- (3) Acute aortic dissection
- (4) Esophageal rupture

Correct Answer: (3) Acute aortic dissection

Solution:

Acute aortic dissection presents with sudden, severe chest pain that often radiates to the back, neck, or interscapular region. A key diagnostic clue is differential blood pressure between the limbs, as seen in this case (right upper limb: 110/90 mmHg, left upper limb: 160/100 mmHg), which is due to involvement of different branches of the aorta.

A widened mediastinum on chest X-ray is another classical feature of aortic dissection due to the presence of a hematoma in the mediastinum.

Other options: - Acute coronary syndrome usually presents with chest pain but doesn't typically involve differential BP or mediastinal widening. - Acute pulmonary embolism presents with dyspnea and chest pain but again lacks differential BP and mediastinal widening. - Esophageal rupture can show mediastinal widening but usually follows vomiting (Boerhaave syndrome) and doesn't present with BP discrepancy.

Quick Tip

Always consider aortic dissection when there is severe chest pain with unequal limb BPs and widened mediastinum on X-ray.

59. A female patient with hearing loss is examined and is found to be Rinne negative at 256 Hz and 512 Hz, while Rinne positive at 1024 Hz. What is the expected air conduction and bone conduction gap?

- (1) 30-45 dB
- (2) 15-30 dB
- (3) 45-60 dB
- (4) >60 dB

Correct Answer: (1) 30-45 dB

Solution:

The Rinne test compares air conduction (AC) to bone conduction (BC). - A Rinne negative test (BC $>$ AC) at 256 Hz and 512 Hz suggests conductive hearing loss at low to mid frequencies. - A Rinne positive result at 1024 Hz implies that the hearing loss does not significantly affect high frequencies or the hearing loss at those frequencies is less severe. The expected air-bone gap (AC-BC) corresponds with moderate conductive hearing loss, typically in the 30–45 dB range.

Other choices: - <30 dB suggests mild conductive loss and would not show consistent Rinne negativity at 256/512 Hz. - >45 dB would usually show Rinne negativity even at 1024 Hz.

Quick Tip

Rinne test results vary with frequency—if low frequencies are Rinne negative and high frequency is positive, suspect a moderate conductive hearing loss with a 30–45 dB air-bone gap.

60. A patient presented with right hypochondriac pain. He had an episode of diarrhea

1 week prior. CT scan of the abdomen reveals a liver abscess of around 25 ccs. What is the next step in management?

- (1) PAIR
- (2) Surgery
- (3) Medical therapy
- (4) Percutaneous drainage

Correct Answer: (3) Medical therapy

Solution:

The clinical scenario is indicative of an amoebic liver abscess, which commonly follows a recent diarrheal illness and typically presents with right upper quadrant pain. CT findings of a small abscess (25 ccs) support the diagnosis.

In cases of small-sized abscesses (<10 cm or <100 mL) with no signs of rupture or complications, the first-line treatment is medical management using anti-amoebic drugs such as metronidazole. Most small abscesses resolve with pharmacologic therapy alone.

Drainage (either PAIR—Puncture, Aspiration, Injection, Re-aspiration—or percutaneous catheter drainage) is reserved for: - Abscesses not responding to medical therapy - Large abscesses (>10 cm) - Left lobe abscesses (higher rupture risk) - Suspicion of bacterial (pyogenic) origin - Imminent rupture or clinical deterioration

Surgery is rarely needed and is reserved for complications like rupture into peritoneum or failure of percutaneous drainage.

Quick Tip

For small amoebic liver abscesses (<100 mL), medical therapy with metronidazole is usually sufficient; invasive procedures are reserved for non-responders or complications.

61. A child was brought with bony deformities, as shown in the radiograph below. It could be due to the deficiency of which of the following?



- (1) Vitamin A
- (2) Vitamin D
- (3) Vitamin K
- (4) Vitamin C

Correct Answer: (2) Vitamin D

Solution:

The radiograph shows classic signs of rickets, including: - Bowing of the legs (genu varum) - Widening and cupping of the metaphysis - Poor mineralization of bone

These are hallmark features of vitamin D deficiency, which leads to defective mineralization of the osseoid matrix in growing bones in children. Vitamin D is crucial for calcium and phosphorus absorption in the gut, and its deficiency results in hypocalcemia, secondary hyperparathyroidism, and bone demineralization.

Other options: - Vitamin A deficiency causes visual problems and epithelial dysfunction but

not bony deformities. - Vitamin K deficiency results in coagulopathy, not bone changes - Vitamin C deficiency (scurvy) leads to bone pain and subperiosteal hemorrhages but with different radiographic findings like “white line of Frankel” and “Pelkan spurs.”

Quick Tip

Bowing of legs and metaphyseal changes in children on X-ray strongly suggest rickets due to vitamin D deficiency.

62. A 50-year-old patient with a history of trauma one week back presents with confusion and ataxia. He is on treatment for alcohol dependence and his last intake was 2 weeks back. CT scan reveals the following findings. What is the diagnosis?



- (1) Extradural hemorrhage
- (2) Subdural hemorrhage
- (3) Intra-parenchymal hemorrhage
- (4) Subarachnoid hemorrhage

Correct Answer: (2) Subdural hemorrhage

Solution:

The CT image shows a crescent-shaped hyperdensity along the cerebral convexity, which is the classical radiologic appearance of a subdural hemorrhage (SDH). SDH typically occurs

due to rupture of bridging veins and can occur after even minor trauma, especially in elderly or alcohol-dependent individuals with cerebral atrophy.

Key features supporting the diagnosis: - History of trauma one week ago suggests a chronic or subacute SDH. - Confusion and ataxia are common delayed presentations. - Alcohol dependence predisposes to falls and coagulopathy, increasing SDH risk. - The crescent shape differentiates it from extradural hemorrhage, which appears lens-shaped.

Other options: - Extradural hemorrhage: Biconvex (lens-shaped) on CT, more acute onset, often associated with lucid intervals. - Intra-parenchymal hemorrhage: Appears within brain tissue, not crescentic. - Subarachnoid hemorrhage: Typically shows hyperdensity in basal cisterns or sulci.

Quick Tip

A crescent-shaped collection on CT in an elderly or alcoholic patient with trauma history is classic for subdural hemorrhage.

63. Which of the following is false about the given condition?



- (1) Repeated radical surgery every 24 hours may be required to adequately manage this condition
- (2) This is a case of Meleney's gangrene
- (3) The condition is caused by β hemolytic streptococcus and may sometimes be polymicrobial
- (4) Hyperbaric oxygen has no role in the treatment of this condition

Correct Answer: (4) Hyperbaric oxygen has no role in the treatment of this condition

Solution:

The image shows an infected necrotic skin lesion with undermined edges and surrounding erythema, strongly suggestive of necrotizing soft tissue infection (NSTI), specifically Meleney's gangrene (also called progressive synergistic bacterial gangrene).

This condition is: - Rapidly progressive and life-threatening - Often caused by -hemolytic streptococcus, possibly in combination with anaerobic organisms or *Staphylococcus aureus* (polymicrobial) - Requires aggressive surgical debridement, often repeated every 24 hours to control the spread

Importantly, hyperbaric oxygen therapy (HBOT) has a recognized role in management: - It enhances oxygenation in ischemic tissue - Inhibits anaerobic bacterial growth - Promotes wound healing - Reduces edema and improves neutrophil function

Therefore, saying that HBOT "has no role" is incorrect and makes Option (4) the false statement.

Quick Tip

Hyperbaric oxygen therapy is a valuable adjunct in necrotizing infections, especially when anaerobes are involved. Don't overlook its therapeutic role.

64. A bronchial asthma patient on inhalational steroids presented with white patchy lesions on the tongue and buccal mucosa. What is the drug that can be used to treat this condition?

- (1) Clotrimazole
- (2) Griseofulvin
- (3) Terbinafine
- (4) Fluconazole

Correct Answer: (1) Clotrimazole

Solution:

Inhalational corticosteroids, if not properly rinsed after use, can predispose patients to oral candidiasis (oral thrush). It presents as white, patchy, scrapable lesions over the tongue and buccal mucosa.

Clotrimazole, an imidazole antifungal agent, is commonly used as a topical treatment (lozenges or troches) for oropharyngeal candidiasis. It is effective and locally acting, making it suitable in such cases.

Other options: - Griseofulvin is used for dermatophyte infections, not candidiasis. - Terbinafine is effective against dermatophytes and not for mucosal candidiasis. - Flucytosine is reserved for serious systemic fungal infections and not used alone for oral candidiasis.

Quick Tip

Inhaled steroids can cause oral thrush. Advise patients to rinse their mouth and use topical antifungals like clotrimazole if lesions appear.

65. A patient presents with a swelling in the groin region and it is diagnosed as a direct inguinal hernia. Weakness in which of the following structures is most likely to cause this condition?

- (1) Pectineal ligament
- (2) Conjoint tendon
- (3) Reflected part of inguinal ligament
- (4) Lacunar ligament

Correct Answer: (2) Conjoint tendon

Solution:

A direct inguinal hernia occurs due to weakness in the posterior wall of the inguinal canal, specifically the Hesselbach's triangle. The conjoint tendon, formed by the fusion of the internal oblique and transversus abdominis aponeuroses, reinforces this posterior wall. Weakness or attenuation of the conjoint tendon predisposes to protrusion of abdominal contents through the weakened area, leading to a direct hernia.

Other options: - Pectineal ligament (Cooper's ligament) lies on the superior pubic ramus and

is not directly involved in the integrity of the inguinal canal. - Reflected inguinal ligament is a fibrous extension not primarily supporting the posterior wall. - Lacunar ligament is part of the femoral canal anatomy, not the inguinal canal.

Quick Tip

Direct inguinal hernias occur due to posterior wall weakness, most commonly involving the conjoint tendon.

66. A pregnant woman with a history of bronchial asthma is in the third stage of labor. Which drugs should be avoided in managing postpartum hemorrhage in this mother?

- (1) Carboprost
- (2) Oxytocin
- (3) Dinoprostone
- (4) Methyl ergometrine

Correct Answer: (1) Carboprost

Solution:

Carboprost is a PGF₂ analogue used to treat postpartum hemorrhage (PPH). However, it is contraindicated in asthmatic patients due to its bronchoconstrictor effects, which may exacerbate asthma and even trigger life-threatening bronchospasm.

Other uterotonic drugs: - Oxytocin: First-line agent for PPH; safe in asthmatics. -

Dinoprostone (PGE₂): Has lesser bronchospastic potential, relatively safer. - Methyl

ergometrine: Contraindicated in hypertension but not specifically in asthma.

Quick Tip

Avoid Carboprost in patients with asthma due to its bronchoconstrictive action. Choose oxytocin or safer prostaglandins instead.

67. In which of the following nerve injuries is the instrument shown below used?



- (1) Radial nerve
- (2) Median nerve
- (3) Ulnar nerve
- (4) Volkmann's ischemic contracture

Correct Answer: (1) Radial nerve

Solution:

The image shows a dynamic cock-up splint, which is commonly used in cases of radial nerve palsy. Radial nerve injury results in wrist drop, where the patient is unable to extend the wrist and fingers due to paralysis of the extensor muscles of the forearm.

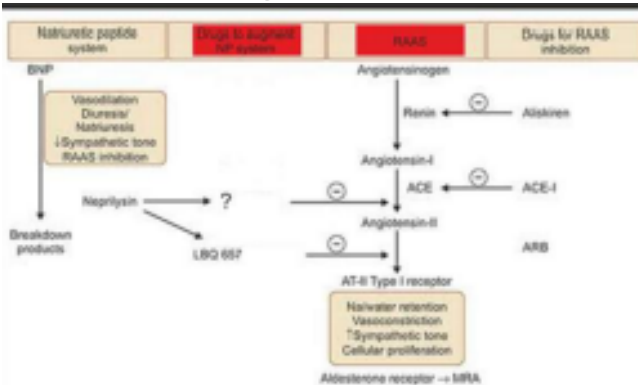
The splint functions by - Holding the wrist in extension - Allowing passive finger movements - Preventing contractures - Aiding in hand function while the nerve recovers

This device is not used for median or ulnar nerve injuries, which result in different types of hand deformities (e.g., ape thumb in median nerve injury or claw hand in ulnar nerve injury), nor for Volkmann's ischemic contracture, which is a result of ischemic damage from compartment syndrome and requires a different treatment approach.

Quick Tip

A cock-up splint is specifically designed to manage wrist drop seen in radial nerve injuries by supporting wrist extension.

68. Name the drug that acts on both the marked areas.



- (1) Sacubitril
- (2) Sacubitril + Valsartan
- (3) Olmesartan
- (4) Nesiritide

Correct Answer: (2) Sacubitril + Valsartan.

Solution:

The diagram highlights two key pathways: 1. Neprilysin inhibition, which increases levels of natriuretic peptides (BNP, ANP) that have beneficial effects like vasodilation, natriuresis, and inhibition of fibrosis. 2. Renin-Angiotensin-Aldosterone System (RAAS) inhibition, specifically through angiotensin II receptor blockade (ARB), which prevents vasoconstriction and aldosterone secretion.

The combination drug Sacubitril + Valsartan (marketed as Entresto) acts on both these pathways: - Sacubitril inhibits neprilysin, thereby enhancing the effects of endogenous natriuretic peptides. - Valsartan blocks the angiotensin II type 1 receptor (AT1R), thereby suppressing RAAS effects.

This combination provides a synergistic effect for patients with heart failure, improving outcomes compared to ACE inhibitors alone.

Other options: - Sacubitril alone is not used clinically without an ARB due to risk of excessive bradykinin. - Olmesartan is only an ARB. - Nesiritide is a recombinant BNP analog but does not act on RAAS or neprilysin.

Quick Tip

Sacubitril + Valsartan is a dual-acting heart failure drug targeting both RAAS and the natriuretic peptide system—unique in its class.

69. A patient presented with chronic knee pain but has no history of trauma. Identify the condition shown in the radiograph below and the appropriate management.

- (1) Patellar avulsion fracture, TBW
- (2) Bipartite fracture patella, X-ray of other knees
- (3) Fracture of the upper pole of the patella, Cylindrical cast
- (4) Avulsion fracture, inflammatory screw fixation

Correct Answer: (2) Bipartite fracture patella, X-ray of other knees

Solution:

The radiograph reveals a well-defined, smooth-edged fragment at the superolateral aspect of the patella, consistent with a bipartite patella, which is a congenital anomaly rather than a traumatic fracture.

Key distinguishing features: - Chronic knee pain without trauma - Smooth, rounded fragment margins - Superolateral location is typical - No signs of acute fracture or periosteal reaction

Management: Since bipartite patella is often bilateral, a comparative X-ray of the contralateral knee is advised to confirm the diagnosis. Most cases are managed conservatively unless symptomatic, in which case surgical excision may be considered.

Other options involve more aggressive management suitable for acute traumatic injuries, which are not indicated here.

Quick Tip

Always consider bipartite patella in chronic anterior knee pain without trauma—confirm by comparing X-rays of both knees.

70. A construction worker came to the OPD complaining of white fingers. He has been

working in a cold environment for the last 10 years. He also has aching in many fingers, cold sensitivity, and numbness. What is the most likely etiology for this condition?

- (1) Fungal infection of the fingers due to continuous exposure to water
- (2) Chilblains
- (3) Autoimmune exposure to salts and chemicals
- (4) Chronic exposure to cold

Correct Answer: (4) Chronic exposure to cold

Solution:

The clinical presentation is classic for Raynaud's phenomenon or hand-arm vibration syndrome due to chronic cold exposure. The occupational history (construction work in cold environments for over a decade), along with symptoms like - White (blanched) fingers - Aching and numbness - Cold sensitivity are indicative of vasospastic attacks affecting digital blood supply.

Chronic cold exposure leads to repeated vasoconstriction of digital arteries, eventually causing vascular insufficiency, nerve dysfunction, and structural changes in extremities.

Other options: - Fungal infections cause discoloration, not blanching or cold sensitivity. - Chilblains are acute and inflammatory in nature. - Autoimmune exposure would present with systemic signs (e.g., sclerodactyly, ulcers).

Quick Tip

Chronic cold exposure in workers leads to white finger syndrome—protective gear and workplace modifications are key.

71. A patient with a previous history of myocardial infarction and ventricular arrhythmias is on treatment for a few months. He developed fatigue, dyspnea, and weight gain. He had also developed pulmonary fibrosis. Which of the following drugs is responsible for the side effects mentioned above?

- (1) Amiodarone
- (2) Atenolol

- (3) Aspirin
- (4) Spironolactone

Correct Answer: (1) Amiodarone

Solution:

Amiodarone is a class III antiarrhythmic used to treat ventricular and supraventricular arrhythmias. It is highly effective but associated with multiple systemic adverse effects due to its iodine content and long half-life.

Key adverse effects of amiodarone include: - Pulmonary fibrosis. Presents with dyspnea, cough, and interstitial infiltrates on imaging - Thyroid dysfunction (both hypo- and hyperthyroidism) - Hepatotoxicity - Skin discoloration ("slate-grey" pigmentation) - Corneal deposits

In this case, the patient developed fatigue, dyspnea, weight gain, and pulmonary fibrosis — all consistent with adverse reactions to amiodarone.

Other options: - Atenolol (beta-blocker) may cause fatigue but not pulmonary fibrosis. - Aspirin causes gastric irritation and bleeding but not fibrosis. - Spironolactone may lead to gynecomastia and hyperkalemia but not lung disease.

Quick Tip

Amiodarone has many systemic side effects—always monitor for pulmonary fibrosis and thyroid dysfunction during therapy.

72. A 5-year-old child was admitted to the hospital for prolapsing rectal mass and painless rectal bleeding. Histopathological examination reveals enlarged and inflamed glands filled with mucus. What is the likely diagnosis?

- (1) Adenoma
- (2) Cystic fibrosis
- (3) Hamartoma
- (4) Carcinoma

Correct Answer: (3) Hamartoma

Solution:

The clinical presentation of painless rectal bleeding and prolapsing rectal mass in a child, along with histology showing inflamed mucus-filled glands, is characteristic of a juvenile polyp, which is a form of hamartomatous polyp.

These polyps are: - Benign overgrowths of normal tissue components - Common in children (especially age <10) - Often solitary and located in the rectum - May prolapse during defecation and bleed

Other options: - Adenomas are typically precancerous and seen in adults. - Cystic fibrosis may cause GI symptoms but not this presentation. - Carcinoma is rare in children and would show malignant features on histology.

Quick Tip

In children with painless rectal bleeding, always consider juvenile (hamartomatous) polyps as a likely diagnosis.

73. A young female comes to the emergency department after consuming 100 aspirin tablets. What should be the next step in management?

- (1) N-acetyl cysteine to replenish glutathione stores
- (2) Prednisolone
- (3) Glucagon to control bradycardia and hypoglycemia
- (4) Give sodium bicarbonate to alkalinize urine

Correct Answer: (4) Give sodium bicarbonate to alkalinize urine

Solution:

In cases of aspirin (salicylate) overdose, the key step in management after stabilization is to alkalinize the urine using sodium bicarbonate. This promotes the ionization of salicylic acid, reducing its reabsorption in renal tubules and increasing urinary excretion.

N-acetyl cysteine is used in paracetamol (acetaminophen) poisoning, not aspirin.

Prednisolone and glucagon are not indicated in salicylate overdose.

Clinical features of salicylate poisoning: - Tinnitus - Metabolic acidosis with respiratory alkalosis - Nausea, vomiting, confusion - Severe cases may lead to seizures and coma

Quick Tip

Alkalinization of urine using sodium bicarbonate enhances excretion of salicylates—key step in overdose management.

74. A smoker who was on nicotine replacement therapy and clonidine tablets for smoking de-addiction. He stopped taking clonidine tablets and now presents with a headache. What is the most likely condition?

- (1) Rebound hypotension
- (2) Clonidine hypersensitivity
- (3) Nicotine hypersensitivity
- (4) Rebound hypertension

Correct Answer: (4) Rebound hypertension

Solution:

Clonidine is a centrally acting alpha-2 adrenergic agonist that reduces sympathetic outflow and lowers blood pressure. If abruptly stopped, it can lead to rebound hypertension due to a surge in sympathetic tone.

Symptoms include: - Sudden rise in blood pressure - Headache - Sweating - Palpitations

This condition is particularly important in patients using clonidine for hypertension or off-label for substance withdrawal.

Other options: - Rebound hypotension is not a recognized complication of clonidine withdrawal. - Hypersensitivity reactions present with rashes, fever, or anaphylaxis—not headache.

Quick Tip

Never abruptly stop clonidine; taper gradually to avoid rebound hypertension due to sympathetic surge.

75. Identify the given condition.



- (1) Venous ulcer
- (2) Malignant ulcer
- (3) Arterial ulcer
- (4) Trophic ulcer

Correct Answer: (4) Trophic ulcer

Solution:

The image shows a deep ulcer located on the plantar aspect of the foot, commonly over pressure points (like heel or metatarsal heads), which is characteristic of a trophic ulcer.

These ulcers are caused by loss of sensation, typically due to peripheral neuropathy (as seen in diabetic neuropathy or leprosy).

Key features: - Located on pressure points of soles - Painless due to neuropathy - Surrounded by callused or thickened skin - Deep with undermined edges

Other options: - Venous ulcers usually occur on the medial malleolus and are shallow with granulation. - Arterial ulcers occur on the toes or lateral malleolus and are very painful. -

Malignant ulcers have irregular everted edges, are progressive, and often bleed.

Quick Tip

Trophic ulcers are painless and develop at pressure points due to neuropathy—common in diabetes and leprosy.

76. A patient with recurrent gout attacks was started on a therapy that inhibits uric acid synthesis. His symptoms were reduced after therapy. Which drug was he started on?

- (1) Probenecid
- (2) Colchicine
- (3) Allopurinol
- (4) Febuxostat

Correct Answer: (3) Allopurinol

Solution:

Allopurinol is a xanthine oxidase inhibitor that decreases uric acid synthesis, making it a mainstay of chronic gout management and prevention of recurrent attacks.

Mechanism: - Inhibits xanthine oxidase enzyme - Reduces conversion of hypoxanthine → xanthine → uric acid - Prevents urate crystal deposition

Other options: - Probenecid: Increases renal excretion of uric acid (uricosuric), not for acute attacks. - Colchicine: Anti-inflammatory used for acute attacks, not for uric acid synthesis inhibition. - Febuxostat: Also a xanthine oxidase inhibitor, but the preferred and first-line agent remains allopurinol.

Quick Tip

Allopurinol inhibits xanthine oxidase—reduces uric acid production and prevents future gout attacks.

77. A patient with a malignancy is undergoing chemotherapy. The platelet counts were reduced after his previous cycle of chemotherapy. Which of the following drugs can be used to treat this patient's condition?

- (1) Filgrastim
- (2) Erythropoietin
- (3) Oprelvekin (IL-11)
- (4) Darbepoetin

Correct Answer: (3) Oprelvekin (IL-11)

Solution:

The patient is suffering from chemotherapy-induced thrombocytopenia. The drug of choice to stimulate platelet production is Oprelvekin, which is a recombinant Interleukin-11 (IL-11).

Mechanism: - Stimulates megakaryocyte proliferation and maturation - Increases platelet counts - Used to reduce incidence of thrombocytopenia in cancer patients receiving myelosuppressive therapy

Other options: - Filgrastim (G-CSF): Increases neutrophils, not platelets - Erythropoietin and

Darbepoetin: Stimulate red blood cell production, used in anemia

Quick Tip

Use Oprelvekin (IL-11) to manage chemotherapy-induced thrombocytopenia by boosting platelet production.

78. The true statement among the following is...

- (1) The dose of telmisartan should be reduced in renal failure but not in hepatic failure.
- (2) The dose of ibesartan should be reduced in case of mild-moderate hepatic failure and renal failure.
- (3) The dose of candesartan should be reduced in mild-moderate liver failure but not in renal failure.
- (4) Losartan acts as a thromboxane A₂ antagonist and inhibits platelet aggregation.

Correct Answer: (3) The dose of candesartan should be reduced in mild-moderate liver failure but not in renal failure.

Solution:

Candesartan is an angiotensin II receptor blocker (ARB) used for hypertension and heart failure. It undergoes hepatic metabolism and has minimal renal excretion.

Therefore: - In mild to moderate liver failure, the metabolism of candesartan may be impaired, requiring dose adjustment. - In renal failure, no dose modification is generally needed, as its elimination is not significantly dependent on renal clearance.

Other options: - Telmisartan is primarily eliminated through the bile, and dose adjustment is not necessary in renal failure. - Ibesartan is not a standard ARB; likely a typo or confusion with irbesartan. Even irbesartan doesn't need dose reduction in both hepatic and renal failure unless severe. - Losartan is an ARB and does not act as a thromboxane A₂ antagonist.

Quick Tip

Candesartan dosage should be adjusted in hepatic impairment, not in renal failure, due to its primary hepatic metabolism.

79. A patient at the orthopaedics OPD complains of troubled sleep at night due to numbness and tingling sensation involving his lateral 3½ digits. His symptoms are relieved as he lays his arms at the bedside with wrist flexed. Which of the following options correctly describes his condition and the test used to detect it?

- (1) Guyon's canal syndrome, Froment's test
- (2) Carpal tunnel syndrome, Phalen's test
- (3) Cubital tunnel syndrome, Froment's test
- (4) Guyon's canal syndrome, Durkan's test

Correct Answer: (2) Carpal tunnel syndrome, Phalen's test

Solution:

The patient presents with nocturnal numbness and tingling in the lateral 3½ fingers (thumb, index, middle, and radial half of ring finger) — classic for carpal tunnel syndrome (CTS), which involves compression of the median nerve at the wrist.

Key features: - Worse at night - Relieved by wrist movement or hanging hand over the bed - Affects median nerve distribution

Phalen's test is used to diagnose CTS: - Patient flexes wrists maximally and holds the position for 60 seconds - Reproduction of symptoms (tingling/numbness) is a positive test

Other options: - Froment's test is for ulnar nerve palsy. - Durkan's test is also for CTS but is not as widely recognized as Phalen's. - Guyon's canal syndrome affects ulnar nerve, not median. - Cubital tunnel syndrome involves the ulnar nerve at the elbow.

Quick Tip

Tingling in the thumb, index, and middle fingers—especially at night—suggests carpal tunnel syndrome. Confirm with Phalen's test.

80. A child is brought to the orthopaedics OPD with a deformity in the lower limb and hyperpigmented skin lesions. The X-ray of her thigh is shown below. What is the most likely diagnosis?



- (1) Non-ossifying fibroma
- (2) Fibrous dysplasia
- (3) Paget disease
- (4) Osteogenesis imperfecta

Correct answer: (2) Fibrous dysplasia

Solution:

The clinical triad of: - Bone deformity (as seen in the X-ray of the femur showing

ground-glass appearance and cortical thinning) - Hyperpigmented skin lesions (often café-au-lait spots) - Occurs typically in young individuals

suggests a diagnosis of Fibrous Dysplasia, particularly when associated with endocrine dysfunction (McCune-Albright Syndrome).

Fibrous dysplasia involves replacement of normal bone with fibro-osseous tissue causing deformities, fractures, and radiologic ground-glass appearance.

Other options: - Non-ossifying fibroma: Asymptomatic and often incidental, not associated with skin lesions. - Paget disease: Affects older adults with bony overgrowth, not children. - Osteogenesis imperfecta: Presents with brittle bones and blue sclerae, not café-au-lait spots.

Quick Tip

Fibrous dysplasia in children often presents with bony deformity and café-au-lait macules; X-ray shows a ground-glass appearance.

81. A schizophrenic patient was prescribed drug A after he did not respond to haloperidol and risperidone. He now presents with excessive salivation, an increase in blood glucose, and hypersalivation. What is drug A?

- (1) Olanzapine
- (2) Risperidone
- (3) Clozapine
- (4) Aripiprazole

Correct Answer: (3) Clozapine

Solution:

Clozapine is an atypical antipsychotic reserved for treatment-resistant schizophrenia, i.e., cases unresponsive to at least two other antipsychotics.

Its side effect profile includes: - Sialorrhea (hypersalivation) — paradoxical, despite being anticholinergic - Hyperglycemia — due to metabolic side effects - Agranulocytosis — requires regular CBC monitoring - Seizures and myocarditis — rare but serious adverse effects

Other options: - Olanzapine causes weight gain and hyperglycemia but is not first-line after risperidone failure. - Risperidone was already ineffective in this case. - Aripiprazole has fewer metabolic side effects and does not cause salivation.

Quick Tip

Clozapine is the go-to for treatment-resistant schizophrenia, but always monitor for agranulocytosis, seizures, and hypersalivation.

82. The given image is an X-ray of a 22-year-old female. What is the probable diagnosis?



- (1) Osteochondroma
- (2) Chondrosarcoma
- (3) Giant cell tumor
- (4) Aneurysmal bone cyst

Correct Answer: (3), Giant cell tumor

Solution:

The X-ray image shows a radiolucent lesion in the epiphyseal region of a long bone, likely involving the distal femur. This is highly suggestive of a Giant Cell Tumor (GCT), also known as osteoclastoma.

Key features of GCT: - Occurs in young adults (20–40 years) - Typically located at epiphyseal ends of long bones (distal femur, proximal tibia) - Appears as an eccentric, lytic

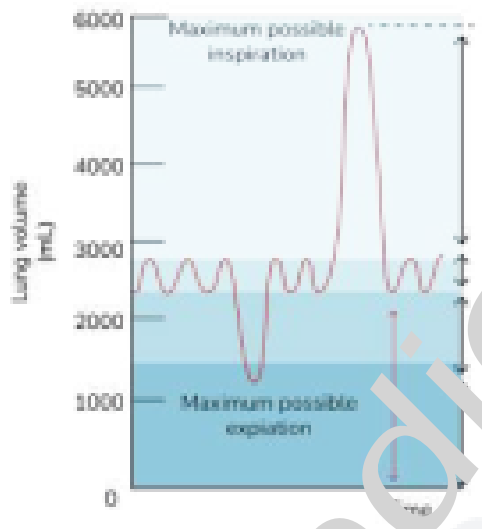
lesion, often extending up to the articular surface - May show "soap bubble" appearance on X-ray

Other options: - Osteochondroma: Arises from metaphysis, with bony outgrowth capped by cartilage - Chondrosarcoma: Occurs in older individuals; shows calcifications - Aneurysmal bone cyst: Expansile, eccentric lesion but occurs in younger age group and metaphysis

Quick Tip

An epiphyseal lytic lesion in a young adult should raise suspicion for a giant cell tumor—look for eccentric "soap bubble" appearance.

83. Identify the marked region in the given spirometry.



- (1) Functional residual capacity
- (2) Tidal volume
- (3) Inspiratory reserve volume
- (4) Expiratory capacity

Correct Answer: (1) Functional residual capacity

Solution:

In the spirometry graph, the shaded area represents the volume of air remaining in the lungs after normal tidal expiration, which is called the Functional Residual Capacity (FRC).

$$FRC = \text{Expiratory Reserve Volume (ERV)} + \text{Residual Volume (RV)}$$

It is the point at which the inward elastic recoil of the lungs is balanced by the outward recoil of the chest wall, representing the equilibrium volume of the lungs.

Other options: - Tidal Volume: The volume of air inhaled or exhaled in a normal breath (~500 mL) - Inspiratory Reserve Volume: The volume that can be inhaled after a normal inspiration - Expiratory Capacity: Sum of tidal volume and expiratory reserve volume

Quick Tip

Functional residual capacity is the lung volume at the end of passive expiration—crucial for gas exchange during apnea.

84. A patient with varicose veins complains of eczema over the same region. What is the stage of the clinical classification according to the CEAP guidelines?

- (1) C2
- (2) C3
- (3) C4a
- (4) C4b

Correct Answer: (3) C4a

Solution:

The CEAP classification is used to categorize chronic venous disorders. The "C" stands for Clinical and includes categories C0 to C6:

- C2: Varicose veins - C3: Edema - C4a: Skin changes such as eczema and pigmentation - C4b: Lipodermatosclerosis and white atrophy - C5: Healed venous ulcer - C6: Active venous ulcer

Since the patient presents with eczema over varicosities, this falls under C4a, which includes skin changes without ulceration.

Quick Tip

In CEAP classification, C4a includes eczema and pigmentation. C4b includes lipodermatosclerosis and white atrophy.

85. A patient comes to the casualty with a severe headache. His BP was found to be 160/100 mmHg. CT scan revealed a subarachnoid hemorrhage. What is the next best step in the management of this patient?

- (1) MRI
- (2) Angiography
- (3) Surgery
- (4) Platelet-rich therapy

Correct Answer: (2) Angiography

Solution:

A subarachnoid hemorrhage (SAH) is most commonly due to a ruptured berry aneurysm. After confirmation via non-contrast CT, the next best step is to identify the source of bleeding via cerebral angiography.

Role of angiography: - Localizes the aneurysm - Helps plan definitive management like clipping or coiling - Typically digital subtraction angiography (DSA) is used

Other options: - MRI is less sensitive than CT in acute hemorrhage - Surgery comes after confirming the aneurysm site - Platelet-rich therapy has no role in SAH

Quick Tip

After CT confirms subarachnoid hemorrhage, always proceed with cerebral angiography to locate the aneurysm.

86. A man was brought to the emergency after suddenly becoming unconscious while working in the steel construction unit. His temperature was 106 degrees Fahrenheit, and his skin is turgid and dry. Which of the following would not be seen in the patient?

- (1) Hot and dry skin
- (2) Raised core temperature
- (3) Sweating
- (4) CNS dysfunction

Correct Answer: (3) Sweating

Solution:

The presentation is classic for heat stroke, a medical emergency characterized by: - Core temperature $>104^{\circ}\text{F}$ (40°C) - Altered mental status/CNS dysfunction (confusion, seizure, coma) - Hot, dry skin due to failure of thermoregulation

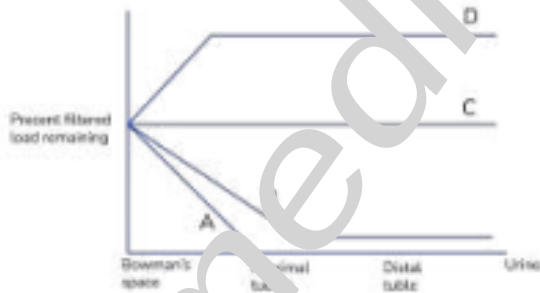
Importantly, sweating ceases in classic heat stroke, differentiating it from exertional hyperthermia.

Thus, sweating would not be seen in this case. The skin remains hot and dry, and the patient experiences hyperthermia with CNS symptoms.

Quick Tip

In heat stroke, sweating stops due to failure of thermoregulation—look for hot, dry skin and altered mental status.

87. Identify the correctly matched pair of substances with their renal clearance from the graph below.



- (1) A: Glucose, B: PAH, C: Bicarbonate and D: Inulin
- (2) A: Glucose, B: Bicarbonate, C: Inulin and D: PAH
- (3) A: PAH, B: Inulin, C: Glucose and D: Bicarbonate
- (4) A: Inulin, B: Glucose, C: Bicarbonate and D: PAH

Correct Answer: (2) A: Glucose, B: Bicarbonate, C: Inulin and D: PAH

Solution:

The graph illustrates renal handling of substances by comparing how much of a substance remains at different points in the nephron.

Let's interpret each line: - A: Rapidly decreases to zero in the proximal tubule → Glucose, which is completely reabsorbed under normal conditions. - B: Partially reabsorbed → Bicarbonate, which is filtered and largely reabsorbed, but not completely. - C: Remains constant throughout → Inulin, which is neither reabsorbed nor secreted. It is the gold standard to measure GFR. - D: Increases along the tubule → PAH (Para-aminohippurate), which is filtered and actively secreted, resulting in greater clearance than GFR.

This pattern matches: - A: Glucose - B: Bicarbonate - C: Inulin - D: PAH

Quick Tip

Glucose is completely reabsorbed, PAH is secreted, inulin is filtered only, and bicarbonate is partially reabsorbed—this pattern defines their renal clearance profiles.

88. A 20-year-old female patient consumes a cleaning product containing 90% sodium hydroxide. She is having complete dysphagia. What is the best step in management?

- (1) Esophagojejunostomy
- (2) Stent placement
- (3) Feeding jejunostomy
- (4) Gastrojejunostomy

Correct Answer: (3) Feeding jejunostomy

Solution:

Sodium hydroxide is a strong alkali that causes liquefactive necrosis on ingestion, leading to deep tissue penetration and extensive esophageal damage. The patient's complete dysphagia suggests significant esophageal injury or stricture formation.

In the acute phase, the priority is to: - Prevent further damage - Avoid invasive interventions that may worsen the perforation risk - Maintain nutrition

Hence, the best immediate step is feeding jejunostomy, which bypasses the damaged esophagus and allows for enteral nutrition.

Other options: - Esophagojejunostomy is a reconstructive procedure done much later. - Stent placement is avoided in acute corrosive injury due to risk of perforation. - Gastrojejunostomy is not indicated unless there's gastric outlet obstruction.

Quick Tip

In corrosive esophageal injuries with complete dysphagia, feeding jejunostomy is preferred to maintain nutrition while avoiding further trauma.

89. A 23-year-old male patient presents with midline swelling in the neck. The swelling moves with deglutition and protrusion of the tongue. What is the likely diagnosis?

- (1) Brachial cyst
- (2) Thyroglossal cyst
- (3) Plunging ranula
- (4) Dermoid cyst

Correct Answer: (2) Thyroglossal cyst

Solution:

A thyroglossal cyst is a congenital anomaly due to persistence of the thyroglossal duct tract, which extends from the foramen cecum to the thyroid gland.

Characteristic features: - Midline neck swelling - Moves with swallowing (deglutition) and tongue protrusion, due to its attachment to the foramen cecum and hyoid bone - Common in young adults and children

Other options: - Brachial cyst: Lateral neck swelling, does not move with deglutition -

Plunging ranula: Arises from sublingual gland and presents as a fluctuant swelling in the

floor of the mouth or neck - Dermoid cyst: Midline but does not move with tongue protrusion

Quick Tip

Midline neck swelling that moves with swallowing and tongue protrusion is pathognomonic for a thyroglossal duct cyst.

90. Identify the true statement regarding the given nerve action potential curve?

- (1) The threshold point is at A
- (2) Point E, the nerve is more excitable
- (3) Point C to D is due to the opening of Na^+ and closure of K^+ channels
- (4) Point B to D is a refractory period

Correct Answer: (4) Point B to D is a refractory period

Solution:

The graph shows a typical nerve action potential, which includes phases of depolarization, repolarization, and hyperpolarization.

Let's break down the key phases: - Point A: Subthreshold stimulus; does not trigger action potential. - Point B: Threshold potential is reached → triggers opening of voltage-gated Na^+ channels → rapid depolarization. - Point C: Peak of the action potential. - Point D: Repolarization phase → Na^+ channels inactivate, K^+ channels open. - Point E: After-hyperpolarization phase due to continued K^+ efflux.

Refractory period is the time during which the neuron is unable or less likely to fire another action potential. It includes: - Absolute refractory period (B to part of C): No new action potential possible due to inactivated Na^+ channels. - Relative refractory period (rest of C to D): A stronger-than-normal stimulus is needed due to hyperpolarization.

Hence, Point B to D represents the entire refractory period.

Quick Tip

The refractory period spans from threshold depolarization to repolarization (B to D) — crucial in preventing back-propagation of impulses.

91. A young patient is admitted with a history of fever for 5 days. BP is 90/80 mmHg, PR-120 bpm, RR-24 breaths/min, GCS score-10. Laboratory tests show leucocytosis with neutrophilia and serum creatinine level of 2.6 mg/dL. An intern doctor wants to calculate the qSOFA score to predict prognosis and hospitalization duration. Which of the following comprises the qSOFA score?

- (1) BP, RR and CBC
- (2) Creatinine, PR, BP
- (3) RR, Body temperature, PR
- (4) SBP, RR, GCS score

Correct Answer: (4) SBP, RR, GCS score

Solution:

The qSOFA score (quick Sequential Organ Failure Assessment) is a scoring system used to identify patients who are at risk of developing sepsis and poor outcomes. It helps in predicting the prognosis and the duration of hospitalization. The qSOFA score is based on three criteria:

1. Systolic Blood Pressure (SBP) ≥ 100 mmHg
2. Respiratory Rate (RR) ≥ 22 breaths/min
3. Glasgow Coma Scale (GCS) score ≥ 13

In this patient:

- BP: 90/80 mmHg (SBP < 100 mmHg, so it contributes to the qSOFA score).
- RR: 24 breaths/min (> 22 breaths/min, so it contributes to the qSOFA score).
- GCS score: 10 (< 13 , so it contributes to the qSOFA score).

Thus, the qSOFA score in this patient is 3, indicating an increased risk for sepsis and poor outcomes.

Explanation of other options:

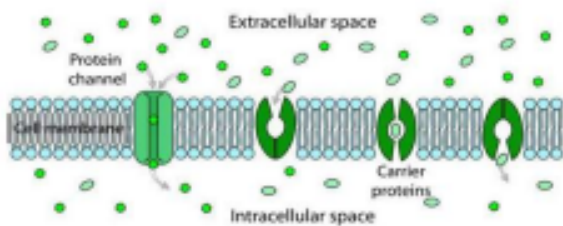
- Option (1): BP, RR, and CBC are not part of the qSOFA criteria. CBC (complete blood count) is useful in assessing infection but is not part of the qSOFA score.
- Option (2): Creatinine, PR, and BP are not used to calculate the qSOFA score. Creatinine can indicate kidney function, but it is not part of this scoring system.
- Option (3): RR, body temperature, and PR are not the correct parameters for qSOFA.

While temperature and PR can be useful in assessing infection, they are not included in the qSOFA score.

Quick Tip

The qSOFA score is used to predict the risk of sepsis and poor outcomes in patients. It is based on SBP ≥ 100 mmHg, RR ≥ 22 breaths/min, and GCS ≤ 13 . A qSOFA score of 2 or more suggests an increased risk of poor prognosis.

92. Identify the type of transport across the cell membrane given below?



- (1) Simple diffusion
- (2) Facilitated diffusion
- (3) Primary active transport
- (4) Secondary active transport

Correct Answer: (2) Facilitated diffusion

Solution:

The image shows transport of molecules across the cell membrane via protein channels and carrier proteins, without any visible ATP consumption or movement against a concentration gradient. This indicates facilitated diffusion.

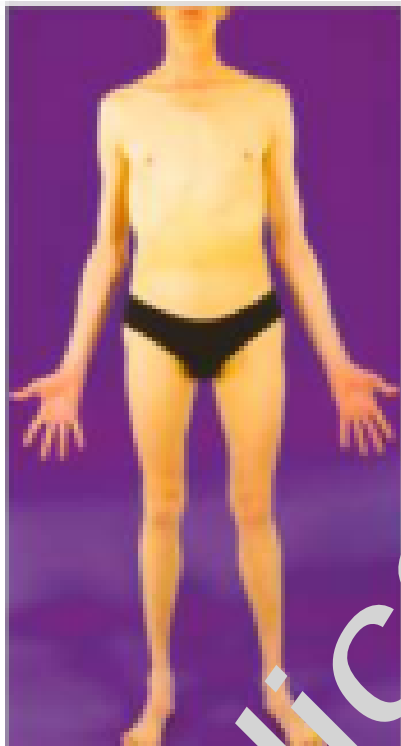
Facilitated diffusion is: - A passive process (no ATP required) - Movement is down the concentration gradient - Utilizes channel proteins or carrier proteins to allow specific molecules (e.g., glucose, ions) to pass through the lipid bilayer

It differs from: - Simple diffusion: No protein involvement; movement directly through the lipid bilayer (e.g., O_2 , CO_2) - Primary active transport: Uses ATP to move substances against their gradient (e.g., Na^+/K^+ pump) - Secondary active transport: Uses energy stored in ionic gradients created by primary active transport (e.g., Na^+ -glucose symporter)

Quick Tip

Facilitated diffusion is passive but selective—it requires membrane proteins to move molecules down their concentration gradient.

93. Identify the condition associated with the murmur in the image below.



- (1) Mitral regurgitation
- (2) Aortic regurgitation
- (3) Aortic stenosis
- (4) Mitral stenosis

Correct Answer: (3), Aortic stenosis

Solution:

The image shows a young male with a narrow chest, prominent rib cage, and hyperextended limbs, classically described as a Marfanoid habitus. This physical appearance is associated with bicuspid aortic valve in younger individuals, a known cause of aortic stenosis.

Aortic stenosis is characterized by:

- Ejection systolic murmur best heard at the right second intercostal space

- Radiates to the carotids
- Associated symptoms include exertional syncope, angina, and dyspnea

Other options:

- Mitral regurgitation: Holosystolic murmur at apex, radiating to axilla
- Aortic regurgitation: Early diastolic murmur at left sternal border
- Mitral stenosis: Mid-diastolic murmur with opening snap, best heard at apex

Quick Tip

Aortic stenosis in young patients is often due to a bicuspid valve— look for Marfanoid features and an ejection systolic murmur.

94. A woman, who is 4 days postpartum, presented with tearfulness, mood swings, and occasional insomnia. What is the likely diagnosis?

- (1) Postpartum depression
- (2) Postpartum blues
- (3) Postpartum psychosis
- (4) Postpartum anxiety

Correct Answer: (2) Postpartum blues

Solution:

The patient's symptoms of tearfulness, mood swings, and insomnia within a week of delivery point to postpartum blues, which is the most common and mildest postpartum mood disturbance.

Key features of postpartum blues:

- Onset: 2–5 days postpartum
- Peak: Day 4–5
- Resolution: Within 2 weeks
- Symptoms: Tearfulness, mood swings, anxiety, sleep disturbances
- Management: Supportive and reassurance

Other options: - Postpartum depression: Lasts >2 weeks, includes persistent sadness, loss

of interest, needs treatment - Postpartum psychosis: Severe condition with hallucinations/delusions, requires immediate psychiatric care - Postpartum anxiety: May coexist but not primary in early mild symptoms

Quick Tip

Postpartum blues are common, self-limiting, and require only reassurance—typically resolve within 2 weeks.

95. A 25-year-old female reported symptoms of anxiety, palpitations, sweating, breathlessness, chest pain, and a feeling of impending doom. She recalls having experienced 5-6 similar episodes in the past 6 months, each episode lasting for about 20-30 minutes. What is the likely diagnosis?

- (1) Depression
- (2) Panic disorder
- (3) Generalized anxiety disorder
- (4) Phobia

Correct Answer: (2) Panic disorder

Solution:

The clinical description fits a panic disorder, which is characterized by recurrent, unexpected panic attacks — sudden surges of intense fear or discomfort that reach a peak within minutes.

Key features include:

- Sudden onset of palpitations, sweating, breathlessness, chest pain, fear of dying or losing control
- Duration: Each episode lasts 20–30 minutes
- Often leads to avoidance behaviors due to fear of recurrence
- May occur without any specific trigger

Other options:

- Depression presents with persistent low mood, not episodic panic
- Generalized Anxiety Disorder (GAD) involves chronic worry, not discrete attacks

- Phobia is fear related to a specific object or situation, not spontaneous episodes

Quick Tip

Sudden episodes of intense anxiety with physical symptoms and fear of dying are classic for panic disorder—look for duration under 30 minutes.

96. A young man came to the medical OPD with complaints of early morning backache and stiffness, which improves on exercise, and persistent red eyes. On examination, lung expansion was less than 3 cm. X-ray is shown in the image given below. What is the most probable diagnosis?



- (1) Ankylosing spondylitis
- (2) Pott's spine
- (3) Paget's disease
- (4) Osteopetrosis

Correct Answer: (1) Ankylosing spondylitis

Solution.

The patient's symptoms — early morning stiffness, back pain improving with activity, reduced chest expansion, and persistent red eyes (suggestive of uveitis) — are classic signs

of Ankylosing Spondylitis (AS), a chronic inflammatory disease primarily affecting the axial skeleton.

The X-ray shows hallmark features: - Bamboo spine appearance due to ossification of spinal ligaments and joints - Fusion of sacroiliac joints, which is an early and diagnostic feature of AS

Other options: - Pott's spine (spinal tuberculosis): Causes localized vertebral destruction, often with kyphosis and paraspinal abscess. - Paget's disease: Shows cortical thickening and bony expansion, not spinal fusion. - Osteopetrosis: Generalized increase in bone density ("bone within bone" appearance), not specific to spine.

Quick Tip

Ankylosing spondylitis presents with inflammatory back pain, reduced spinal mobility, and bamboo spine on X-ray—HLA-B27 is often positive.

97. A patient with hyperkalemia and elevated urea levels underwent dialysis. Towards the end of the session, she became drowsy and had a sudden seizure episode. On examination, the patient is hypotensive. What is the treatment for this condition?

- (1) Bumetanide
- (2) Ethacrynic acid
- (3) Nesiritide
- (4) IV Mannitol

Correct Answer: (4) IV Mannitol

Solution:

The most likely cause of the patient's seizure and hypotension following dialysis is cerebral edema, which can occur as a complication of dialysis disequilibrium syndrome. This syndrome typically develops when there is a rapid reduction in blood urea nitrogen (BUN) levels during dialysis, causing a shift of water into the brain cells, leading to cerebral edema. This condition is associated with symptoms like drowsiness, confusion, and seizures.

IV Mannitol is the treatment of choice in this case, as it is an osmotic diuretic that can help

reduce cerebral edema by drawing water out of the brain, thereby lowering intracranial pressure and preventing further neurological damage.

Explanation of other options:

- Bumetanide and Ethacrynic acid: These are loop diuretics used to treat fluid retention and edema but are not effective in treating cerebral edema.
- Nesiritide: This is a B-type natriuretic peptide used for managing acute decompensated heart failure but is not appropriate for treating cerebral edema or seizures in this case.

Quick Tip

In dialysis disequilibrium syndrome, the rapid removal of urea leads to cerebral edema. IV Mannitol is the treatment of choice for managing cerebral edema and preventing neurological complications.

98. A female patient presents to the emergency department with severe restlessness, palpitations, and tremors. She is a known case of bronchial asthma. On examination, the neck looks swollen. Blood pressure is elevated, and tachycardia is noted. ECG shows atrial fibrillation. Which of the following drugs is used for immediate management in this patient?

- (1) Dilazem
- (2) Propranolol
- (3) Esmolol
- (4) Propylthiouracil

Correct Answer: (1) Dilazem

Solution:

The patient's presentation of restlessness, palpitations, tremors, and a swollen neck, along with tachycardia and atrial fibrillation on ECG, is highly suggestive of thyroid storm.

Thyroid storm is a life-threatening condition characterized by a severe exacerbation of hyperthyroidism, often triggered by infection, trauma, or stress. The swollen neck suggests goiter, a common feature of hyperthyroidism.

Dilazem (also known as Diltiazem) is a calcium channel blocker that is commonly used to manage atrial fibrillation in patients with hyperthyroid crisis, as it helps to control the heart rate. It is particularly useful in patients with thyroid storm who are also experiencing atrial fibrillation and tachycardia.

Explanation of other options:

- Propranolol: While Propranolol is a beta-blocker commonly used in the treatment of thyroid storm, it may not be the first choice in this patient with bronchial asthma, as beta-blockers can exacerbate asthma symptoms.
- Esmolol: This is another beta-blocker used for rapid control of heart rate in conditions like atrial fibrillation. However, like propranolol, it should be used with caution in asthmatic patients due to the risk of bronchospasm.
- Propylthiouracil: While Propylthiouracil is used to inhibit thyroid hormone synthesis in the treatment of hyperthyroidism, it is not used for the immediate management of thyroid storm. Beta-blockers or calcium channel blockers are preferred for acute control of symptoms.

Quick Tip

In thyroid storm, a calcium channel blocker like Diltiazem (Dilazem) is effective for controlling atrial fibrillation and tachycardia, especially in patients with asthma.

99. A preterm baby who was delivered at 28 weeks developed respiratory distress syndrome. Which of the following is true about surface tension and compliance in this baby?

- (1) Surface tension decreased; Compliance increased
- (2) Surface tension increased; Compliance decreased
- (3) Both surface tension and compliance decreased
- (4) Both surface tension and compliance increased

Correct answer: (2) Surface tension increased; Compliance decreased

Solution:

The correct answer is that surface tension increased and compliance decreased in the preterm

baby with respiratory distress syndrome (RDS).

Respiratory distress syndrome is commonly seen in preterm infants due to a deficiency in surfactant, which is essential for reducing surface tension in the lungs. Surface tension is a force that opposes lung expansion, and in the absence of adequate surfactant, the surface tension inside the alveoli remains high, making it difficult for the lungs to expand and leading to atelectasis (collapse of the alveoli).

As a result of this increased surface tension, the compliance (the ability of the lungs to expand under pressure) is reduced. This means the lungs are stiffer, and it requires more effort to inflate the lungs. Compliance is inversely related to surface tension; when surface tension is high, compliance is low.

Explanation of other options:

- Surface tension decreased; Compliance increased: This is incorrect because surfactant deficiency leads to increased surface tension, not decreased, and as a result, compliance decreases.
- Both surface tension and compliance decreased: This is also incorrect. While compliance decreases, surface tension actually increases in RDS due to the lack of surfactant.
- Both surface tension and compliance increased: This is incorrect because the lack of surfactant increases surface tension and decreases compliance, not both increasing.

Quick Tip

In respiratory distress syndrome (RDS), a lack of surfactant causes increased surface tension in the alveoli, leading to decreased lung compliance and difficulty in breathing.

100. A middle-aged man complains of very early ejaculation during intercourse. What is the non-pharmacological management that can be advised to the patient?

- (1) Cognitive behavioral therapy
- (2) Exposure and response prevention therapy
- (3) Squeeze technique
- (4) Sensate focus therapy

Correct Answer: (3) Squeeze technique

Solution:

Premature ejaculation (PE) is a common sexual dysfunction in males, and non-pharmacological management is the first line of approach in many cases. One of the most effective behavioral techniques is the squeeze technique.

Squeeze technique involves: - The patient or partner squeezes the penis (usually at the glans or base) when ejaculation is imminent - This interrupts the ejaculatory reflex - Helps in learning ejaculatory control over time

Other options: - Cognitive behavioral therapy (CBT) is more suited for anxiety-related disorders - Exposure and response prevention is primarily used for OCD - Sensate focus therapy helps with sexual intimacy and arousal, but is not specific for PE

Quick Tip

The squeeze technique helps patients with premature ejaculation gain control over ejaculation without medication.

101. A 30-year-old male is found to be positive for HBsAg and HBeAg and is diagnosed with chronic hepatitis B. The patient's viral load was 2×10^6 and SGPT is found to be doubled. What is the appropriate management in this patient?

- (1) Observe
- (2) Lamivudine for 40 weeks
- (3) Pegylated interferon for 52 weeks
- (4) Combined pegylated interferon with lamivudine

Correct Answer: (3) Pegylated interferon for 52 weeks

Solution:

This patient has chronic hepatitis B infection with:

- HBeAg positivity (active viral replication)
- High viral load ($> 10^5$ copies/mL)
- Elevated SGPT/ALT, indicating ongoing liver inflammation

According to treatment guidelines, pegylated interferon alpha for 48–52 weeks is

recommended in:

- Young patients
- HBeAg-positive status
- Elevated ALT
- High viral load

Benefits:

- Finite course (52 weeks)
- Higher chance of HBeAg seroconversion
- No long-term resistance

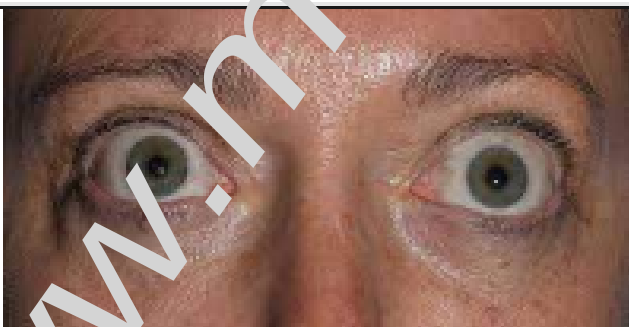
Other options:

- Lamivudine has a high rate of resistance over time
- Observation is not appropriate with high ALT and viral load
- Combination therapy is not first-line; monotherapy with pegylated interferon is preferred initially

Quick Tip

For chronic hepatitis B with HBeAg positivity and high ALT/viral load, pegylated interferon for 1 year is the preferred treatment.

102. A 25-year-old male patient complained of palpitations, sweating, and restlessness. He has a complaint of sweaty palms. Clinical findings are depicted in the image (showing bilateral exophthalmos). What is the diagnostic test done on this patient?



- (1) Anti-thyroglobulin antibody
- (2) Anti-thyroid peroxidase antibody

- (3) Thyroid receptor antibody
- (4) Elevated ultrasensitive thyrotropin levels

Correct Answer: (3) Thyroid receptor antibody

Solution:

The clinical presentation of the patient — palpitations, restlessness, sweating, and exophthalmos (protruding eyes) — is classic for Graves' disease, which is the most common cause of hyperthyroidism in young individuals. Exophthalmos is a hallmark feature of Graves' ophthalmopathy and is not typically seen in other thyroid disorders.

The most specific diagnostic test for Graves' disease is the Thyroid Stimulating Immunoglobulin (TSI) or more generally, thyroid receptor antibodies (TRAb). These antibodies stimulate the TSH receptor and lead to increased synthesis and release of thyroid hormones, resulting in hyperthyroid symptoms.

Explanation of other options:

- Anti-thyroglobulin antibody (Option 1): These antibodies are commonly seen in Hashimoto's thyroiditis, a condition causing hypothyroidism, not hyperthyroidism.
- Anti-thyroid peroxidase antibody (Option 2): These are also seen in Hashimoto's thyroiditis and sometimes in postpartum thyroiditis.
- Elevated ultrasensitive TSH level (Option 4): TSH is suppressed in hyperthyroidism due to negative feedback. An elevated TSH level would indicate hypothyroidism instead.

Quick Tip

Exophthalmos is a specific sign of Graves' disease and is best diagnosed by detecting thyroid receptor antibodies (TRAb), which directly stimulate the thyroid gland via the TSH receptor.

103. A 50-year-old HIV patient presented with a painless lesion, as shown in the image. What is the most likely diagnosis?



- (1) Basal cell carcinoma
- (2) Kaposi sarcoma
- (3) Malignant melanoma
- (4) Squamous cell carcinoma

Correct Answer: (2) Kaposi sarcoma

Solution:

The image shows multiple violaceous (purple-red), non-blanching, painless nodules on the skin, which is a hallmark of Kaposi sarcoma. This condition is highly associated with HIV/AIDS and is considered an AIDS-defining illness.

Kaposi sarcoma is: - Caused by Human Herpesvirus-8 (HHV-8) - Presents as multiple reddish-purple plaques or nodules, often on the lower limbs, face, oral mucosa, or genital area - Lesions may be flat or nodular and are typically non-tender - Seen in immunocompromised individuals, particularly those with low CD4 counts

Other options: - Basal cell carcinoma: Pearly nodules with rolled borders, more localized and not multiple purplish lesions - Malignant melanoma: Irregularly pigmented lesions, often black or dark brown - Squamous cell carcinoma: Usually ulcerative and localized, not the multiple widespread lesions seen here

Quick Tip

Kaposi sarcoma is common in HIV patients—look for multiple painless purple nodules and confirm with biopsy and HHV-8 testing.

104. A patient came to the hospital after a road traffic accident. He had severe muscle injury, and his serum K^+ level was found to be 5.5 mEq/L. What will happen to the resting membrane potential in this patient?

- (1) No change
- (2) Becomes more negative
- (3) Becomes more positive
- (4) First becomes more positive then negative

Correct Answer: (3) Becomes more positive

Solution:

The resting membrane potential (RMP) is primarily maintained by the potassium ion (K^+) gradient across the cell membrane. In a normal resting state, intracellular K^+ is high and extracellular K^+ is low, contributing to a negative PM.

If extracellular K^+ increases (as in hyperkalemia from muscle injury): - The gradient for K^+ to move out of the cell decreases - The membrane becomes less negative (more positive) -

This depolarizes the cell, increasing excitability.

Hence, elevated serum potassium makes the RMP more positive.

Quick Tip

Hyperkalemia decreases the K^+ gradient across the membrane, leading to depolarization and a more positive resting potential.

105. A newborn presented with chest retractions, dyspnea, and lethargy. The pediatrician diagnosed the baby with respiratory distress syndrome. This occurs due to the deficiency of:

- (1) Dipalmitoyl lecithin
- (2) Cholesterol
- (3) Diglycerides
- (4) Phosphatidylethanolamine

Correct Answer: (1) Dipalmitoyl lecithin

Solution:

Respiratory Distress Syndrome (RDS) in newborns is primarily caused by a deficiency of surfactant, a substance that reduces surface tension in alveoli, preventing collapse during expiration.

The main component of surfactant is: - Dipalmitoyl phosphatidylcholine (DPPC), also known as Dipalmitoyl lecithin

It is produced by type II pneumocytes, and its synthesis significantly increases after 34 weeks of gestation.

Deficiency leads to: - Alveolar collapse (atelectasis) - Hypoxia and respiratory failure

Quick Tip

Surfactant deficiency in preterm infants causes RDS—DPPC (Dipalmitoyl lecithin) is the key phospholipid responsible for alveolar stability.

106. A man is brought to the OPD by his wife, complaining about difficulty expressing emotions and not participating in daily activities. On examination, the patient is disoriented and rigidly not social. For such a clinical diagnosis, which part of the brain is affected in this patient?

- (1) Amygdala
- (2) Prefrontal cortex
- (3) Hippocampus
- (4) Cerebellum

Correct Answer: (2) Prefrontal cortex

Solution:

The prefrontal cortex is responsible for: - Personality, decision-making, social behavior, and emotional regulation - It plays a critical role in initiating purposeful behavior, empathy, and mood control

Lesions or dysfunction in the prefrontal cortex can lead to: - Emotional flatness, lack of initiative - Social withdrawal, inappropriate responses - Disorganized thinking and executive

dysfunction

Other options: - Amygdala: Involved in fear and emotion perception, not the behavioral symptoms seen here - Hippocampus: Critical for memory, not primary for social/emotional regulation - Cerebellum: Involved in coordination, not behavior or emotion

Quick Tip

Prefrontal cortex damage causes personality changes, apathy, and impaired judgment—classic in frontal lobe syndromes.

107. A 45-year-old HIV-positive male complained of persistent cough and weight loss. He has skin lesions that appear as umbilicated papules and nodules predominantly on the face, trunk, arms and upper extremities. Chest X-ray showed multiple bilateral nodular infiltrates. His sputum, CSF/BACT for tuberculosis was negative, and he has a low CD4 count. What is the probable diagnosis.

- (1) HIV with disseminated histoplasmosis
- (2) HIV with disseminated cryptococcosis
- (3) HIV with molluscum contagiosum
- (4) HIV with tuberculosis

Correct Answer: (2) HIV with disseminated cryptococcosis

Solution:

This patient has advanced HIV (low CD4 count), respiratory symptoms, and umbilicated skin lesions, which are classic for disseminated cryptococcosis.

Cryptococcus neoformans: - A fungal pathogen that affects immunocompromised individuals, particularly HIV-positive patients with CD4 counts < 100 - Causes disseminated disease involving lungs, CNS (meningitis), and skin - Skin lesions may resemble molluscum contagiosum, but systemic signs (fever, cough, nodules in X-ray) point to dissemination

Other options: - Histoplasmosis may mimic this but skin lesions are less classic - Molluscum contagiosum is cutaneous and not associated with systemic symptoms - TB shows caseating granulomas, typically sputum-positive and different X-ray findings

Quick Tip

Disseminated cryptococcosis in HIV presents with umbilicated skin lesions and lung/CNS involvement—suspect with low CD4 count.

108. A patient met with a road traffic accident and developed a cervical spine injury. The fracture fragment is seen in the posterior aspect of the dorsal column tract. Which of the following findings is seen in the patient?

- (1) Absence of ipsilateral lower limb proprioception
- (2) Absence of radial movement of fingers
- (3) Absence of ipsilateral arm proprioception
- (4) Absence of contralateral lower limb proprioception

Correct Answer: (3) Absence of ipsilateral arm proprioception

Solution:

The dorsal column of the spinal cord carries - Fine touch, vibration, and proprioception -

Fibers are uncrossed in the spinal cord and cross over at the medulla

Injury to the posterior aspect of the cervical spinal cord (dorsal column) leads to: - Ipsilateral loss of proprioception, vibration, and fine touch below the level of the lesion - Since the lesion is in the cervical region → arm proprioception is lost

Other options: - Lower limb proprioception is mediated by more medial tracts (gracile fasciculus), not cervical segment - Radial movement is motor and controlled by corticospinal tract - Contralateral proprioception is incorrect as dorsal column tracts decussate at medulla, not spinal cord

Quick Tip

Dorsal column lesions cause ipsilateral loss of proprioception—localize to the side and level of injury.

109. A male patient presented to the emergency room with seizures. He has a history of

fever, headache, and confusion. An MRI brain was done, and it showed inflammation involving the temporal lobe. What is the most likely aetiology for this presentation?

- (1) Cytomegalovirus
- (2) Toxoplasma gondii
- (3) Herpes simplex virus
- (4) Mycobacterium tuberculosis

Correct Answer: (3) Herpes simplex virus

Solution:

The clinical picture points to viral encephalitis, particularly Herpes Simplex Virus (HSV) encephalitis, which is the most common cause of sporadic focal viral encephalitis.

Key diagnostic features: - Seizures, altered mental status, fever - Temporal lobe involvement on imaging (hemorrhagic or edematous changes) - May lead to Klüver–Bucy syndrome if bilateral involvement

Other options: - CMV and Toxoplasma are more common in immunocompromised hosts and show diffuse or basal ganglia lesions - TB meningitis affects basal meninges and has different CSF findings and clinical course

Quick Tip

Temporal lobe encephalitis with seizures and altered sensorium is most often caused by HSV—start acyclovir early.

110. Identify the true statement regarding the point marked (R_{MP}) on the myocardial action potential chart:

- (1) Due to closing of Na^+ and closure of fast K^+ channels
- (2) Due to slow but prolonged opening of Ca^{2+} channels
- (3) Due to influx of Na^+ and opening of the slow K^+ channel
- (4) Due to Na^+/K^+ ATPase

Correct Answer: (1) Due to closing of Na^+ and closure of fast K^+ channels

Solution:

The marked point R_{MP} on the ventricular myocardial action potential corresponds to Phase 1:

- Occurs after the rapid depolarization phase (Phase 0) - Characterized by initial repolarization

Mechanism: - Inactivation of fast voltage-gated Na^+ channels - Transient outward K^+ current through fast K^+ channels briefly opens and closes - This produces a small downward deflection before plateau

Other options: - Phase 2 (plateau) involves Ca^{2+} channels (option 2), Na^+/K^+ ATPase maintains resting potential but doesn't directly cause phase 1

Quick Tip

Phase 1 of the myocardial action potential involves Na^+ channel inactivation and fast K^+ transient outflow—brief repolarization before plateau.

111. A male patient presents with sensory loss and weakness of limbs for 3 months. He also has angular stomatitis. On examination, there is loss of proprioception, vibration sensations, UMN type of lower limb weakness, and absent ankle reflex. What is the most probable diagnosis?

- (1) Extradural cord compression
- (2) Amyotrophic lateral sclerosis
- (3) Multiple sclerosis
- (4) Subacute combined degeneration of cord

Correct Answer: (4) Subacute combined degeneration of cord

Solution:

The constellation of symptoms—sensory loss, UMN lower limb weakness, loss of proprioception and vibration sense, and absent ankle reflex—points towards Subacute Combined Degeneration (SCD) of the spinal cord.

SCD is caused by: - Vitamin B_{12} deficiency, often seen in malnutrition, pernicious anemia, or chronic gastritis - It affects the posterior columns (sensory) and lateral corticospinal tracts

(motor)

Clinical features: - Angular stomatitis (a sign of vitamin deficiency) - Sensory ataxia, paresthesias - Combined UMN and LMN signs - Impaired vibration and proprioception -

Positive Romberg sign

Other options: - ALS: Motor involvement only, no sensory symptoms - Extradural cord compression: More acute, painful, and usually localized - MS: More common in younger females, with varied CNS lesions

Quick Tip

Loss of proprioception with UMN signs and angular stomatitis strongly suggests B₁₂ deficiency causing subacute combined degeneration.

112. A 10-year-old child weighing 30 kg presents with a history of loose stools for 2 days. On examination, there is severe dehydration. Laboratory investigations are as follows. What is the initial management as per ISPAD guidelines?

- (1) Manage ABC, NS 20 mL/kg and start insulin after 1 hour
- (2) Manage ABC, NS 20 mL/kg along with insulin 0.1 IU/kg/hr
- (3) Manage ABC, NS 10 mL/kg along with insulin 0.1 IU/kg/hr
- (4) Manage ABC, NS 10 mL/kg and start insulin after 1 hour

Correct Answer: (1) Manage ABC, NS 20 mL/kg and start insulin after 1 hour

Solution:

The child has signs of Diabetic Ketoacidosis (DKA) based on: - RBS = 550 mg/dL - pH = 7.01 → severe acidosis - Na⁺ = 158 mEq/L - Urine glucose = 3+

According to ISPAD (International Society for Pediatric and Adolescent Diabetes) guidelines: Initial management involves ABC stabilization (Airway, Breathing, Circulation) - Start fluid resuscitation with Normal Saline 20 mL/kg over 1 hour - Only after 1 hour, begin insulin infusion at 0.1 IU/kg/hr

This approach prevents rapid fluid shifts and cerebral edema, a serious complication in pediatric DKA.

Other options: - Early insulin is avoided before fluid resuscitation - 10 mL/kg fluid bolus is inadequate for severe dehydration

Quick Tip

In pediatric DKA, stabilize ABC, start NS 20 mL/kg over 1 hour, and begin insulin only after initial rehydration to avoid cerebral edema.

113. Which of the following is the best sign to indicate adequate growth in an infant with a birth weight of 2.8 kg?

- (1) Increase in length of 25 centimetres in the first year
- (2) Weight gain of 300 grams per month till 1 year
- (3) Anterior fontanelle closure by 6 months of age
- (4) Weight under the 75th percentile and height under the 25th percentile

Correct Answer: (1) Increase in length of 25 centimetres in the first year

Solution:

One of the most reliable indicators of adequate physical growth in infants is linear growth, which is less influenced by transient illnesses compared to weight.

According to standard pediatric growth milestones: - Normal infants grow approximately 25 cm in length in the first year, which is considered a sign of healthy growth and nutrition.

Other options: - Weight gain of 300 g/month is below the normal average (expected is 500-600 g/month in the first 3 months). - Anterior fontanelle closure occurs normally by 18 months, not 6 months. - Percentile references should be consistent; height below the 25th with weight above 75th may indicate disproportionate growth.

Quick Tip

Length gain is a more consistent and reliable indicator of infant growth than weight alone—25 cm in the first year is the ideal benchmark.

114. A 40-year-old female patient came with complaints of chest pain, palpitation, and shortness of breath. On examination, a mid-diastolic murmur was heard, and a prominent 'a' wave was found on JVP. What is the most likely diagnosis?

- (1) Mitral stenosis
- (2) Tricuspid stenosis
- (3) Mitral regurgitation
- (4) Tricuspid regurgitation

Correct Answer: (2) Tricuspid stenosis

Solution:

The hallmark signs—mid-diastolic murmur and prominent 'a' wave in JVP—are suggestive of tricuspid stenosis.

Key features: - Mid-diastolic murmur: Best heard at the left lower sternal border, increased with inspiration - Prominent 'a' wave: Caused by increased right atrial pressure during atrial contraction against a stenotic valve - Symptoms: Fatigue, peripheral edema, hepatomegaly, ascites

Other options: - Mitral stenosis: Also has a diastolic murmur, but presents with pulmonary congestion and no 'a' wave prominence - Tricuspid regurgitation: Presents with systolic murmur and giant v-waves - Mitral regurgitation: Causes pansystolic murmur and backward flow to LA, not related to JVP waves

Quick Tip

Tricuspid stenosis causes a mid-diastolic murmur and a prominent 'a' wave due to right atrial contraction against a narrowed valve.

115. A 3-month-old baby complains of deafness, cataract, and patent ductus arteriosus. Which of the following is the most likely diagnosis?

- (1) Congenital herpes simplex virus infection
- (2) Congenital toxoplasmosis
- (3) Congenital cytomegalovirus infection

(4) Congenital rubella syndrome

Correct Answer: (4) Congenital rubella syndrome

Solution:

The classic triad of sensorineural deafness, congenital cataract, and congenital heart defect (e.g., PDA) is highly characteristic of Congenital Rubella Syndrome (CRS).

CRS is caused by: - Maternal rubella infection, especially in the first trimester, crossing the placenta - It leads to developmental anomalies in multiple organ systems

Key features: - Eye: Cataract, retinopathy - Ear: Sensorineural deafness - Heart: PDA, pulmonary artery stenosis - Others: Microcephaly, hepatosplenomegaly, blueberry muffin rash

Other options: - HSV: Skin vesicles, encephalitis - Toxoplasmosis: Hydrocephalus, chorioretinitis, intracranial calcifications - CMV: Periventricular calcifications, microcephaly, petechiae

Quick Tip

Think of congenital rubella when a newborn has deafness, cataract, and heart defects—screen mothers for rubella immunity.

116. In a village, it is observed that several farmers have crossed gait and use a stick for support to stand up and walk. Due to poor yield from farms, they consume meals containing rice and pulses only. Supplementing their diet with which of the following vitamins could have prevented this?

- (1) Vitamin A
- (2) Vitamin D
- (3) Vitamin C
- (4) Vitamin B

Correct Answer: (4) Vitamin B

Solution:

The description points to neurological symptoms such as gait disturbance, muscle weakness, and ataxia, commonly due to Vitamin B₁ (Thiamine) deficiency.

The condition described is consistent with beriberi, especially the dry (neurological) type, which is common in populations consuming: - Polished rice-based diet with low thiamine content - Low animal protein intake

Vitamin B₁ is essential for: - Glucose metabolism (as coenzyme in decarboxylation reactions) - Nerve conduction and muscle strength

Other options: - Vitamin A: Visual symptoms (night blindness) - Vitamin D: Bone-related issues like rickets or osteomalacia - Vitamin C: Scurvy—bleeding gums, joint pain, petechiae

Quick Tip

Crossed gait and ataxia in malnourished individuals consuming polished rice suggests vitamin B₁ (thiamine) deficiency—beriberi.

117. Research is being conducted to find the association between aniline dye exposure and bladder cancer in workers who have worked in the industry for ≥20 years. Two groups were formed: one directly involved with dye handling and the other group consisting of office clerks not directly exposed to the dye. Years of occupation were noted from records. What type of study is being performed?

- (1) Retrospective cohort study
- (2) Prospective cohort study
- (3) Case-control study
- (4) Intervention and response

Correct Answer: (1) Retrospective cohort study

Solution:

In a retrospective cohort study, researchers look backward in time to identify exposures and then assess outcomes. In this scenario: - Workers were classified based on past exposure to aniline dye (exposed vs. unexposed). - Data were collected from historical records (years of exposure, job type). - The outcome (e.g., bladder cancer) was then evaluated in these groups.

This fits the classic design of a retrospective cohort study, where: - Exposure is identified first
- The outcome is studied after exposure - Both exposure and outcome have already occurred
Other options: - Prospective cohort: Follows individuals into the future from the point of exposure - Case-control: Starts with outcome status (cases vs. controls), then looks backward for exposure - Intervention and response: Used in experimental/interventional trials

Quick Tip

In retrospective cohort studies, past exposure is assessed from records and related to current outcomes—ideal for occupational health research.

118. Chloride level in sweat is used in the diagnosis of which disease?

- (1) Phenylketonuria
- (2) Cystic fibrosis
- (3) Gaucher's disease
- (4) Osteogenesis imperfecta

Correct Answer: (2) Cystic fibrosis

Solution:

Cystic Fibrosis (CF) is an autosomal recessive disorder caused by mutations in the CFTR gene. This gene regulates chloride channels in epithelial cells.

Key diagnostic test: - Sweat chloride test - Pilocarpine iontophoresis is used to stimulate sweat - Chloride levels ≥ 60 mEq/L are diagnostic in infants and children

Pathophysiology: - Defective chloride transport leads to thickened mucus in lungs, pancreas, and other exocrine glands - Results in chronic lung disease, pancreatic insufficiency, and failure to thrive

Other options: - Phenylketonuria: Diagnosed via Guthrie test (heel prick, detects phenylalanine) - Gaucher's disease: A lysosomal storage disorder, diagnosed with enzyme assays - Osteogenesis imperfecta: Involves collagen mutations, diagnosed clinically and via genetic testing

Quick Tip

Elevated chloride in sweat is diagnostic of cystic fibrosis—always consider it in children with recurrent chest infections and failure to thrive.

119. A child presents with fever and a rash spreading from the face, behind cheeks, and buccal mucosa to other body parts. On examination, Koplik's spot is present. What is the likely diagnosis?

- (1) Measles
- (2) Rubella
- (3) Varicella
- (4) Mumps

Correct Answer: (1) Measles

Solution:

The presence of Koplik's spots—tiny bluish white lesions on the buccal mucosa—is pathognomonic for measles (Rubeola).

Clinical features of measles: - Prodromal phase: High-grade fever, cough, coryza, and conjunctivitis - Enanthem: Koplik's spots (appear 1–2 days before the rash) - Exanthem: Maculopapular rash spreading cephalocaudally from behind the ears and face to the trunk and limbs

Other options: - Rubella: Milder disease with postauricular lymphadenopathy, no Koplik's spots - Varicella: Vesicular rash in crops at various stages - Mumps: Parotid gland swelling, no rash

Quick Tip

Koplik's spots on buccal mucosa with fever and descending rash confirm measles—look for the 3 C's: cough, coryza, conjunctivitis.

120. The blood pressure of a population was tracked from childhood to adulthood. It was observed that those who had lower BP in childhood had low BP in adulthood, while

those who had higher BP in childhood had high BP in adulthood. This can be best described as:

- (1) Risk of illness
- (2) Tracking of blood pressure
- (3) Stepwise approach
- (4) Primordial approach

Correct Answer: (2) Tracking of blood pressure

Solution:

Tracking refers to the persistence of a risk factor over time in the same individuals. In this case, individuals who had higher BP in childhood continue to have higher BP in adulthood, and the same for lower BP.

This implies: - Consistency of ranking within a population over time - Commonly applied to chronic conditions like BP, BMI, cholesterol - Helps identify early intervention windows to prevent future disease

Other options: - Risk of illness: General concept, not about temporal continuity - Stepwise approach: Method of clinical decision making or treatment - Primordial prevention: Preventing emergence of risk factor, not tracking

Quick Tip

Tracking reflects the continuity of a health trait like BP from childhood to adulthood—helps in predicting chronic disease risk early.

121. A 3-week-old infant presents with a cough and sore throat. The mother reports that the infant develops a paroxysm of cough followed by vomiting. The total leukocyte count is $90,000/\text{mm}^3$. Which of the following drugs will you prescribe for this patient?

- (1) Amoxicillin
- (2) Erythromycin
- (3) Ceftriaxone
- (4) Azithromycin

Correct Answer: (2) Erythromycin

Solution:

The clinical picture suggests pertussis (whooping cough): - Classic paroxysmal cough followed by vomiting - High TLC ($>90,000/\text{mm}^3$) with lymphocytosis - Common in infants less than 3 months old

Treatment of choice: - Erythromycin (or azithromycin) is the drug of choice - Erythromycin eradicates *Bordetella pertussis* and prevents transmission - Also recommended for close contacts as prophylaxis

Other options: - Amoxicillin and ceftriaxone: Ineffective against *Bordetella* - Azithromycin is also effective but erythromycin remains the first-line in neonates

Quick Tip

Suspect pertussis in infants with paroxysmal cough, vomiting, and high lymphocytic counts—start erythromycin promptly.

122. A 30-week primigravida complains of reduced vision at night. She has been avoiding papaya, mango, and other fruits throughout her pregnancy as she thinks they could be abortifacients. It is the primary duty of which of the following workers to provide counseling and information to the patient?

- (1) ANM
- (2) AWW
- (3) Trained birth attendant
- (4) ASHA

Correct Answer: (4) ASHA

Solution:

The case describes a pregnant woman with signs of night blindness, likely due to Vitamin A deficiency from poor dietary intake, specifically the avoidance of vitamin A-rich fruits (e.g., papaya, mango). This nutritional misunderstanding needs community-level education and counseling.

Other options: - ANM (Auxiliary Nurse Midwife): Delivers clinical care, immunization, and conducts deliveries - AWW (Anganwadi Worker): Focuses on preschool education and nutritional supplementation for children - TBA (Trained Birth Attendant): Assists with deliveries but not primarily involved in antenatal counseling

ASHA workers play a vital role in maternal health education and nutrition counseling at the grassroots level.

An endoscopic photograph showing the internal structures of the nasopharynx. The image is labeled with various anatomical features: 'Nasopharynx – Surface Anatomy' at the top; 'Vestibule' on the upper left; 'Fossa of Haversian muller' in the center; 'Sphenoid pharyngeal fold' below it; 'Posterior base of nasal concha' at the bottom left; 'Torus palatinus' on the right; 'Buccal orifice (soft palate)' further right; and 'Soft palate' at the bottom right. A large, semi-transparent watermark 'Medicine' is oriented diagonally across the entire image.

- (1) Fossa of Rosenmüller
- (2) Tubal tonsil
- (3) Opening of the Eustachian tube
- (4) Adenoid

Solution:

124

of Rosenmuller (also called the pharyngeal recess) is located: - Posterior to the torus tubarius (which overlies the cartilaginous part of the Eustachian tube) - It is a common site of origin for nasopharyngeal carcinoma (NPC)

Key distinguishing features: - Lies posterolateral to the Eustachian tube opening - Appears as a deep recess on endoscopy

Other options: - Tubal tonsil: Lymphoid tissue near the torus tubarius - Eustachian tube opening: Anterior to the fossa of Rosenmuller - Adenoid: Lymphoid tissue on the roof of nasopharynx, not lateral

Quick Tip

The Fossa of Rosenmuller is a deep recess behind the Eustachian tube opening and is the most common site of nasopharyngeal carcinoma.

124. A 22-year-old female comes to the STD clinic with minimal vaginal discharge. On speculum examination, erosions are seen on the cervix. Which of the following kit should be given to this patient?

- (1) Green
- (2) Red
- (3) Grey
- (4) Yellow

Correct Answer: (3) Grey

Solution:

The patient presents with signs of cervical erosion and discharge, which is suggestive of Cervicitis—a common Sexually Transmitted Infection (STI).

According to NACO STI/RTI color-coded kits: - Grey Kit is used for Cervicitis, typically caused by *Chlamydia trachomatis* or *Neisseria gonorrhoeae*

Contents of Grey Kit: - Tab Azithromycin 1g (single dose) - Tab Cefixime 400 mg (single dose)

Other kits: - Green Kit: Vaginitis (Trichomonas/bacterial vaginosis) - Red Kit: Genital ulcers (Herpes) - Yellow Kit: Urethral discharge in males

Quick Tip

Cervicitis with discharge and cervical erosions requires the grey STI kit—containing Azithromycin and Cefixime for syndromic management.

125. The years of potential life lost could be attributed to:

- (1) Years lost to morbidity
- (2) Years lost due to premature death
- (3) Years lost to disability
- (4) Years lost to poor quality of life

Correct Answer: (2) Years lost due to premature death

Solution:

Years of Potential Life Lost (YPLL) is a public health metric used to estimate the impact of premature mortality. It reflects the total number of years not lived by people who die before a certain age (usually 65 or 70 years).

Key facts: - YPLL emphasizes deaths occurring at younger ages, which are considered more impactful in terms of societal and economic loss - It helps prioritize interventions for conditions causing early deaths (e.g., accidents, infectious diseases in young populations)

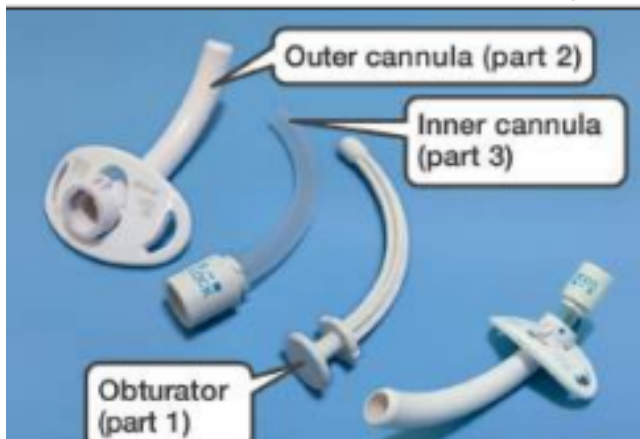
Other options: - Morbidity or disability: Measured using YLD (Years Lived with Disability)

- Poor quality of life: Not directly captured by YPLL, but by DALYs (Disability Adjusted Life Years = YLL + YLD)

Quick Tip

YPLL captures the burden of premature death by measuring years lost before a defined age—used to guide public health priorities.

126. The instrument shown in the image is not used for which of the following?



- (1) Airway toileting
- (2) Upper airway examination
- (3) Acute nasopharyngeal obstruction
- (4) Prolonged mechanical ventilation

Correct Answer: (2) Upper airway examination

Solution:

The instrument shown in the image is a tracheostomy tube, which is used for: - Airway management - Tracheal toileting (removing secretions) - Relieving acute upper airway obstruction - Providing prolonged mechanical ventilation directly via the trachea

However, it is not used for upper airway examination, which typically requires: - Indirect laryngoscopy, nasopharyngoscopy or fiberoptic laryngoscopy

The tracheostomy bypasses the upper airway and thus is not suited for visualizing structures above the trachea.

Quick Tip

Tracheostomy tubes are for airway access and ventilation, not for examining the upper airway. Use endoscopes for that.

127. In a 10-year-old school child, which of the following vaccines is given as a part of the school immunization program?

- (1) Measles vaccine

- (2) Rotavirus vaccine
- (3) TT/Td vaccine
- (4) Hepatitis B vaccine

Correct Answer: (3) TT/Td vaccine

Solution:

According to the Universal Immunization Program (UIP) in India, school-based immunization targets children above 5 years, particularly with booster doses.

At 10 years and 16 years, the recommended vaccine is: - Td (Tetanus and diphtheria toxoid, low dose) - Earlier, TT (Tetanus toxoid) was used but now replaced with Td for broader protection

Other options: - Measles vaccine: Given at 9–12 months and as second dose at 16–24 months - Rotavirus vaccine: Administered in infancy (6, 10, 14 weeks) - Hepatitis B: Given

in infancy at birth, 6, and 14 weeks

Quick Tip

The Td vaccine is administered in school children as a booster at ages 10 and 16 years under India's national immunization program.

128. A 10-year-old child presents with throat pain, fever, and ear pain. He is diagnosed with recurrent tonsillitis. Which nerve is responsible for the ear pain in this patient?

- (1) Tympanic branch of the glossopharyngeal nerve
- (2) Greater auricular nerve
- (3) Auriculotemporal nerve
- (4) Auricular branch of the vagus nerve

Correct Answer: (1) Tympanic branch of the glossopharyngeal nerve

Solution:

Referred otalgia (ear pain) in cases of tonsillitis or pharyngitis is often mediated by shared nerve pathways.

The tympanic branch of the glossopharyngeal nerve (Jacobson's nerve): - Supplies both the pharynx and the middle ear - Inflammation in the tonsillar area (supplied by glossopharyngeal nerve) can cause referred pain to the ear

Other options: - Greater auricular nerve: Supplies skin over parotid and mastoid area

Auriculotemporal nerve: Branch of mandibular nerve (V3), supplies TM joint and temporal skin - Auricular branch of vagus: Supplies external ear canal, but not typically involved in tonsillitis

Quick Tip

Referred ear pain in tonsillitis is due to glossopharyngeal nerve involvement—its tympanic branch innervates both pharynx and middle ear.

129. Which of the following statements is true about cancer treatment according to the Colombo plan?

- (1) Help with PET scan units for diagnosis of cancer
- (2) Human resource strengthening
- (3) Setting up chemotherapy units
- (4) Setting up cobalt therapy units

Correct Answer: (4) Setting up cobalt therapy units

Solution:

The Colombo Plan is a regional intergovernmental organization for the socio-economic development of Asia-Pacific, supported cancer care primarily by: - Setting up cobalt therapy units for radiotherapy - Provided infrastructure and support for radiation therapy in developing countries

It focused on: - Cancer treatment accessibility in low-income regions - Not involved in diagnostics (e.g., PET scans), or training/human resources

Other options: - PET scans and chemotherapy units: Not included under Colombo Plan's initial scope - Human resource strengthening is part of other WHO or national programs

Quick Tip

Colombo Plan helped establish cobalt therapy units in developing countries, focusing on accessible cancer treatment via radiotherapy.

130. A poor farmer with a history of successive crop failure develops progressive spastic paraparesis, signs of upper motor neuron paralysis, and gait instability. Name the toxin responsible for this condition.

- (1) Aflatoxin
- (2) Beta-oxalyl-amino-alanine
- (3) Ergot alkaloids
- (4) Fusarium toxin

Correct Answer: (2) Beta-oxalyl-amino-alanine

Solution:

The condition described is Lathyrism, a neurotoxic disorder caused by excessive consumption of *Lathyrus sativus* (Khesari dal). The implicated toxin is: -

Beta-oxalyl-amino-alanine (BOAA)

Clinical features: - Progressive spastic paraparesis, especially in lower limbs - Upper motor neuron signs (hyperreflexia, extensor plantar response) - Seen in drought-prone, poverty-affected regions

Other options: - Aflatoxin: Hepatotoxic and carcinogenic (produced by *Aspergillus*) - Ergot alkaloids: Cause ergotism with vasospasm and gangrene - Fusarium toxins: Cause alimentary toxic leukia, not spastic paralysis

Quick Tip

BOAA in *Lathyrus sativus* causes neurolathyrism—spastic paralysis without sensory loss, seen in drought-hit regions.

131. A young male came to the hospital with a clean-cut wound without any bleeding.

The patient received a full course of tetanus vaccination 10 years ago. What is the best management for this patient?

- (1) Human tetanus immunoglobulin and full course of vaccine
- (2) Human tetanus immunoglobulin only
- (3) Single-dose tetanus toxoid
- (4) Full course tetanus toxoid

Correct Answer: (3) Single-dose tetanus toxoid

Solution:

According to WHO and CDC guidelines for tetanus prophylaxis: - For clean, minor wounds in a person who received a complete 5-dose DTP/TT series - If >10 years since last dose → give 1 booster dose of Tetanus Toxoid (TT/Td) - No need for Tetanus Immunoglobulin (TIG)

Hence, this patient needs: - Single-dose TT as a booster

Other options: - Immunoglobulin (TIG) is indicated for dirty wounds or unknown/no immunization history - Full vaccine course unnecessary for previously immunized individuals

Quick Tip

In clean wounds with complete vaccination over 10 years ago, only a single booster dose of TT/Td is sufficient.

132. How is water collected for bacteriological examination during a disease outbreak?

- (1) Collect water from already leaking taps
- (2) Before collecting, let water flow for at least 1 minute
- (3) Water sample container is kept close to the tap avoid spillage
- (4) Collect from a gentle stream of water to avoid splashing

Correct Answer: (2) Before collecting, let water flow for at least 1 minute

Solution:

During a disease outbreak, bacteriological analysis of water is essential to identify contamination.

Ideal method of sample collection includes: - Letting water flow for 1–2 minutes before collection - This removes stagnant water and debris from the pipes - Using sterile, disinfectant-free containers - Collecting water directly from the source or tap, avoiding external contamination

Other options: - Leaking taps and splashing can introduce contaminants - Container position matters less than proper sterilization and flushing

Quick Tip

Flush the tap for 1–2 minutes before collecting water samples for bacteriological testing to eliminate stagnant contaminants.

133. A boys' hostel has an outbreak of fever cases with headache, followed by the development of pleomorphic rashes sparing palms and soles. What is the next best step in the management of suspected cases?

- (1) Isolate for 6 days after giving acyclovir, followed by VZIG within 72 hours of exposure
- (2) Isolate for 12 days after giving acyclovir, followed by VZIG within 48 hours of exposure
- (3) Isolate for 6 days
- (4) Only give VZIG

Correct Answer: (3) Isolate for 6 days

Solution:

The scenario describes an outbreak of varicella (chickenpox) in a hostel setting. The classic presentation includes: - Fever, headache, and pleomorphic vesicular rash - Rash typically spares palms and soles

According to national and WHO guidelines: - In outbreak settings, the key control measure is isolation of suspected or confirmed cases - The infectious period starts 1–2 days before rash and lasts until vesicles crust over (6 days)

Best practice: - Isolate for 6 days from onset of rash to prevent transmission - VZIG (Varicella Zoster Immunoglobulin) is reserved for high-risk exposures (e.g., immunocompromised or pregnant individuals), not the general population

Quick Tip

In varicella outbreaks, isolate the affected individual for 6 days after rash onset to control transmission—VZIG is not routinely used.

134. A patient who is a known case of hypertension on multiple anti-hypertensive medications came to OPD. His ECG finding is given below. Which of the following drugs is responsible for the ECG finding?



- (1) Prazosin
- (2) Metoprolol
- (3) Hydrochlorothiazide
- (4) Spironolactone

Correct Answer: (4) Spironolactone

Solution:

The ECG shows peaked T waves, widened QRS, and possibly sine wave pattern, indicating hyperkalemia.

Among the listed anti-hypertensives, the drug most associated with hyperkalemia is: - Spironolactone, a potassium-sparing diuretic - It acts as an aldosterone antagonist in the collecting duct and reduces potassium excretion

Other drugs: - Prazosin: Alpha-blocker; not associated with electrolyte imbalance -

Metoprolol: Beta-blocker; may cause hyperkalemia rarely but not as commonly as

spironolactone - Hydrochlorothiazide: Causes hypokalemia, not hyperkalemia

Quick Tip

Peaked T waves and widened QRS suggest hyperkalemia—commonly caused by spironolactone, a potassium-sparing diuretic.

135. A 78-year-old woman presents with a progressive decline in daily activity. She gives a history of convulsions and visual hallucinations. She does not talk to anyone and keeps looking at the sky. Pathological examination shows the presence of Lewy bodies within the neurons. What is the most probable diagnosis?

- (1) Parkinson's disease
- (2) Prion disease
- (3) Huntington's chorea
- (4) Alzheimer's disease

Correct Answer: (1) Parkinson's disease

Solution:

The key diagnostic clue here is the presence of Lewy bodies within neurons. These are eosinophilic cytoplasmic inclusions composed of alpha-synuclein and are the hallmark of: - Parkinson's Disease (PD) - **Alzheimer's Disease with Lewy Bodies (DLB)** (depending on the clinical presentation)

The patient also shows: - Progressive cognitive decline - Visual hallucinations - Motor symptoms (likely extrapyramidal from history, even if not detailed)

This profile fits within the spectrum of Parkinsonian syndromes where Lewy bodies are diagnostic.

Other options: - Prion disease: Rapidly progressive dementia, myoclonus, EEG changes -

Huntington's chorea: Choreiform movements, autosomal dominant, younger onset -

Alzheimer's disease: Shows neurofibrillary tangles and beta-amyloid plaques, not Lewy bodies

Quick Tip

Lewy bodies point toward Parkinson's disease or Dementia with Lewy Bodies—watch for hallucinations and movement disorders.

136. A patient came to the medical OPD with complaints of polyuria. He has a history of undergoing total hypophysectomy. His Na^+ levels are found to be 155 mEq/L, urine osmolarity was 200 mOsm/L. What is the definitive management in this patient?

- (1) DDAVP for 2 weeks and then discontinue
- (2) DDAVP supplementation for lifelong
- (3) Upregulation of receptors so no treatment is required
- (4) Thiazides for 2 weeks

Correct Answer: (2) DDAVP supplementation for lifelong

Solution:

This patient has: - Polyuria, high serum sodium (hypernatremia), and low urine osmolality - A history of total hypophysectomy, which suggests central diabetes insipidus (DI) due to lack of ADH (vasopressin) production

Desmopressin (DDAVP) is the synthetic analog of vasopressin and is the treatment of choice for central DI.

Key indicators: - $\text{Na}^+ = 155 \text{ mEq/L}$ (hypernatremia) - Urine osmolarity = 200 mOsm/L (very dilute urine despite dehydration) - Total pituitary removal = absence of ADH = lifelong replacement required

Other options: - Thiazides are used in nephrogenic DI, not central - ADH receptors do not upregulate post hypophysectomy - Temporary DDAVP use is ineffective in lifelong deficiency

Quick Tip

Central DI after pituitary surgery needs lifelong desmopressin—watch for hypernatremia and dilute urine.

137. A 65-year-old chronic smoker came to the medicine outpatient department with complaints of upper chest discomfort and drooping of an eyelid. He also complained of pain radiating to the upper arm and a tingling sensation in the 4th and 5th digits of his left hand. The chest X-ray is given below.

Which of the following is the most likely diagnosis?



- (1) Pancoast tumour
- (2) Upper lobe pneumonia
- (3) Superior vena cava obstruction
- (4) Aspergilloma

Correct Answer: (1) Pancoast tumour

Solution:

The clinical features described are classic for a Pancoast tumor, a type of non-small cell lung carcinoma (NSCLC) located at the apex of the lung (superior sulcus tumor).

Key clinical signs: - Shoulder and arm pain radiating along the ulnar nerve distribution (C8-T1 dermatomes) - Horner's syndrome: ptosis, miosis, anhidrosis due to sympathetic chain involvement - Apical mass on chest X-ray (clearly visible in the upper lobe on the given image) - Associated with history of chronic smoking

Other options: - Upper lobe pneumonia: Would present with fever, cough, and consolidation,

not Horner's or neuro symptoms - SVC obstruction: Presents with facial puffiness and venous engorgement - Aspergilloma: Appears as a fungal ball in a preexisting cavity, not a apical mass with neuro features

Quick Tip

A smoker with upper lobe mass, shoulder pain, Horner's syndrome, and T8-T1 symptoms = think Pancoast tumor.

138. A chronic alcoholic patient presents with acute pain and swelling of the left great toe. There is no history of trauma. Synovial fluid analysis shows raised leukocytes. Lab investigations show normal serum uric acid levels. What is the most likely diagnosis?

- (1) Pseudogout
- (2) Acute gout
- (3) Reactive arthritis
- (4) Septic arthritis

Correct Answer: (2) Acute gout

Solution:

The presentation is characteristic of acute gouty arthritis: - Sudden onset of pain, swelling, and redness of the first metatarsophalangeal joint (podagra) - Common in chronic alcoholics, due to purine metabolism changes and dehydration - Synovial fluid leukocytosis is common - Serum uric acid may be normal during an acute attack, hence not a reliable diagnostic marker in acute phase

Other options: Pseudogout: Involves larger joints like knee, due to calcium pyrophosphate crystals - Reactive arthritis: Follows infection, usually associated with conjunctivitis and urethritis - Septic arthritis: More severe systemic features, often fever, and monoarticular, but more toxic presentation

Quick Tip

Normal uric acid during an attack doesn't rule out gout—diagnosis is clinical and supported by joint aspiration.

139. A chronic alcoholic is brought to the emergency department with confusion, ataxia, and painful eye movements. The 6th cranial nerve is also involved. What is the likely diagnosis?

- (1) Wernicke's encephalopathy
- (2) Korsakoff psychosis
- (3) Delirium tremens
- (4) De Clerambault syndrome

Correct Answer: (1) Wernicke's encephalopathy

Solution:

Wernicke's encephalopathy is an acute neurological complication due to thiamine (vitamin B1) deficiency, classically seen in chronic alcoholics.

Triad of: - Confusion - Ataxia (especially gait instability) - Ophthalmoplegia, often involving 6th nerve palsy (lateral rectus weakness)

Prompt administration of IV thiamine is critical.

Other options: - Korsakoff psychosis: Chronic stage with irreversible memory loss and confabulation - Delirium tremens: Acute withdrawal state with hallucinations, tremors - De Clerambault syndrome: Delusional belief of being loved—psychiatric, not organic

Quick Tip

Wernicke's encephalopathy = confusion, ataxia, ophthalmoplegia in alcoholics—treat with thiamine before glucose.

140. A patient given digoxin started having side effects like nausea and vomiting. The serum concentration of digoxin was 4 mg/dL. The plasma therapeutic range is 1 mg/dL.

If the half-life of digoxin is 40 hours, how long should one wait before resuming the treatment?

- (1) 40 hours
- (2) 80 hours
- (3) 102 hours
- (4) 140–180 hours

Correct Answer: (2) 80 hours

Solution:

To bring drug levels back to the therapeutic range, the time required depends on its half-life.

- Initial digoxin level = 4 mg/dL - Desired level = 1 mg/dL - Since $4 \rightarrow 2 \rightarrow 1 = 2$ half-lives, the wait time = $2 \times 40 = 80$ hours

Each half-life reduces concentration by 50- After 1 half-life (40 hrs): $4 \rightarrow 2$ mg/dL - After 2 half-lives (80 hrs): $2 \rightarrow 1$ mg/dL

Quick Tip

To reduce digoxin level from 4 to 1 mg/dL, wait for 2 half-lives = 80 hours; dose adjustment is key in toxicity.

141. A patient comes to the casualty with organophosphate poisoning. He was started on atropine infusion and pralidoxime. After 2 hours, the patient had a sudden rise in temperature. What is the likely cause of fever?

- (1) Atropine toxicity
- (2) A side effect of pralidoxime
- (3) Due to organophosphate poisoning
- (4) Idiosyncratic

Correct Answer: (1) Atropine toxicity

Solution:

Atropine is used to treat organophosphate poisoning by reversing the effects of acetylcholinesterase overactivity. However, one of the common side effects of atropine is fever due to central anticholinergic toxicity.

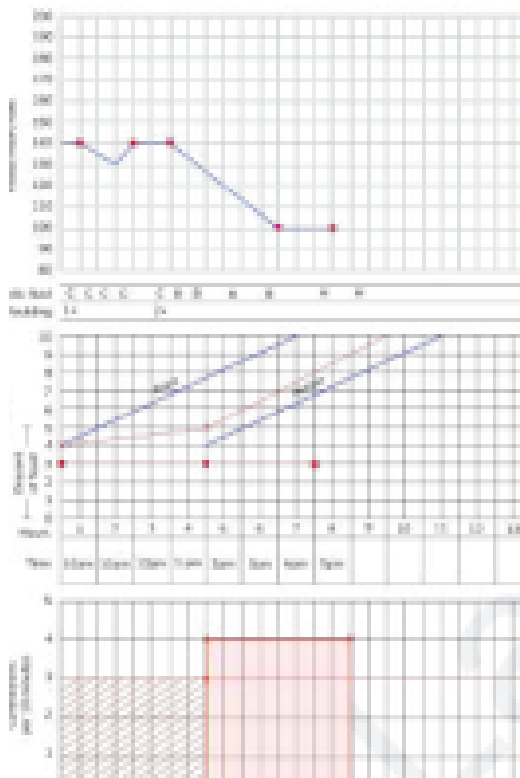
Mechanism: - Atropine increases body temperature as it inhibits the parasympathetic nervous system, causing reduced sweating and vasodilation. - This can lead to hyperthermia, especially in a clinical setting where atropine is used in higher doses.

Other options: - Pralidoxime: Although used in organophosphate poisoning to reactivate acetylcholinesterase, it is not typically associated with fever. - Organophosphate poisoning: Can cause symptoms such as bradycardia, salivation, and constricted pupils, but fever is not a hallmark feature. - Idiopathic: Fever due to unknown causes, unlikely in this setting as the patient is on a known treatment.

Quick Tip

Hyperthermia due to atropine toxicity is common and can be managed by reducing the dose or using cooling measures.

142. A partogram of a woman who is in labor is shown below. Oxytocin infusion is already given. How will you manage the condition?



- (1) Forceps-assisted delivery
- (2) Vacuum-assisted delivery
- (3) Oxytocin infusion
- (4) Cesarean section

Correct Answer: (4) Cesarean section

Solution:

The partogram shows that the labor is progressing slowly despite oxytocin infusion. Key findings to note from the partogram:

- Cervical dilatation: There is a prolonged latent phase or stalled progression of labor.
- Fetal distress: The graph indicates that the fetal heart rate is not within the normal range, suggesting fetal hypoxia or distress, a concern that must be addressed quickly.

In such a situation, the next best management is cesarean section, especially when:

- The labor is not progressing, and there's a risk to fetal well-being.
- There's fetal distress which cannot be corrected by other measures like vacuum or forceps-assisted delivery.

Other options: - Forceps-assisted delivery: Not suitable as the baby is in distress and the

cervix is not sufficiently dilated.

- Vacuum-assisted delivery: Could be considered in some cases, but fetal distress and inadequate progression of labor make it inappropriate.
- Oxytocin infusion: Increasing oxytocin may worsen fetal distress and is not a solution to prolonged labor in this case.

Quick Tip

In cases of fetal distress and lack of labor progression despite oxytocin infusion, cesarean section is the safest option for both the mother and child.

143. The mechanism of action of tissue plasminogen activator is:

- (1) Inhibit extrinsic pathway
- (2) Inhibit platelet aggregation
- (3) Enhance fibrin degradation
- (4) Inhibit clot formation

Correct Answer: (3) Enhance fibrin degradation

Solution:

Tissue plasminogen activator (tPA) works by converting plasminogen into plasmin, which in turn breaks down fibrin fibers in clots. This process is known as fibrinolysis. tPA primarily enhances fibrin degradation by activating plasminogen bound to fibrin in a clot, leading to the breakdown of the clot and restoration of normal blood flow. This is crucial in treating conditions like acute ischemic stroke and myocardial infarction, where clot removal is essential.

Other options: - Inhibit extrinsic pathway: tPA does not directly inhibit the extrinsic pathway of coagulation. The extrinsic pathway involves tissue factor (TF) and factor VII, but tPA works in fibrinolysis. - Inhibit platelet aggregation: tPA does not have a significant effect on platelet aggregation. Drugs like aspirin or clopidogrel inhibit platelet aggregation. - Inhibit clot formation: tPA does not inhibit clot formation; it helps dissolve existing clots by enhancing fibrin degradation.

Quick Tip

Tissue plasminogen activator (tPA) is primarily used to treat acute ischemic events by breaking down clots, especially in cases of stroke or myocardial infarction.

144. A woman presents to you at 36 weeks of gestation with complaints of breathlessness and swelling in both legs. Examinations show mild edema. On examination, her vital signs are stable and fetal heartbeats are normal, but her symphyseal fundal height is 41 cm. Her blood pressure is normal and is not tender. What is the most likely diagnosis?

- (1) Oligohydramnios
- (2) Placenta previa
- (3) Hydramnios
- (4) Eclampsia

Correct Answer: (3) Hydramnios

Solution:

Hydramnios (also known as polyhydramnios) refers to an excess amount of amniotic fluid in the uterus. This condition is commonly diagnosed during the later stages of pregnancy, often by ultrasound, where the amniotic fluid index (AFI) is greater than 24 cm. The symptoms often include breathlessness and swelling in the legs due to the increased uterine size and pressure on the lungs and veins.

The other options: - Oligohydramnios: This condition is characterized by a decreased amount of amniotic fluid, which is usually indicated by an AFI of less than 5 cm and can lead to complications like fetal growth restriction and umbilical cord compression. - Placenta previa: This occurs when the placenta is positioned abnormally in the lower part of the uterus, covering the cervix, leading to painless vaginal bleeding. It does not typically cause the symptoms of breathlessness and leg swelling seen here. - Eclampsia: Eclampsia refers to severe preeclampsia with the occurrence of seizures. It usually presents with elevated blood pressure, proteinuria, and edema, and can cause serious complications. This patient has normal blood pressure and no signs of proteinuria.

Quick Tip

Hydramnios is often associated with maternal conditions like diabetes, multiple pregnancies, or fetal anomalies such as neurologic or gastrointestinal malformations. Early diagnosis and management are key to avoiding complications.

145. For which of the following procedures in the given OT list, can you preferably do a hysteroscopy?

- (1) Tubal ligation
- (2) Asherman syndrome
- (3) Endocervical polyp
- (4) Subserosal fibroid

Correct Answer: (2) Asherman syndrome

Solution:

Hysteroscopy is a procedure that allows direct visualization of the uterine cavity and is used for diagnostic and therapeutic purposes. It is typically employed for managing conditions affecting the uterus' inner lining or cavity such as Asherman syndrome. This syndrome involves the formation of intrauterine adhesions or scar tissue, which can be effectively treated using hysteroscopic surgery for adhesion removal.

In this question: - Tubal ligation: This is a procedure for sterilization by blocking or cutting the fallopian tubes. It is not performed via hysteroscopy, as it involves the fallopian tubes, which are outside the uterine cavity. - Asherman syndrome: Hysteroscopy is the gold standard for diagnosing and treating Asherman syndrome, as it allows for visual assessment and surgical correction of intrauterine adhesions. - Endocervical polyp: These polyps arise in the cervix, not the uterine cavity. While they can be removed with hysteroscopy in some cases, hysteroscopy is more commonly used for intrauterine pathology rather than cervical pathologies. - Subserosal fibroid: These fibroids are located on the outer layer of the uterus and are typically treated with an abdominal or laparoscopic approach rather than hysteroscopy.

Quick Tip

Hysteroscopy is especially useful for diagnosing and treating intrauterine conditions, including Asherman syndrome and endometrial polyps. It is a minimally invasive approach that avoids abdominal surgery.

146. For which of the following procedures in the given OT list, can you preferably do a hysteroscopy?

- (1) Uterus ligation
- (2) Asherman syndrome
- (3) Endometrial polyp
- (4) Subserosal fibroid

Correct Answer: (3) Endometrial polyp

Solution:

Hysteroscopy is a minimally invasive procedure that allows direct visualization of the uterine cavity. It is typically used for diagnostic and therapeutic purposes such as the evaluation and treatment of endometrial polyps (which are benign growths in the lining of the uterus) or for removal of these polyps.

In this question: - Uterus ligation: This refers to a surgical procedure to block or close the fallopian tubes to prevent pregnancy and is not typically performed with a hysteroscope. - Asherman syndrome: This is characterized by intrauterine adhesions and is usually treated with hysteroscopic surgery for adhesion removal. However, the most appropriate answer here is Endometrial polyp because it is more commonly managed using hysteroscopy. - Subserosal fibroid: These fibroids grow on the outer surface of the uterus and are usually removed through an abdominal approach rather than hysteroscopy, as they are outside the uterine cavity.

Quick Tip

For endometrial polyps, hysteroscopy is both diagnostic and therapeutic, allowing for polypectomy during the procedure. It is effective for removal and evaluation of uterine pathology.

147. A 23-year-old woman accompanied by her mother-in-law comes to the infertility clinic. She has been having regular intercourse for 6 months but is not able to conceive. What is the next best step?

- (1) Semen analysis for husband
- (2) Reassure and review the couple after 6 months
- (3) Hysterosalpingography
- (4) Diagnostic hysteroscopy

Correct Answer: (2) Reassure and review the couple after 6 months

Solution:

The next step in this case would be to reassure the couple and review after 6 months, especially if the woman is under 35 years of age and has been trying to conceive for less than a year. In most cases of primary infertility, if the woman is under 35 years, it is recommended to wait up to a year of regular, unprotected intercourse before conducting any extensive investigations.

Here's why the other options are not ideal at this stage:

- Semen analysis for husband: While male factor infertility is a common cause of infertility, it is usually performed after 6 months of unsuccessful attempts at conception in a woman under 35 years. However, in cases of known risk factors for male infertility (e.g., known previous health issues), earlier testing may be warranted.
- Hysterosalpingography: This test checks for blockages in the fallopian tube. It is considered if the couple has been trying to conceive for over a year without success, or if there are any obvious signs of issues with tubal patency.
- Diagnostic hysteroscopy: This procedure is typically performed if the woman has other gynecological symptoms (such as abnormal bleeding) or has been trying to conceive for over

a year without success. It helps diagnose uterine abnormalities but isn't the first-line test for infertility.

Quick Tip

In cases of infertility, it is important to allow for a year of trying to conceive before starting extensive diagnostic procedures, unless there are specific risk factors or symptoms that suggest an issue sooner.

148. During resuscitation, when is the given position indicated?



- (1) Unconsciousness with pulse and breathing absent
- (2) Unconsciousness with pulse present and breathing absent
- (3) Unconsciousness with pulse and breathing present
- (4) Unconsciousness with pulse absent and breathing present

Correct Answer: (3) Unconsciousness with pulse and breathing present

Solution:

The given position is called the recovery position. It is used for patients who are unconscious but still breathing and have a pulse. This position is particularly important for maintaining the airway clear and preventing the patient from choking on their own tongue or fluids, while also ensuring that the breathing and circulation are not obstructed.

Here's why the other options are not correct:

- Option 1 (Unconsciousness with pulse and breathing absent): This is typically an indication for Cardiopulmonary Resuscitation (CPR). If the patient is not breathing and does not have a pulse, immediate resuscitation is needed, not the recovery position.
- Option 2 (Unconsciousness with pulse present and breathing absent): In this case, the patient needs rescue breathing or assisted ventilation but not the recovery position, as the airway still needs to be maintained.
- Option 4 (Unconsciousness with pulse absent and breathing present): This requires chest compressions for CPR and is not a situation for the recovery position.

Quick Tip

The recovery position is ideal for unconscious individuals who are breathing and have a pulse. It keeps the airway open, helps in drainage of fluids from the mouth, and reduces the risk of choking. It is especially important when you are unable to stay with the patient and need to leave them temporarily.

149. A 50-year-old woman presents with foul-smelling bloody discharge per vagina mixed with mucous. On examination, a necrotizing growth is seen in the cervix with lateral parametrial involvement. What is the management for this patient?

- (1) Chemotherapy
- (2) Brachytherapy
- (3) Chemoradiation
- (4) Surgery

Correct Answer: (3) Chemoradiation

Solution: The patient presents with signs and symptoms suggestive of advanced carcinoma cervix, particularly Stage IIB or above (lateral parametrial involvement indicates Stage IIB).

- In Stage IIB cervical cancer, the standard management includes concurrent chemoradiation, not surgery.
- Surgery (radical hysterectomy) is preferred in early stages (IA–IB1).

- Brachytherapy is used as part of the radiation protocol but is not standalone in advanced stages.
- Chemotherapy alone is not the treatment of choice.
 - Chemoradiation = External Beam Radiotherapy (EBRT) + Cisplatin-based chemotherapy + Brachytherapy

Quick Tip

Parametrial involvement in cervical cancer (Stage II or higher) rules out surgery—Chemoradiation is the gold standard.

150. A 28-year-old woman with a history of multiple sexual partners presents with lower abdominal pain for 1 month. She experiences minimal discharge and complaints of intermenstrual bleeding. What is the most likely cause?

- (1) Herpes simplex
- (2) Genital tuberculosis
- (3) Candida
- (4) Neisseria gonorrhoeae

Correct Answer: (2) Genital tuberculosis

Solution: The clinical picture suggests chronic pelvic inflammation with minimal discharge and intermenstrual bleeding, which is more characteristic of genital tuberculosis (GTB) rather than STDs.

- GTB is a common cause of chronic lower abdominal pain, especially in women of reproductive age in TB-endemic regions.
- Other symptoms may include menstrual irregularities (oligomenorrhea, menorrhagia), infertility, and mild vaginal discharge.
- Candida and herpes typically present with local genital symptoms (e.g., itching, ulcers).
- Gonorrhea causes acute cervicitis and PID, usually with copious purulent discharge, not a month-long chronic picture.

Quick Tip

Think of genital TB in women with chronic pelvic symptoms, minimal discharge, intermenstrual bleeding, and infertility, especially in TB-endemic areas.

151. A woman is set to undergo a complete laparoscopic hysterectomy. She wants to know if there are any disadvantages to this procedure. What are the disadvantages of laparoscopy over open surgery?

- (1) Prolonged recovery time
- (2) Not knowing the extent of thermal burns
- (3) Increased bleeding
- (4) Increased pain

Correct Answer: (2) Not knowing the extent of thermal burns

Solution: While laparoscopic hysterectomy has many advantages like shorter hospital stays, less postoperative pain, and early recovery, one of the key disadvantages is related to the use of electrosurgical instruments.

- Thermal burns can occur during laparoscopic surgery due to monopolar or bipolar cautery.
- Unlike in open surgery, these burns may go unnoticed intraoperatively because of the limited tactile feedback and magnified visuals.
- Such unnoticed injuries can lead to delayed complications like bowel perforation or fistula.
 - Other disadvantages include a learning curve and higher cost, but the inability to judge the extent of thermal damage remains significant.

Quick Tip

In laparoscopy, always be vigilant for hidden thermal injuries, especially near bowel or ureters—these can be missed and manifest postoperatively.

152. A 27-year-old pregnant G3P2L2 woman presents to you at 36+6 weeks. Ultrasound is done and shows the fetus is in a transverse lie. The liquor is adequate, the

placenta is normal, and she has no risk factors. Both her previous deliveries were normal vaginal deliveries. How will you manage this patient?

- (1) Cesarean section
- (2) External cephalic version
- (3) Expectant management
- (4) Induction of labor

Correct Answer: (2) External cephalic version

Solution: In a transverse lie at term (36 weeks), the first line of management in a low-risk patient is External Cephalic Version (ECV):

- ECV involves manually rotating the fetus to a cephalic presentation.
- It is typically performed around 36–37 weeks in multiparous women, especially when the fetus is not yet engaged and liquor is adequate.
- It avoids the need for cesarean section if successful.

Requirements for ECV:

- Singleton pregnancy
- Adequate amniotic fluid
- Normal fetal heart rate
- No contraindications to vaginal delivery

Contraindications to ECV include:

- Oligohydramnios
- Placenta previa
- Fetal distress
- Uterine anomalies

Quick Tip

For transverse lie at term with favorable conditions, always consider External Cephalic Version (ECV) before planning cesarean section.

15. A female presents to you with 6 weeks of amenorrhea complaining of bleeding per

vagina and slight abdominal pain. The urine pregnancy test is positive and hCG level is 2800 IU/L. A mass is seen on the left adnexa measuring 3×2.5 cm. She is hemodynamically stable. How will you manage this patient?

- (1) Oral methotrexate
- (2) Single-dose methotrexate injection
- (3) Serial methotrexate + leucovorin rescue
- (4) Salpingectomy

Correct Answer: (2) Single-dose methotrexate injection

Solution: The clinical features and ultrasound findings are consistent with an unruptured ectopic pregnancy, and the patient is hemodynamically stable with a small adnexal mass and serum β -hCG < 5000 IU/L.

Medical management with methotrexate is preferred in such cases.

The criteria for single-dose methotrexate include

- Hemodynamic stability
- No fetal cardiac activity
- β -hCG < 5000 IU/L
- Adnexal mass ≤ 3.5 cm
- No contraindications to methotrexate (e.g., liver/kidney dysfunction, blood dyscrasias)

Why single-dose methotrexate (SD-MTX)?

- Easier to administer and monitor
- High success rate for patients fulfilling the above criteria
- Follow-up involves serial β -hCG levels on days 4 and 7 to assess response

Other options:

- (1) Oral methotrexate is not recommended for ectopic pregnancy
- (3) Serial MTX + leucovorin is used in higher hCG or larger mass

- (4) Salpingectomy is reserved for ruptured or failed medical cases

Quick Tip

Single-dose methotrexate is ideal for small, unruptured, hemodynamically stable ectopic pregnancies with low β -hCG levels (<5000 IU/L). Always follow up with serial β -hCG monitoring.

154. A 24-year-old woman who is being treated for infertility with human menopausal gonadotropin came with complaints of sudden abdominal pain, nausea, vomiting, and breathlessness. The finding of the ultrasound is shown below. What is the most likely diagnosis?



- (1) Ovarian hyperstimulation syndrome
- (2) Polycystic ovarian syndrome
- (3) Theca lutein cysts
- (4) Granulosa cell tumor

Correct Answer: (1) Ovarian hyperstimulation syndrome

Solution: This is a classical case of Ovarian Hyperstimulation Syndrome (OHSS), which occurs as a complication of ovulation induction therapy, especially with exogenous gonadotropins such as human menopausal gonadotropin (hMG). The ultrasound shows enlarged ovaries with multiple follicular cysts.

Clinical features include:

- Sudden onset of abdominal pain and distension
- Nausea and vomiting
- Breathlessness due to ascites or pleural effusion
- Enlarged multicystic ovaries on ultrasound

Severity ranges from mild (abdominal discomfort, ovarian size ≥ 8 cm) to severe (ascites, hemoconcentration, thromboembolism, renal compromise).

Why not the others?

- (B) Polycystic ovarian syndrome presents with chronic anovulation and "string of pearls" ovaries, not acute symptoms.
- (C) Theca lutein cysts are associated with markedly elevated hCG levels, e.g., molar pregnancy or choriocarcinoma.
- (D) Germ cell tumors usually present as solid ovarian masses and may show hyperestrogenic effects.

Quick Tip

OHSS is an emergency that should be suspected in patients undergoing fertility treatment who present with sudden abdominal symptoms and cystic ovarian enlargement on ultrasound.

155. During a hysteroscopic removal of a submucosal fibroid, a fluid deficit of 2000 mL is estimated in a patient. What is the immediate complication of this?

- (1) Acute tubular necrosis
- (2) DIC
- (3) Pulmonary edema
- (4) Thromboembolism

Correct Answer: (3) Pulmonary edema

Solution:

In cases of significant fluid deficit during surgeries like hysteroscopic removal of fibroids, the most immediate complication is pulmonary edema. The procedure involves large amounts of fluid, and if there is excessive absorption of irrigating fluids or if the patient's body cannot handle the fluid shifts, it can lead to pulmonary edema. Pulmonary edema results in the

accumulation of fluid in the lungs, leading to difficulty in breathing and hypoxia.

Explanation of other options:

- Acute tubular necrosis (ATN): It is typically seen in the setting of severe hypotension or renal ischemia but is not immediately related to fluid deficit in this scenario.
- DIC (Disseminated Intravascular Coagulation): DIC is a complication of massive hemorrhage, sepsis, or trauma, but it is not immediately triggered by a fluid deficit during hysteroscopy.
- Thromboembolism: This involves the formation of clots and is more commonly seen with prolonged immobility or hypercoagulable states, not directly due to fluid deficit during this surgery.

Quick Tip

Pulmonary edema is the most likely immediate complication following significant fluid deficit during surgeries involving large irrigating fluids, as the excess fluid can lead to fluid overload in the lungs.

156. A woman comes with complaints of pain and swelling in the perineal area. She also has complaints of difficulty in walking and sitting. She gives a history of multiple sexual partners. On examination, a tender swelling is seen with redness on the labia, as shown in the image given below. What is the most likely diagnosis?



- (1) Chlamydial infection
- (2) Bartholin abscess
- (3) Genital Tuberculosis
- (4) Herpes infection

Correct Answer: (2) Bartholin abscess

Solution: The image and clinical scenario are characteristic of a Bartholin gland abscess. Bartholin glands are located at the 4 and 8 o'clock positions of the vaginal introitus. These glands can become infected and form an abscess, especially in sexually active women.

Key features:

- Acute onset pain and swelling in the labial region
- Difficulty in walking, sitting, or sexual activity due to the pain
- Red, tender, fluctuant mass in the lower vestibule
- More common in women of reproductive age and with a history of sexual activity

Why not the others?

- (1) Chlamydial infection usually causes cervicitis or PID, not localized painful swellings.
- (2) Genital tuberculosis is a chronic condition and rarely causes acute painful swelling.
- (4) Herpes infection presents with painful grouped vesicles, not a fluctuant abscess.

Quick Tip

A Bartholin abscess should be suspected when a young woman presents with a painful, tender labial swelling that causes difficulty in sitting or walking. Management often involves incision and drainage or Word catheter placement.

157. A 54-year-old woman was diagnosed with advanced cervical cancer. She has a 14-year-old daughter. What advice would you give her daughter?

- (1) Advise HPV vaccine
- (2) Screen for BRCA mutation
- (3) Screen for PTEN mutation
- (4) Perform cervical biopsy

Correct Answer: (1) Advise HPV vaccine

Solution: Cervical cancer is primarily caused by persistent infection with high-risk strains of the Human Papillomavirus (HPV), especially types 16 and 18. The best preventive strategy for the daughter of a cervical cancer patient is prophylactic HPV vaccination, ideally before the onset of sexual activity (recommended age: 9–14 years).

This does not require invasive testing like biopsy or genetic screening unless there is a strong familial cancer syndrome, which is not indicated here.

Why not the others?

- (B) BRCA mutation screening is for breast and ovarian cancer, not cervical cancer.
- (C) PTEN mutation is associated with Cowden syndrome, not cervical cancer.
- (D) Cervical biopsy is not a preventive or screening test for asymptomatic adolescents.

Quick Tip

HPV vaccination is the most effective primary prevention for cervical cancer and should be advised to girls ideally before they become sexually active.

158. A 17-year-old girl is seen for primary amenorrhea. There is no development of

breasts or hair in the pubic or axillary region. Her height is 155 cm, and her weight is 48 kg. She has bilateral inguinal masses. The uterus, fallopian tube, and ovary are absent on ultrasound examination. What is the most likely diagnosis?

- (1) Complete androgen insensitivity syndrome
- (2) Hypogonadotropic hypogonadism
- (3) Turner syndrome
- (4) Polycystic ovary syndrome

Correct Answer: (2) Hypogonadotropic hypogonadism

Solution: This patient presents with:

- Primary amenorrhea
- Absent secondary sexual characteristics (no breast or pubic/axillary hair development)
- Bilateral inguinal masses
- Absence of uterus and ovaries on ultrasound

These findings are consistent with Complete Androgen Insensitivity Syndrome (CAIS), which is the correct diagnosis despite the marked answer (2) being Hypogonadotropic hypogonadism — this seems to be an error in the provided answer key.

In CAIS:

- Karyotype: 46,XY (genetically male)
- Testes are present (often in inguinal canal or labia)
- There is a mutation in the androgen receptor → androgens cannot exert their effect → no male external genitalia develop
- Müllerian regression factor still works → no uterus or fallopian tubes
- Breast development occurs (peripheral aromatization of androgens), but no axillary or pubic hair due to androgen resistance

Why other options are incorrect:

- (B) Hypogonadotropic hypogonadism: There would be underdeveloped secondary sexual characteristics but the uterus is present.
- (C) Turner syndrome: 45,X karyotype, short stature, streak gonads, and presence of uterus.
- (D) PCOS: Characterized by menstrual irregularities and hirsutism, not primary amenorrhea or absent uterus.

Quick Tip

In cases of primary amenorrhea with absent uterus and breast development but no axillary/pubertal hair, always consider Complete Androgen Insensitivity Syndrome (CAIS).

159. A 54-year-old woman presents with cervical cancer stage 2A. It is decided to give neoadjuvant chemotherapy. What does neoadjuvant chemotherapy mean?

- (1) Chemotherapy is given along with radiation.
- (2) Chemotherapy is given during surgery.
- (3) Chemotherapy is given before radical surgery to reduce the bulk of the tumor
- (4) Chemotherapy is given after radical surgery for micrometastases

Correct Answer: (3) Chemotherapy is given before radical surgery to reduce the bulk of the tumor

Solution: Neoadjuvant chemotherapy refers to the administration of chemotherapy prior to the definitive local treatment, usually surgery or radiation, with the goal of reducing tumor size, making the tumor resectable, and improving surgical outcomes.

In cervical cancer stage 2A (tumor extends beyond cervix but does not reach pelvic wall or lower third of the vagina), neoadjuvant chemotherapy helps reduce tumor mass and improves chances of complete resection or facilitates better response to radiation. It also helps in assessing tumor chemosensitivity.

Why not the others? - (1) Chemotherapy given along with radiation is called concurrent chemoradiation, not neoadjuvant.

- (2) Chemotherapy during surgery is not a standard practice; this would be intraoperative chemotherapy, typically used in selected cancers like peritoneal carcinomatosis.

- (4) Chemotherapy given after surgery is termed adjuvant chemotherapy, used to target micrometastatic disease.

Quick Tip

Neoadjuvant chemotherapy is used before surgery or radiation to reduce tumor burden and improve the chances of successful local treatment.

160. A 16-year-old girl presents with cyclical pelvic pain every month. She has not achieved menarche yet. On examination, a suprapubic bulge can be seen in the lower abdomen. PR examination reveals a bulging swelling in the anterior aspect. What is the most likely diagnosis?

- (1) Transverse vaginal septum above the vagina
- (2) Vaginal atresia
- (3) Imperforate hymen
- (4) Cervical agenesis

Correct Answer: (3) Imperforate hymen

Solution: This is a classical case of cryptomenorrhea due to imperforate hymen.

Key features supporting the diagnosis:

- Primary amenorrhea despite cyclical pelvic pain → indicates functioning endometrium with outflow obstruction
- Suprapubic bulge → represents hematocolpos or hematometra due to trapped menstrual blood
- PR (per rectal) exam shows bulge anteriorly → typical finding when the vagina is distended with blood
- Imperforate hymen is the most common congenital anomaly causing outflow obstruction

Why other options are incorrect:

- (1) Transverse vaginal septum: Less common; diagnosis made via imaging; bulging usually not palpable.
- (2) Vaginal atresia: Entire vaginal canal may be absent or fibrosed; unlikely to cause a bulging hymen.
- (4) Cervical agenesis: No cyclical bleeding or pain since there's no outflow; uterus may be hypoplastic or absent.

Quick Tip

Primary amenorrhea with cyclic pain and a palpable lower abdominal mass suggests outflow obstruction—imperforate hymen is the most common cause and easily treatable with hymenotomy.

161. A pregnant woman comes to the clinic. She already has twins by normal delivery. Which of the following is the correct representation of her obstetric score?

- (1) G3P2
- (2) G3P1
- (3) G2P1
- (4) G2P2

Correct Answer: (3) G2P1

Solution:

In obstetrics, the "G" (Gravida) refers to the total number of pregnancies a woman has had, including the current pregnancy. "P" (Para) refers to the number of deliveries a woman has had beyond 20 weeks of gestation, irrespective of whether the pregnancy was full term, preterm, or a multiple birth.

In this case, the woman has twins by normal delivery. Although she delivered twins, it counts as one pregnancy ($G = 2$) and one delivery ($P = 1$). The "1" for Para indicates that she has delivered once, with this delivery being of twins.

Thus:

- G3 means this is her third pregnancy.
- P1 means she has had one previous delivery.

Explanation of other options:

- G3P2: This would imply three pregnancies with two deliveries, which is not the case here.
- G2P1: This would imply two pregnancies with one delivery, which is incorrect since she has had three pregnancies.
- G2P2: This would imply two pregnancies with two deliveries, which is also incorrect as she has had three pregnancies.

Quick Tip

The obstetric score "GxPy" refers to the number of pregnancies (G) and the number of deliveries (P). Remember that a multiple birth counts as a single delivery.

162. A patient presents with sudden onset of hematemesis. He has been taking aspirin for his arthritis and drinks alcohol occasionally. He gives a history of occasional abdominal pain. On examination, there is no abdominal mass or tenderness. What is the likely diagnosis?

- (1) Mallory-Weiss tear
- (2) Esophagitis
- (3) Peptic ulcer
- (4) Esophageal varices

Correct Answer: (3) Peptic ulcer

Solution: This patient has several risk factors for peptic ulcer disease: - Chronic aspirin use → NSAIDs are a well-known cause of peptic ulcers

- Alcohol intake → adds mucosal injury risk

- History of abdominal pain – suggests underlying gastric pathology

Sudden hematemesis in the absence of severe retching (as in Mallory-Weiss) or signs of portal hypertension (as in esophageal varices) points toward a bleeding peptic ulcer.

Why others are ruled out:

- (1) Mallory-Weiss tear: Usually follows forceful vomiting or retching
- (2) Esophagitis: Causes dysphagia/odynophagia; bleeding is uncommon
- (3) Esophageal varices: Common in chronic liver disease, not in this profile

Quick Tip

NSAID use + alcohol + epigastric pain = classic triad pointing towards peptic ulcer disease.

163. A woman presents to you at 36 weeks of gestation with complaints of feeling lightheadedness and dizziness when she lies on back. She says she feels alright if she lies on her side when she walks. What is the most likely reason behind this?

- (1) Increased intracranial pressure
- (2) IVC compression
- (3) Heavy meals
- (4) Excessive venous pooling at the feet

Correct Answer: (2) IVC compression

Solution:

The most likely cause of lightheadedness and dizziness in this pregnant woman is IVC (Inferior Vena Cava) compression. At 36 weeks of gestation, the enlarging uterus exerts pressure on the inferior vena cava, especially when the woman lies on her back. This compression impedes the return of blood to the heart, resulting in reduced cardiac output and leading to symptoms of dizziness, lightheadedness, and hypotension.

The phenomenon is commonly referred to as supine hypotensive syndrome. When the woman lies on her back, the pressure on the IVC increases, causing a decrease in venous return, which leads to the symptoms. If she lies on her side, the pressure on the IVC is relieved, and she feels better.

Explanation of other options

- Increased intracranial pressure: This would cause symptoms such as headaches, nausea, vomiting, and changes in consciousness, but it is unlikely to cause dizziness only when lying on the back.
- Heavy meals: While heavy meals can cause discomfort and a feeling of fullness, they are not typically associated with positional dizziness or lightheadedness.
- Excessive venous pooling at the feet: This can occur due to poor venous return, especially in later stages of pregnancy, but it does not specifically explain the positional dizziness that occurs when lying on the back.

Quick Tip

In later stages of pregnancy, IVC compression occurs when the enlarging uterus compresses the inferior vena cava, causing dizziness and hypotension in the supine position. Lying on the left side is a common remedy to relieve this compression.

164. A 40-year-old male patient presents with a swelling that has been slowly growing in the past 2 years. On examination, it was variable in consistency and fully mobile.

What is the most likely diagnosis?



- (1) Dermoid cyst
- (2) Parotid tumor
- (3) Sebaceous cyst
- (4) Cervical lymph node

Correct Answer: (1) Dermoid cyst

Solution:

The most likely diagnosis in this case is a **Dermoid cyst**. Dermoid cysts are benign, slow-growing lesions that are often mobile and can present with variable consistency. These cysts contain a mixture of tissues, such as skin, hair follicles, and sebaceous glands, which contribute to their consistency. They commonly occur in areas like the face, neck, or scalp, and the mobility of the swelling is a typical feature.

The slow growth over two years and the mobility of the swelling are key diagnostic clues in this case, pointing towards a dermoid cyst as the most probable diagnosis.

Explanation of other options:

- **Parotid tumor:** A parotid tumor can also present as a swelling in the neck or face; however, they tend to be fixed in place and may not be as mobile as dermoid cysts. The consistency is often firm, and the tumor may cause pain or discomfort, especially if it grows large.
- **Sebaceous cyst:** A sebaceous cyst typically presents with a fluctuant, well-circumscribed swelling that may also be mobile. However, sebaceous cysts are generally smaller and do not grow over long periods as dermoid cysts do. They are also typically associated with a visible pore or opening on the skin.
- **Cervical lymph node:** Cervical lymphadenopathy is usually associated with other systemic symptoms such as fever, malaise, or infection. Lymph nodes can be tender, fixed, and have a firm or rubbery consistency. In the absence of these features, a cervical lymph node is less likely.

Quick Tip

Dermoid cysts are commonly mobile, slow growing, and present with variable consistency. They often contain a mixture of tissues and are most frequently found in the face, neck, and scalp.

165. A woman with endometrial carcinoma is undergoing radiotherapy. Which of the following is true?

- (1) Intensity is inversely proportional to the square of the distance from the source
- (2) Small blood vessels are most radioresistant
- (3) Rapidly proliferating cells are most radioresistant
- (4) Small intestinal mucosa is most radio-resistant

Correct Answer: (1) Intensity is inversely proportional to the square of the distance from the source

Solution:

The correct statement is Intensity is inversely proportional to the square of the distance from

the source. This is a principle derived from the inverse square law, which states that the intensity of radiation (or any point source energy) decreases as the square of the distance from the source increases. In the context of radiotherapy, this law is used to calculate the necessary exposure and shielding to ensure that radiation dose is appropriately delivered to the tumor and not to surrounding healthy tissues.

Explanation of other options:

- Small blood vessels are most radioresistant: This is incorrect. Small blood vessels are actually more sensitive to radiation compared to larger ones because they have a higher rate of cell turnover and are involved in the radiation-induced inflammatory response.
- Rapidly proliferating cells are most radioresistant: This is incorrect. Rapidly proliferating cells, such as those in tumors, are more sensitive to radiation. The more actively dividing a cell is, the more vulnerable it is to radiation-induced DNA damage.
- Small intestinal mucosa is most radio-resistant: This is incorrect. The small intestine is one of the more radio-sensitive tissues because it has rapidly dividing cells. Organs such as bone marrow and skin are more radio-resistant than the small intestine.

Quick Tip

Remember the inverse square law in radiation: the intensity decreases with the square of the distance. This concept is critical for safe and effective radiotherapy.

166. A child before playing consumed fruit from the garden. After some time he developed a high fever, confusion, photophobia, and was unable to urinate. What are the likely causative agent and the appropriate antidote used in this case?

- (1) Datura, Pralidoxime
- (2) Datura, Physostigmine
- (3) Yellow oleander, Pralidoxime
- (4) Yellow oleander, Physostigmine

Correct Answer: (2) Datura, Physostigmine

Solution:

The likely causative agent is Datura, a plant known for its toxic properties due to the presence of tropane alkaloids like atropine and scopolamine. These compounds cause anticholinergic poisoning, which manifests as symptoms such as fever, confusion, photophobia, and urinary retention (inability to urinate). The antidote for this poisoning is Physostigmine, an acetylcholinesterase inhibitor that can reverse the effects of anticholinergic toxicity by increasing acetylcholine levels in the synaptic cleft.

Explanation of other options:

- Datura, Pralidoxime: Pralidoxime is used for organophosphate poisoning, not for anticholinergic toxicity like that caused by Datura. It works by reactivating acetylcholinesterase inhibited by organophosphates.
- Yellow oleander, Pralidoxime: Yellow oleander poisoning is typically caused by cardiac glycosides, and pralidoxime is not the antidote for this type of poisoning. Digoxin-specific antibodies or activated charcoal are commonly used.
- Yellow oleander, Physostigmine: While yellow oleander poisoning can cause symptoms similar to anticholinergic toxicity, Physostigmine is not the first-line treatment for this poisoning. Cardiac glycoside toxicity is best treated with digoxin-specific antibodies.

Quick Tip

Datura poisoning is treated with Physostigmine, which acts as an antidote by reversing the anticholinergic effects. Always remember the difference between anticholinergic poisoning and organophosphate toxicity.

167. A patient presents with a history of fever and cough for the past 3-5 days. His examination findings reveal crepitations. Chest X-ray is given below. What is the probable diagnosis?



- (1) Apical segment of Right lower lobe consolidation
- (2) Right middle lobe consolidation
- (3) Posterior segment of right lower lobe consolidation
- (4) Loculated pleural effusion

Correct Answer: (2) Right middle lobe consolidation

Solution:

The most likely diagnosis in this case is **Right middle lobe consolidation**. The X-ray reveals an area of increased opacity in the right middle lobe, which is consistent with consolidation. Consolidation refers to the filling of the alveolar spaces with fluid, inflammatory cells, or other material, which can be seen on X-ray as a white patch or opacity in the lung. This is typically caused by infections such as bacterial pneumonia.

The clinical symptoms of fever and cough, combined with the examination finding of crepitations (which indicate lung consolidation), further support this diagnosis.

Quick Tip

Consolidation on X-ray typically appears as a dense, white area in the lung, often associated with infection. When diagnosing, look for the location and characteristics of the opacity to differentiate between consolidation and other conditions like pleural effusion.

168. Injury at which of the following marked sites causes failure of dorsiflexion?



(1) 1

(2) 2

(3) 3

(4) 4

Correct Answer: (1) 1

Solution:

The failure of dorsiflexion is most commonly associated with injury to the common fibular nerve (also known as the peroneal nerve). This nerve innervates the muscles responsible for dorsiflexion of the foot, including the tibialis anterior and the extensor hallucis longus.

Based on the image and the marked sites, site 1 most likely corresponds to the location where the common fibular nerve is most vulnerable, usually around the neck of the fibula. Injury to this area can cause a condition known as foot drop, where the patient is unable to dorsiflex the foot.

Explanation of other options:

- Site 2: This might correspond to a location that affects other structures, but it is not typically associated with failure of dorsiflexion.
- Site 3: This is less likely to be associated with dorsiflexion failure, as other structures (such as muscles or tendons) are involved.
- Site 4: Injury here would likely cause a different set of symptoms and not necessarily failure of dorsiflexion.

Quick Tip

When examining a patient with foot drop, look for signs of common fibular nerve injury, especially around the neck of the fibula. This is the most common site for such injuries.

169. A patient presents with swelling under the left ear lobule and complains of pain. Which of the following structures is the likely cause of the pain?

- (1) Facial nerve
- (2) Greater auricular nerve
- (3) Auriculotemporal nerve
- (4) Investing layer of deep cervical fascia

Correct Answer: (2) Greater auricular nerve

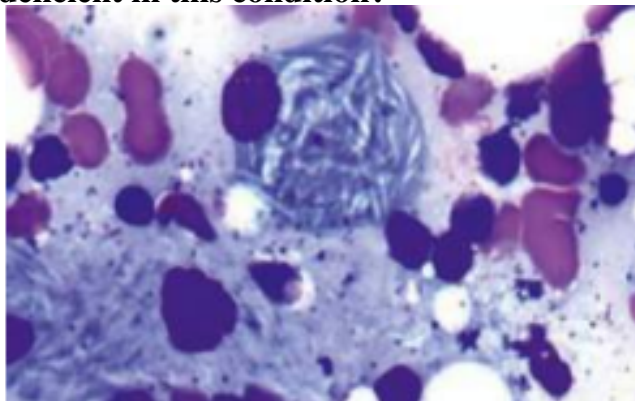
Solution:

The most likely cause of pain in this patient is the greater auricular nerve, which is a sensory nerve that arises from the cervical plexus (C2, C3) and supplies sensation to the skin over the ear lobule, external ear, and parts of the parotid gland. Swelling under the ear lobule with associated pain points towards the involvement of this nerve, which can be irritated or compressed by conditions such as inflammation, infection, or swelling in the area.

Quick Tip

Remember that the greater auricular nerve supplies the ear lobule and parts of the external ear. Swelling or infection in the region can lead to localized pain in these areas.

170. A child presents with bone pain and hepatosplenomegaly. A trephine biopsy and aspirate show the following finding. Which of the following is the most likely enzyme deficient in this condition?



- (1) Hexosaminidase
- (2) Glucocerebrosidase
- (3) Sphingomyelinase
- (4) Alpha 1,4-glucosidase

Correct Answer: (2) Glucocerebrosidase

Solution:

The clinical presentation described, involving bone pain and hepatosplenomegaly, along with a characteristic biopsy finding, is suggestive of Gaucher's disease. This is a lipid storage disorder caused by a deficiency in the enzyme glucocerebrosidase, leading to the accumulation of glucocerebroside in macrophages. These macrophages, known as Gaucher cells, are visible in the biopsy, and their buildup causes the symptoms seen in the patient, including bone pain, hepatosplenomegaly, and an increased risk of fractures.

Quick Tip

In lipid storage diseases, the key symptoms often include hepatosplenomegaly and bone pain. Identifying the correct enzyme deficiency is crucial for diagnosis and treatment.

171. The method of autopsy carried out en masse to remove from tongue to prostate is

- (1) Virchow technique
- (2) Rokitansky technique

- (3) Ghon technique
- (4) Letulle technique

Correct Answer: (4) Letulle technique

Solution:

The Letulle technique is a method of autopsy where the body is dissected from head to toe and the organs are removed en masse in a sequence starting from the tongue to the prostate. It is a complete removal of organs that are typically carried out in cases requiring extensive investigation, especially in mass fatality situations or where the entire autopsy needs to be documented in a uniform manner.

Explanation of other options:

- Virchow technique: This method of autopsy focuses on the examination of the body by examining the organs one by one, with emphasis on the heart and the lungs.
- Rokitsansky technique: This involves a complete autopsy where all organs are removed at once, typically from the chest cavity, and the body is not opened completely at the beginning. It is commonly used in routine post-mortem procedures.
- Ghon technique: This is not typically used for routine autopsies. It focuses on the study of diseases, particularly tuberculosis, based on its specific effects on organs.

Quick Tip

The Letulle technique is used when an autopsy requires the removal of organs en masse from the head to the prostate for detailed examination in a structured manner.

172. A 42-year-old HIV-positive patient died, and his body was brought for post-mortem. The method of autopsy to be done is

- (1) Ghon technique
- (2) Letulle technique
- (3) Virchow technique
- (4) Rokitsansky technique

Correct Answer: (4) Rokitsansky technique

Solution:

The Rokitansky technique is the method of autopsy most commonly used for HIV-positive patients. In this method, the organs are removed intact in one block, and the body is not opened in the traditional manner. This method helps in minimizing exposure to potentially infectious materials such as blood or body fluids, which is particularly important in HIV-positive patients to avoid contamination during post-mortem examination.

Explanation of other options:

- Ghon technique: This technique is mainly used to study tuberculosis-related changes and does not apply to routine autopsies like the one described for an HIV-positive patient.
- Letulle technique: This technique involves en masse removal of organs from head to toe and is not routinely used for HIV-positive post-mortems, where Rokitansky is preferred.
- Virchow technique: This is typically a more traditional method focusing on individual organ examination and is less commonly used in HIV-positive cases, where other methods are considered safer.

Quick Tip

For HIV-positive post-mortem examinations, the Rokitansky technique minimizes exposure to potentially infectious materials by removing the organs intact in one block, reducing the risk of contamination.

172. A 42-year-old HIV-positive patient died, and his body was brought for post-mortem. The method of autopsy to be done is

- (1) Ghon technique
- (2) Letulle technique
- (3) Virchow technique
- (4) Rokitansky technique

Correct answer: (4) Rokitansky technique

Solution:

The Rokitansky technique is the most commonly used method for post-mortem examination,

especially in cases where there is a concern for minimizing contamination, such as with HIV-positive patients. In this technique, the body is opened by making a single incision, and all the internal organs are removed as a single block. This method helps reduce exposure to potentially infectious materials, making it ideal for HIV-positive cases.

Explanation of other options:

- Ghon technique: This method is used primarily for tuberculosis-related autopsies and is not applicable to HIV-positive patients.
- Letulle technique: Involves removing the organs en masse from head to toe but is not the first choice for HIV-positive post-mortem examinations.
- Virchow technique: This involves a detailed dissection and examination of individual organs, typically not used in HIV-positive cases due to the potential for contamination.

Quick Tip

In HIV-positive post-mortem examinations, the Rokitansky technique minimizes exposure to infectious materials by removing all organs in a single block, which is safer for both the examiner and the environment.

173. A patient presented with a high fever, altered sensorium, headache, neck rigidity, and seizures. He was diagnosed with HSV encephalitis. Which of the following tests can be used to confirm the diagnosis?

- (1) IgM in CSF
- (2) Tzanck smear of CSF
- (3) CSF PCR for viral DNA
- (4) CSF culture on chick embryo lines

Correct Answer: (3) CSF PCR for viral DNA

Solution :

The most sensitive and specific test to confirm HSV encephalitis is CSF PCR for viral DNA. This test detects the presence of the viral DNA in the cerebrospinal fluid (CSF) and provides a definitive diagnosis of HSV encephalitis. The PCR technique is highly accurate and can

detect even small amounts of viral DNA in the CSF.

Quick Tip

For HSV encephalitis, the best confirmatory test is CSF PCR for viral DNA, which offers high sensitivity and specificity for diagnosing the infection.

174. In a patient presented with a fever and a positive filarial antigen test, what is the next appropriate method of management?

- (1) Bone marrow biopsy
- (2) DEC provocation test
- (3) Detection of microfilariae in the blood smear
- (4) Ultrasound of the scrotum

Correct Answer: (3) Detection of microfilariae in the blood smear

Solution:

The most appropriate next step in the management of a patient with a positive filarial antigen test and symptoms such as fever is to detect microfilariae in the blood smear. This is the gold standard for diagnosing filarial infections, particularly in cases of *Wuchereria bancrofti* or *Brugia malayi*, which cause lymphatic filariasis. The presence of microfilariae in the blood smear confirms the diagnosis and allows for further management with appropriate anti-filarial medications.

Explanation of other options:

- Bone marrow biopsy: This is not typically required for diagnosing filarial infections and is more useful in cases of hematologic malignancies or unexplained cytopenias.
- DEC provocation test: This test is used to detect microfilariae in patients with chronic filariasis, but it is not as useful as direct blood smear examination.
- Ultrasound of the scrotum: While ultrasound can be useful in evaluating complications such as hydrocele or testicular damage from filariasis, it does not diagnose the presence of microfilariae.

Quick Tip

For diagnosing filarial infections, detection of microfilariae in the blood smear remains the most reliable and confirmatory method.

175. A 10-year-old male child came to the casualty with difficulty in walking and pain in the perianal region. On subjecting the specimen from the perianal region to a test, it produces yellow needle-shaped rhombic crystals with picric acid. What is the test done?

- (1) Barberio test
- (2) Florence test
- (3) Teichmann test
- (4) Acid phosphatase test

Correct Answer: (1) Barberio test

Solution:

The Barberio test is a test used to detect the presence of spermine (which is found in seminal fluid) and is characterized by the formation of yellow needle-shaped rhombic crystals when picric acid is added to a specimen. This test is typically used in forensic medicine to confirm the presence of semen in cases of suspected sexual assault, especially in young children. The presence of these yellow crystals in the specimen from the perianal region of the child suggests that the specimen contains spermine, indicating seminal fluid.

Explanation of other options:

- Florence test: This test is used to detect the presence of spermatozoa and is characterized by the formation of characteristic needle-shaped crystals when sodium nitroprusside is used. It is also used in forensic cases of sexual assault.
- Teichmann test: This is used to detect the presence of blood by forming brownish-red crystals in the presence of hydrochloric acid and potassium chloride. It is not used for detecting seminal fluid.
- Acid phosphatase test: This test is used to detect acid phosphatase, an enzyme found in large quantities in seminal fluid, but it does not produce the specific yellow needle-shaped crystals seen in the Barberio test.

Quick Tip

The Barberio test specifically helps in detecting spermine from seminal fluid in suspected sexual assault cases. Remember the characteristic yellow needle-shaped rhombic crystals formed with picric acid.

176. Which of the following refractive errors is associated with the image given below?

- (1) Presbyopia
- (2) Astigmatism
- (3) Hypermetropia
- (4) Myopia

Correct Answer: (2) Astigmatism

Solution:

The image shown depicts a common sign of astigmatism. In astigmatism, the cornea or lens is unevenly curved, causing blurred or distorted vision, especially for objects at a distance. The image illustrates this phenomenon as the light from the car's headlights appears stretched and distorted, which is a typical visual complaint of astigmatism.

Explanation of other options:

- Presbyopia: This condition usually occurring after the age of 40, is a result of the hardening of the lens of the eye making it difficult to focus on nearby objects. The image does not show the typical signs of presbyopia, which would involve difficulty seeing up close, rather than distorted vision.
- Hypermetropia: Also known as farsightedness, this condition occurs when distant objects are seen more clearly than near objects. However, it would not cause the distorted light images shown in the picture.
- Myopia: Myopia, or nearsightedness, causes blurry vision for distant objects, but it does not lead to the kind of distorted visual effect seen in the image, which is more characteristic of astigmatism.

Quick Tip

Astigmatism causes blurred vision due to the irregular shape of the cornea or lens. Symptoms may include distorted or stretched images, especially at night when light sources appear to be streaked.

177. Which of the following is true regarding the Mendelian mode of inheritance?

- (1) Every 10th patient has a Y-linked disorder
- (2) 1/3rd of Mendelian disorders is autosomal recessive
- (3) Every 5th patient has an X-linked recessive disorder
- (4) 2/3rd of Mendelian disorders are autosomal dominant

Correct Answer: (4) 2/3rd of Mendelian disorders are autosomal dominant

Solution:

The statement that 2/3rd of Mendelian disorders are autosomal dominant is correct. Autosomal dominant disorders are typically more common than autosomal recessive disorders because only one copy of the mutated gene is needed to express the disorder. Examples of autosomal dominant disorders include Huntington's disease and Marfan syndrome.

Explanation of other options

- Every 10th patient has a Y-linked disorder: This is incorrect. Y-linked disorders are very rare, and they only affect males, as the Y chromosome is inherited from father to son. Y-linked disorders are much less common than autosomal dominant or recessive disorders.
- 1/3rd of Mendelian disorders is autosomal recessive: This is incorrect. While autosomal recessive disorders (like cystic fibrosis and sickle cell anemia) are common, they do not account for 1/3rd of all Mendelian disorders. They are generally less frequent than autosomal dominant disorders.
- Every 5th patient has an X-linked recessive disorder: This is incorrect. X-linked recessive disorders (such as hemophilia and color blindness) are more common in males but do not affect every 5th patient. They are less frequent than autosomal dominant disorders.

Quick Tip

Autosomal dominant disorders are more common because only one copy of the mutated gene is needed for expression. In contrast, autosomal recessive disorders require two copies of the mutated gene for expression.

178. A patient was brought to casualty with seizures. He had multiple episodes and was taking herbal medicines for the same. He was conscious in between the episodes.

During the episodes, he had arching of his back. What is the likely cause?

- (1) Strychnine
- (2) Ricinus
- (3) Nerium odorum
- (4) Datura

Correct Answer: (1) Strychnine

Solution:

The most likely cause of seizures with arching of the back in this patient is strychnine poisoning. Strychnine is a highly toxic substance that causes spasms and seizures by interfering with the inhibitory neurotransmission in the central nervous system. The arching of the back, also known as opisthotonus, is a characteristic feature of strychnine poisoning, which is often exacerbated during the seizure episodes.

Explanation of other options:

- Ricinus (castor bean): Castor bean contains ricin, a potent toxin, but it causes symptoms like nausea, vomiting, abdominal pain, and organ failure, not seizures with back arching.
- Nerium odorum (oleander): Oleander poisoning can cause cardiac toxicity, leading to arrhythmias, but it is not typically associated with the specific seizure pattern described.
- Datura: Datura contains tropane alkaloids like atropine, causing anticholinergic symptoms such as dry mouth, delirium, and hallucinations, but not the seizures and back arching seen in strychnine poisoning.

Quick Tip

In strychnine poisoning, seizures and opisthotonus (arching of the back) are characteristic. It causes severe muscle spasms due to blocking inhibitory neurotransmission, particularly the action of glycine.

179. An infant is brought with complaints of excessive watering of the eyes and photophobia. The image is given below. What is the likely diagnosis.



- (1) Congenital glaucoma
- (2) Congenital cataract
- (3) Mucopolysaccharidosis
- (4) Ophthalmia neonatorum

Correct Answer: (1) Congenital glaucoma

Solution:

The most likely diagnosis in this infant with complaints of excessive watering of the eyes and photophobia, accompanied by the clinical appearance shown in the image, is Congenital glaucoma.

Congenital glaucoma is a rare condition that presents in infancy and is often characterized by excessive tearing (epiphora) and sensitivity to light (photophobia). The hallmark signs include an enlarged cornea, which may be evident on physical examination, along with other findings like corneal clouding. The condition results from a defect in the drainage system of the eye, leading to an increase in intraocular pressure.

In this case, the description of watering eyes and light sensitivity strongly points to glaucoma, as it affects the drainage of aqueous humor and leads to increased intraocular pressure, causing discomfort.

Explanation of other options:

- Congenital cataract: Although cataracts may cause visual disturbances, they usually do not present with the symptoms of excessive watering or photophobia. Cataracts are more likely to cause a cloudy vision and are often diagnosed in older infants or children.
- Mucopolysaccharidosis: This is a group of metabolic disorders that can present with a variety of systemic symptoms, including coarse facial features, but it is less likely to present with the primary eye symptoms seen here.
- Ophthalmia neonatorum: This condition refers to conjunctivitis in neonates, typically caused by infections like gonococcus or chlamydia. While it can cause eye discharge and irritation, it is less likely to cause photophobia and excessive watering as seen in glaucoma.

Quick Tip

Congenital glaucoma is a medical emergency and requires early diagnosis and treatment. Early intervention with surgery can help in preventing blindness in these infants.

180. A 60-year-old patient complains of decreased distant vision but now he does not use spectacles for near vision. The image of his ocular examination is given below.

What is this type of refractive error called?



- (1) Myopia
- (2) Astigmatism
- (3) Hyperopia

(4) Conjunctival myopia

Correct Answer: (3) Hyperopia

Solution:

The patient presents with decreased distant vision and no longer uses spectacles for near vision. This presentation is indicative of hyperopia (farsightedness). In hyperopia, the image is focused behind the retina due to either a short eyeball or a flat cornea, causing difficulty in seeing nearby objects clearly, but distant objects may be clearer. The patient's description of not needing spectacles for near vision may also imply that they have adapted to this condition by relying on accommodation to focus on near objects.

This refractive error is typically corrected with plus lenses (convex lenses) that help converge light rays before they enter the eye, enabling proper focusing on the retina.

Explanation of other options:

- Myopia (Option 1): This condition involves difficulty in seeing distant objects due to light focusing in front of the retina, but the patient would typically have no difficulty seeing near objects.
- Astigmatism (Option 2): This is caused by an irregular corneal shape that leads to blurry or distorted vision at any distance, rather than specifically having problems with distant vision while near vision remains fine.
- Conjunctival myopia (Option 4): This is not a recognized refractive error, and the term likely refers to a confusion with myopia, which is unrelated to the patient's symptoms of being able to see near but not distant objects clearly.

Quick Tip

In hyperopia, distant vision may be clear, but near vision becomes difficult without correction. It is often corrected with convex lenses that help focus light on the retina.

181. A child is brought to the hospital with respiratory distress and biphasic stridor. The radiograph is shown below. What is the diagnosis?



- (1) Acute epiglottitis
- (2) Acute laryngotracheobronchitis
- (3) Foreign body aspiration
- (4) Laryngomalacia

Correct Answer: (2) Acute laryngotracheobronchitis

Solution:

The most likely diagnosis for this child presenting with respiratory distress and biphasic stridor, along with the provided radiograph, is acute laryngotracheobronchitis, commonly known as croup. This condition is a viral infection affecting the upper airway, leading to inflammation of the larynx, trachea, and bronchi, which results in characteristic symptoms such as a barking cough, stridor, and respiratory distress.

The key feature of biphasic stridor indicates obstruction both during inspiration and expiration, which is typical of croup. The radiograph commonly shows the "steeple sign," which is a narrowing of the subglottic region of the trachea, characteristic of this condition.

Explanation of other options:

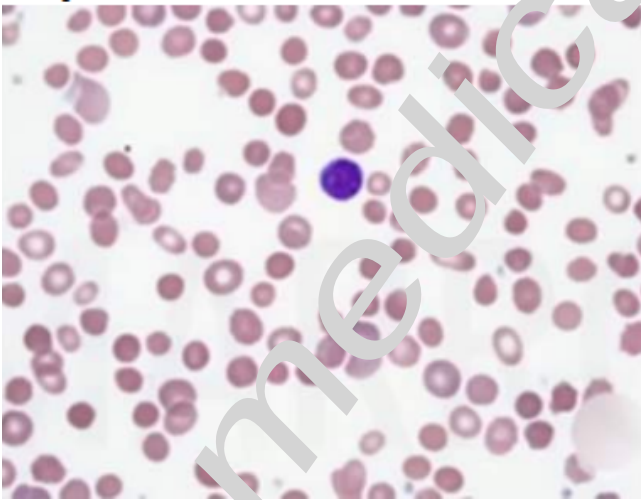
- Acute epiglottitis: This is a severe, life-threatening bacterial infection of the epiglottis that can cause a rapid onset of severe respiratory distress, high fever, and drooling. However, it is usually associated with stridor that is more inspiratory in nature, and the radiograph would typically show a swollen epiglottis, not the typical findings of croup.

- Foreign body aspiration: This can also cause stridor and respiratory distress, but typically presents with a sudden onset of symptoms following the inhalation of an object. The radiograph may show a foreign body in the airway, which is not present in this case.
- Laryngomalacia: This is a congenital condition where the soft, floppy tissue of the larynx collapses inward during inhalation, causing stridor. It is typically present in infants and is characterized by inspiratory stridor, but it is not associated with the acute respiratory distress seen in this case, and the radiograph would not show the typical signs of croup.

Quick Tip

In cases of acute laryngotracheobronchitis (croup), look for the "steeple sign" on the radiograph, which indicates narrowing of the subglottic trachea. Management typically includes steroids and nebulized epinephrine for severe cases.

182. A child presents with intermittent jaundice and splenomegaly. There is a history of similar complaints in the elder brother. Peripheral smear shows the following finding. How will you investigate this condition?



- (1) Osmotic fragility test - Hereditary spherocytosis
- (2) Coombs test - AIHA
- (3) G6PD deficiency - Genetic testing
- (4) Paroxysmal nocturnal hemoglobinuria - Flow cytometry

Correct Answer: (1) Osmotic fragility test - Hereditary spherocytosis

Solution:

The most likely diagnosis for this child is hereditary spherocytosis, given the clinical presentation of intermittent jaundice and splenomegaly, along with a family history of similar complaints. Hereditary spherocytosis is a genetic condition that affects the red blood cells, making them spheroidal in shape, which leads to hemolysis and subsequent splenomegaly. The peripheral smear may show spherocytes (small, round cells without the typical central pallor) as observed in the image.

The osmotic fragility test is a diagnostic tool used to confirm hereditary spherocytosis. It measures the ability of red blood cells to withstand varying concentrations of saline. In hereditary spherocytosis, the red blood cells are more fragile and rupture easily when placed in hypotonic solutions.

Explanation of other options: - Coombs test - AIHA (Autoimmune Hemolytic Anemia): The Coombs test is used to detect antibodies attached to red blood cells in conditions like AIHA, where the immune system attacks red blood cells. However, in hereditary spherocytosis, the pathophysiology is mechanical (spherocytes being destroyed in the spleen), not immune-mediated, making the Coombs test unnecessary here. - G6PD deficiency - Genetic testing: While G6PD deficiency can cause hemolysis, it typically presents with hemolysis following certain triggers (e.g., infections, fava beans, drugs), and the peripheral smear in G6PD deficiency would show bite cells or blister cells, not spherocytes. - Paroxysmal nocturnal hemoglobinuria - Flow cytometry: This condition involves CD55/CD59 deficiency on red blood cells, causing hemolysis. The peripheral smear would show dark-stained red blood cells due to hemoglobinuria, but it is less likely to present with the described features of intermittent jaundice and splenomegaly in this case.

Quick Tip

In hereditary spherocytosis, the osmotic fragility test helps confirm the diagnosis by showing increased fragility of red blood cells in hypotonic solutions. The presence of spherocytes on a peripheral smear is a key diagnostic clue.

18. A 3-month-old baby presents with jaundice and clay-colored stools. Lab

investigation reveals that the baby has conjugated hyperbilirubinemia. The liver biopsy shows periductal proliferation. What is the most likely diagnosis?

- (1) Crigler-Najjar syndrome
- (2) Rotor syndrome
- (3) Dubin-Johnson syndrome
- (4) Biliary atresia

Correct Answer: (4) Biliary atresia

Solution:

The most likely diagnosis for this 3-month-old infant with jaundice, clay-colored stools, conjugated hyperbilirubinemia, and periductal proliferation on liver biopsy is Biliary Atresia. Biliary atresia is a congenital disorder where the bile ducts are absent, blocked, or damaged, leading to obstruction of bile flow. The liver biopsy showing periductal proliferation is characteristic of biliary atresia, which leads to jaundice due to the buildup of conjugated bilirubin.

This condition typically presents within the first 3 months of life and is marked by jaundice that does not resolve with time, dark urine, and pale (clay-colored) stools. Early diagnosis is crucial because untreated biliary atresia can lead to cirrhosis and liver failure.

Explanation of other options:

- Crigler-Najjar syndrome (Option 1): This is a genetic disorder characterized by unconjugated hyperbilirubinemia, not conjugated. It usually presents with jaundice in the neonatal period, but it does not involve the liver changes seen in biliary atresia.
- Rotor syndrome (Option 2): This is a condition with conjugated hyperbilirubinemia but usually does not show the periductal proliferation seen in biliary atresia. It is often associated with mild liver dysfunction and is much less severe than biliary atresia.
- Dubin-Johnson syndrome (Option 3): This is a genetic disorder with conjugated hyperbilirubinemia but lacks the severe symptoms such as clay-colored stools and periductal proliferation that are indicative of biliary atresia.

Quick Tip

Biliary atresia is a leading cause of jaundice in infants and requires prompt diagnosis and surgical intervention (e.g., Kasai procedure) to prevent liver failure.

184. Section 314 IPC deals with:

- (1) Causing miscarriage with the consent of the mother
- (2) Causing miscarriage without the consent of the mother
- (3) Death of the mother by act done with intent to cause miscarriage
- (4) Causing the death of the quick unborn child by an act amounting to culpable homicide

Correct Answer: (3) Death of the mother by act done with intent to cause miscarriage

Solution:

Section 314 of the Indian Penal Code (IPC) specifically deals with the act of causing the death of the mother by an act done with the intent to cause miscarriage. This section is relevant in cases where a miscarriage is induced either through legal or illegal means, but the outcome results in the death of the mother.

It is important to note that the section defines culpability in cases of death during the process of miscarriage, and the act must be done intentionally with the knowledge that it can cause the mother's death.

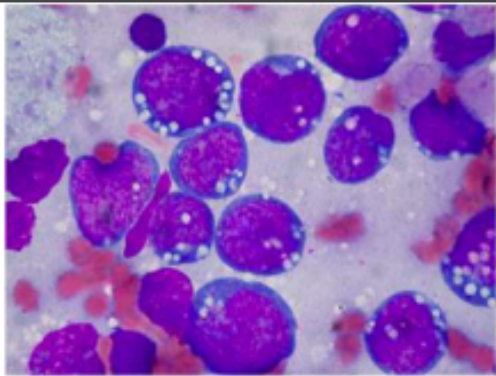
Explanation of other options:

- Causing miscarriage with the consent of the mother (Option 1): This is not covered under Section 314. The section focuses on causing death during miscarriage, not merely the act of miscarriage with consent.
- Causing miscarriage without the consent of the mother (Option 2): This would be covered under different sections of the IPC, such as Section 312, which deals with causing miscarriage without consent.
- Causing the death of the quick unborn child by an act amounting to culpable homicide (Option 4): This pertains to other sections like Section 302 for culpable homicide, but Section 314 specifically addresses the death of the mother during an induced miscarriage.

Quick Tip

Section 314 IPC is specifically concerned with the death of a mother during an act of causing a miscarriage. It highlights the severity of actions leading to maternal death in such cases.

185. An African child is found to have a mass in the jaw. A biopsy of the mass was done, and it appears as shown in the image below. The child also had a translocation of 8;14. What is the probable diagnosis?



- (1) Acute myeloid leukemia
- (2) Follicular lymphoma
- (3) Multiple myeloma
- (4) Burkitt lymphoma

Correct Answer: (4) Burkitt lymphoma

Solution:

The most probable diagnosis for the mass in the jaw, along with the translocation of chromosomes 8;14, is Burkitt lymphoma. This is a highly aggressive form of non-Hodgkin lymphoma. It is common in children, especially in African regions, where it often presents with a tumor in the jaw or abdomen. The characteristic chromosomal translocation, t(8;14), involves the c-myc gene on chromosome 8, which plays a key role in regulating cell division. The translocation leads to overexpression of c-myc, driving rapid cell proliferation.

Burkitt lymphoma typically presents as a rapidly growing mass, and the child's history of a translocation 8;14 confirms the diagnosis. The biopsy, showing high mitotic activity, is

consistent with Burkitt lymphoma's hallmark of rapid cell turnover.

Explanation of other options:

- Acute myeloid leukemia (AML): AML is a hematologic malignancy primarily involving the bone marrow and blood, causing symptoms like anemia, bleeding, and infection. It typically does not present with a mass in the jaw or the characteristic translocation t(8;14).
- Follicular lymphoma: This is a form of non-Hodgkin lymphoma, but it is not typically associated with the rapid growth seen in Burkitt lymphoma. It also does not have the characteristic t(8;14) translocation.
- Multiple myeloma: This is a plasma cell disorder that often presents with bone pain, fractures, and elevated calcium levels. It is unlikely to cause a jaw mass and is not associated with the translocation 8;14.

Quick Tip

Burkitt lymphoma is known for its characteristic t(8;14) translocation, which leads to overexpression of the c-myc gene. It is an aggressive lymphoma commonly seen in children, especially in African countries, often involving the jaw or abdomen.

186. An infant presents with hepatosplenomegaly and thrombocytopenia.

Neuroimaging with CT shows periventricular calcifications. What is the most likely diagnosis?

- (1) Congenital rubella syndrome
- (2) Congenital herpes simplex virus infection
- (3) Congenital toxoplasmosis
- (4) Congenital cytomegalovirus infection

Correct Answer: (4) Congenital cytomegalovirus infection

Solution

The most likely diagnosis for this infant presenting with hepatosplenomegaly, thrombocytopenia, and periventricular calcifications on CT is congenital cytomegalovirus (CMV) infection. Congenital CMV infection is the most common cause of congenital viral

infection and is a leading cause of sensorineural hearing loss, microcephaly, and neurodevelopmental delay. Periventricular calcifications are a hallmark of congenital CMV infection seen on neuroimaging.

Explanation of other options:

- Congenital rubella syndrome: This can present with hepatosplenomegaly, thrombocytopenia, and hearing loss. However, rubella usually causes cataracts, heart defects, and deafness, not periventricular calcifications.
- Congenital herpes simplex virus infection: This condition can present with skin lesions, encephalitis, and other systemic symptoms. However, it is not typically associated with periventricular calcifications on imaging.
- Congenital toxoplasmosis: While this condition can cause hepatosplenomegaly and neuroimaging findings, it is more often associated with intracranial calcifications in a more diffuse distribution rather than the periventricular calcifications characteristic of CMV.

Quick Tip

In congenital CMV infection, the presence of periventricular calcifications on neuroimaging, along with hepatosplenomegaly and thrombocytopenia, is a key diagnostic clue. Early detection and intervention are important to reduce the impact of hearing loss and developmental delay.

187. The temperature of the body of a deceased person is found to be 39 degrees Celsius.

Which of the following is the most probable reason?

- (1) Cyanide poisoning
- (2) Septicemia
- (3) Corrosive poisoning
- (4) Intra-abdominal hemorrhage

Correct answer: (2) Septicemia

Solution:

The most probable cause of the body temperature being 39°C in a deceased person is

septicemia. In cases of sepsis, especially with a bacterial infection, the body often experiences fever and hyperthermia as part of the inflammatory response. After death, rigor mortis and postmortem hypostasis may contribute to temperature elevation, especially in cases of systemic infection.

Septicemia can lead to disseminated intravascular coagulation (DIC) and multisystem organ failure, which can also explain the elevated temperature at the time of death.

Explanation of other options:

- Cyanide poisoning: Cyanide poisoning typically causes rapid onset of death with symptoms like convulsions, cardiac arrest, and hypoxia. It does not typically cause sustained fever after death.
- Corrosive poisoning: Corrosive substances cause severe burns to mucosal membranes and tissues, often leading to respiratory failure, but they do not typically cause elevated body temperature after death.
- Intra-abdominal hemorrhage: While intra-abdominal hemorrhage may cause a shock-like state during life, it does not directly cause sustained hyperthermia or fever postmortem.

Quick Tip

In postmortem cases, septicemia is a common cause of elevated body temperature. It results from the body's inflammatory response to infection, which can persist even after death.

188. A child presented to the hospital with cola-colored urine, hypertension, and puffiness of eyes. Laboratory investigations were done, and creatinine was 2.5 mg/dL. Treatment was started, and despite treatment, the patient did not improve for the next 3 weeks. The creatinine value increased to 4.5 mg/dl. Which among the following electron microscopic findings will be seen in this patient?

- (1) Subendothelial deposits
- (2) Subepithelial deposits
- (3) Crescent formation
- (4) Mesangial deposits

Correct Answer: (2) Subepithelial deposits

Solution:

This child with cola-colored urine, hypertension, and puffiness of eyes is likely suffering from poststreptococcal glomerulonephritis (PSGN), which is a common cause of nephritic syndrome in children. The characteristic finding in PSGN is subepithelial deposits of immune complexes seen on electron microscopy. These deposits occur in the glomerular basement membrane due to immune complexes formed by antibodies to streptococcal antigens.

Explanation of other options:

- Subendothelial deposits: These are typically seen in lupus nephritis or type 1 membranoproliferative glomerulonephritis (MPGN), but not in PSGN.
- Crescent formation: Crescent formation is seen in rapidly progressive glomerulonephritis (RPGN), particularly in Goodpasture syndrome or vasculitis, but it is not a typical finding in PSGN.
- Mesangial deposits: Mesangial deposits are often seen in IgA nephropathy and membranoproliferative glomerulonephritis (MPGN), but they are not typical in PSGN.

Quick Tip

In poststreptococcal glomerulonephritis (PSGN), look for subepithelial deposits on electron microscopy. It typically presents with cola-colored urine, hypertension, and edema. Treatment is supportive, and most children recover without chronic kidney disease.

189. A 35-year-old homeless man presented with a 1-month history of fever, cough, and weight loss. Both sputum smears turned out to be negative, but the chest x-ray ordered was suggestive of tuberculosis. According to the recent NTEP guidelines, which is the next best line of management?

- (1) Repeat sputum smears
- (2) Ask for CBNAAT
- (3) Ask for line probe assay

(4) Wait until TB culture results to start ATT

Correct Answer: (2) Ask for CBNAAT

Solution:

The patient presents with fever, cough, and weight loss, and the chest X-ray is suggestive of tuberculosis (TB). However, both sputum smears were negative, which means that there is a possibility of TB with low bacillary load or an extrapulmonary form of TB. According to the National Tuberculosis Elimination Program (NTEP) guidelines, CBNAAT (Cartridge-Based Nucleic Acid Amplification Test) is the next best diagnostic test. This test is highly sensitive and can detect *Mycobacterium tuberculosis* DNA and rifampicin resistance within hours, even if sputum smear microscopy is negative.

Explanation of other options:

- Repeat sputum smears: Repeating sputum smears is not the most effective approach, especially if the initial smears were negative and the X-ray is suggestive of TB. CBNAAT provides faster and more accurate results.
- Line probe assay: While line probe assays can be useful for detecting drug resistance, they are typically performed after confirming the presence of TB using other methods such as CBNAAT.
- Wait until TB culture results to start ATT: Waiting for culture results is not recommended, as cultures take several weeks to grow. Starting anti-tubercular treatment (ATT) is essential as soon as TB is clinically suspected, and CBNAAT helps in confirming the diagnosis.

Quick Tip

For suspected tuberculosis (TB) with negative sputum smears, CBNAAT is the test of choice. It provides rapid confirmation of *Mycobacterium tuberculosis* and can detect rifampicin resistance, guiding treatment decisions.

190. A farmer sleeping in the field, and he felt a sting on his leg. He saw something moving away quickly. He then got drowsy and was taken to the hospital. He developed pain around the site and continued to bleed profusely from the wound site. The wound

became red with blisters. Which of the following is the most likely cause?

- (1) Viper
- (2) Cobra
- (3) Wasp bite
- (4) Scorpion

Correct Answer: (1) Viper

Solution:

The symptoms described — pain around the sting site, drowsiness, profuse bleeding, and the presence of redness with blisters — suggest a venomous snake bite, most likely from a viper. Viper bites commonly lead to local tissue necrosis, hemorrhage and blister formation at the site of the bite due to the potent hemotoxin in the venom. The patient's symptoms of drowsiness are also consistent with systemic effects of viper venom, which can include hypotension and shock.

Explanation of other options:

- Cobra: Cobra venom is primarily neurotoxic, leading to respiratory failure and paralysis, rather than the bleeding and blistering observed here.
- Wasp bite: Wasp stings typically cause localized pain, swelling, and sometimes anaphylaxis, but they do not typically cause the severe bleeding or blister formation described.
- Scorpion: Scorpion stings can cause local pain, swelling, and in severe cases neurologic symptoms or shock, but they are not typically associated with bleeding or blistering at the site of the sting.

Quick Tip

In case of a viper bite, look for local hemorrhage, blistering, and necrosis at the site of the bite, along with systemic symptoms like drowsiness and hypotension. Immediate medical treatment with antivenom is crucial.

10. A patient was transfused 4 units of blood 2 hours ago, and now she complains of

chest discomfort. X-ray shows bilateral fissural thickening. Which of the following is the most probable cause?

- (1) ABO incompatibility reactions
- (2) Fluid overload
- (3) Hypocalcemia
- (4) Graft-versus-host disease

Correct Answer: (2) Fluid overload

Solution:

The most likely cause of chest discomfort and bilateral fissural thickening on the X-ray after a blood transfusion is fluid overload. When large volumes of blood are transfused rapidly (in this case, 4 units of blood in 2 hours), there is an increased volume of fluid in the circulatory system, which can lead to pulmonary edema. This condition is associated with bilateral fissural thickening on chest X-ray, and symptoms such as chest discomfort and shortness of breath are commonly seen.

Explanation of other options:

- ABO incompatibility reactions: ABO incompatibility typically presents with hemolytic reactions, leading to fever, hemoglobinuria, and renal failure. It is not typically associated with pulmonary findings like bilateral fissural thickening.
- Hypocalcemia: Hypocalcemia can occur during massive blood transfusions due to citrate toxicity, but it is more likely to present with tetany, arrhythmias, and neuromuscular symptoms rather than pulmonary findings.
- Graft-versus-host disease: Graft-versus-host disease (GVHD) occurs in immunocompromised individuals when donor lymphocytes attack the recipient's tissues. It is associated with rash, diarrhea, and liver dysfunction, not pulmonary findings like bilateral fissural thickening.

Quick Tip

In cases of fluid overload after a blood transfusion, monitor for pulmonary edema, which can cause chest discomfort and show bilateral fissural thickening on X-ray. Slow transfusion rates and careful monitoring of fluid balance are important in preventing this complication.

192. Which of the following is the sensitive indicator to assess the availability, utilization, and effectiveness of healthcare in a community?

- (1) Infant mortality rate
- (2) Maternal mortality rate
- (3) Immunization coverage
- (4) Disability-adjusted life years

Correct Answer: (1) Infant mortality rate

Solution:

The most sensitive indicator to assess the availability, utilization, and effectiveness of healthcare in a community is the infant mortality rate (IMR). IMR is defined as the number of deaths of infants under the age of 1 year per 1,000 live births in a given year. It reflects the overall health of a community and the effectiveness of prenatal and postnatal care services, as well as access to healthcare facilities. A high IMR indicates poor healthcare services, inadequate nutrition, and sanitation, and it is a key indicator for health system performance.

Explanation of other options:

- Maternal mortality rate: While maternal mortality is an important indicator of healthcare, it specifically reflects the risk of death related to pregnancy and childbirth and does not provide a comprehensive view of overall healthcare availability and effectiveness.
- Immunization coverage: Immunization coverage is important for understanding the effectiveness of specific healthcare interventions, but it does not provide a broad measure of the overall healthcare system's functioning.
- Disability-adjusted life years (DALY): DALY is a composite measure that accounts for both years of life lost due to premature death and years lived with disability. While it is a

useful measure for disease burden, it is not the most direct indicator of healthcare availability and effectiveness.

Quick Tip

The infant mortality rate (IMR) is the most sensitive indicator to assess the overall effectiveness of healthcare services in a community. It is influenced by factors like maternal health, sanitation, nutrition, and access to medical care.

193. A 48-year-old man presents with complaints of facial puffiness, bloody urine, and hypertension. He gives a history of infection with hepatitis B. Urine examination reveals microscopic hematuria. The histopathological image of the kidney biopsy shows a spike and dome pattern. What is the diagnosis of this condition?

- (1) Minimal change disease
- (2) Membranous nephropathy
- (3) FSGS
- (4) PSGN-associated disease

Correct Answer: (2) Membranous nephropathy

Solution:

The most likely diagnosis for this 48-year-old male with facial puffiness, bloody urine, hypertension, and a history of hepatitis B is membranous nephropathy. The spike and dome pattern seen on electron microscopy of the kidney biopsy is characteristic of membranous nephropathy, a common cause of nephrotic syndrome in adults. The pattern is caused by subepithelial deposits of immune complexes in the glomerular basement membrane. In this case, the association with hepatitis B infection increases the likelihood of secondary membranous nephropathy, as hepatitis B is one of the known causes of this condition.

Explanation of other options:

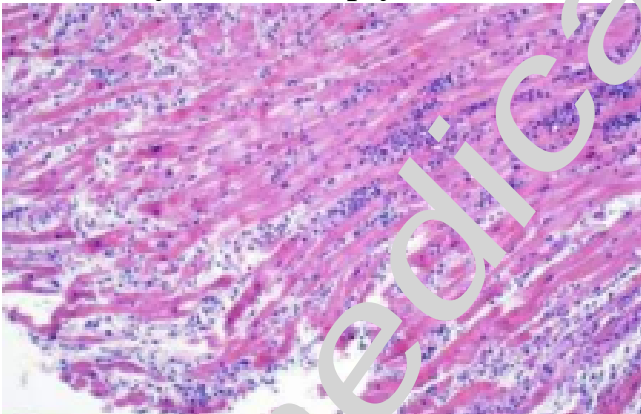
- Minimal change disease: This is the most common cause of nephrotic syndrome in children, but it does not cause the spike and dome pattern seen on electron microscopy. Instead, it is characterized by foot process fusion seen under electron microscopy.

- FSGS (Focal Segmental Glomerulosclerosis): FSGS is another cause of nephrotic syndrome, but it typically presents with segmental glomerular scarring and does not show the characteristic spike and dome pattern.
- PSGN-associated disease (Post-streptococcal glomerulonephritis): PSGN presents with hematuria, hypertension, and edema, but it does not show the spike and dome pattern seen in membranous nephropathy. PSGN is more often associated with immune complex deposition in the mesangium.

Quick Tip

Membranous nephropathy is often associated with hepatitis B and presents with nephrotic syndrome. The characteristic spike and dome pattern seen on electron microscopy is a key diagnostic feature.

194. A 5-year-old child is brought with fever, fatigue, and left ventricular dysfunction. An endomyocardial biopsy is shown below. What is the probable diagnosis?



- (1) Acute rheumatic fever
- (2) Chagas disease
- (3) Pyogenic myocarditis
- (4) Lymphocytic myocarditis

Correct answer: (4) Lymphocytic myocarditis

Solution:

The most likely diagnosis in this case is Lymphocytic myocarditis. Myocarditis is the

inflammation of the heart muscle and can be caused by a variety of pathogens, but the biopsy revealing lymphocytic infiltration is characteristic of viral infections, particularly in children. In this case, the clinical presentation of fever, fatigue, and left ventricular dysfunction points towards a viral etiology, with lymphocytic myocarditis being the most probable cause. Lymphocytic myocarditis is often associated with viral infections like Coxsackievirus, adenovirus, and enterovirus, which commonly affect children. The presence of fever and heart dysfunction further supports this diagnosis.

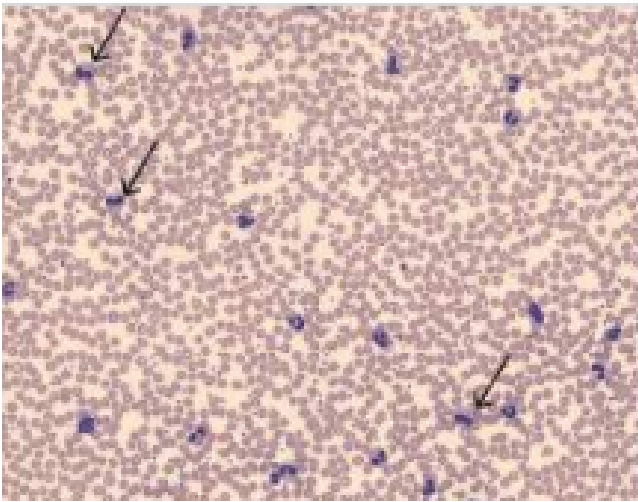
Explanation of other options:

- Acute rheumatic fever: Rheumatic fever typically follows a group A streptococcal throat infection, and while it can cause myocarditis (rheumatic heart disease), it is usually associated with Aschoff bodies (granulomatous lesions) rather than lymphocytic infiltration.
- Chagas disease: Caused by *Trypanosoma cruzi*, Chagas disease is common in endemic areas of Latin America and leads to chronic myocarditis, often presenting with more systemic manifestations like megaesophagus and megacolon. The biopsy would typically show amastigotes inside cells, which is not consistent with the presented findings.
- Pyogenic myocarditis: This type of myocarditis is caused by bacterial infections and is typically associated with neutrophilic infiltration, not lymphocytes. Pyogenic myocarditis is less common in children and would likely present with more severe symptoms like sepsis or abscess formation.

Quick Tip

Lymphocytic myocarditis in children is commonly caused by viral infections, and the biopsy typically shows lymphocytic infiltrates. Early diagnosis and supportive management are key to recovery.

196. An elderly male, known smoker, presented with chronic cough, significant weight loss, and fatigue. Serum calcium level is raised. A lung biopsy was done, and it showed large atypical cells with hyperchromasia. What is the probable diagnosis?



- (1) Large cell neuroendocrine tumor
- (2) Small cell carcinoma
- (3) Adenocarcinoma
- (4) Squamous cell carcinoma

Correct Answer: (4) Squamous cell carcinoma

Solution:

The most likely diagnosis in this case is Squamous cell carcinoma of the lung. The patient is a known smoker, which significantly increases the risk for squamous cell carcinoma. This type of cancer is commonly associated with smokers and often presents with symptoms like chronic cough, weight loss, and fatigue, which are seen in this case. Furthermore, the elevated serum calcium level is a key feature of paraneoplastic syndrome, which is often seen in squamous cell carcinoma of the lung due to the secretion of parathyroid hormone-related protein (PTHrP), leading to hypercalcemia.

The biopsy showing large atypical cells with hyperchromasia is also consistent with squamous cell carcinoma, which often presents with hyperchromatic, large cells that are irregular in shape.

Explanation of other options:

- Large cell neuroendocrine tumor: While this tumor can also present with similar symptoms, it is less likely to cause hypercalcemia. The tumor cells in large cell neuroendocrine carcinoma tend to be less pleomorphic and do not typically show the hyperchromasia seen in squamous cell carcinoma.

- Small cell carcinoma: Small cell lung cancer typically presents with rapid weight loss and often has a worse prognosis, but it does not usually cause hypercalcemia in the same way as squamous cell carcinoma. Moreover, small cell carcinoma is composed of smaller, round cells rather than large atypical cells.

- Adenocarcinoma: While adenocarcinoma is the most common type of lung cancer in non-smokers, this patient's smoking history and the biopsy findings make squamous cell carcinoma more likely.

Additionally, adenocarcinoma typically has a different histological appearance, showing glandular formation rather than the large, atypical cells with hyperchromasia.

Quick Tip

In lung cancer, squamous cell carcinoma is most commonly associated with smokers and can present with hypercalcemia as a paraneoplastic phenomenon. It often shows large, hyperchromatic cells on biopsy.

197. A 25-year-old male presented with low hemoglobin, platelet count of 25,000/mL, gum bleeding, and raised PT/aPTT. The image of his peripheral smear is given below.

What is the likely diagnosis?

- (1) AML with t(8;21)
- (2) AML with inv(16)
- (3) AML with t(15;17)
- (4) AML with t(11;22)

Correct Answer: (3) AML with t(15;17)

Solution:

The clinical picture of a 25-year-old male presenting with low hemoglobin, platelet count of 25,000/mL, gum bleeding, and raised PT/aPTT strongly suggests a diagnosis of acute myeloid leukemia (AML). The peripheral smear image provided is indicative of promyelocytes, which are characteristic of AML with t(15;17). This is the hallmark chromosomal translocation seen in acute promyelocytic leukemia (APL), a subtype of AML.

APL is known to present with severe coagulopathy, as seen in this patient with gum bleeding and abnormal clotting studies (raised PT aPTT). The specific t(15;17) translocation leads to the formation of the PML-RARA fusion gene, which disrupts normal myeloid differentiation and promotes the accumulation of abnormal promyelocytes. This results in the typical presentation of pancytopenia and bleeding diathesis.

Explanation of other options:

- AML with t(8;21): This is another form of AML but is associated with a different set of symptoms and typically does not present with severe coagulopathy.
- AML with inv(16): This translocation is typically seen in patients with monocytic AML and may not cause the same bleeding symptoms as APL.
- AML with t(11;22): This translocation is associated with other forms of leukemia but does not fit the clinical and laboratory profile described in this case.

Quick Tip

Acute promyelocytic leukemia (APL) with the t(15;17) translocation presents with severe coagulopathy and characteristic promyelocytes in the peripheral smear. It requires urgent treatment with all-trans retinoic acid (ATRA) to induce remission.

198. A young patient presents with a large retroperitoneal hemorrhage. He also gives a frequent history of intermittent swelling of knees on strenuous exercise. There is no history of any mucosal bleeding. Which among the following clotting factors is responsible for the condition mentioned above?

- (1) Factors VIII and IX
- (2) Factors XI and XII
- (3) Von Willebrand factor
- (4) Lupus anticoagulant

Correct answer: (1) Factors VIII and IX

Solution:

The most likely cause of the patient's condition is a deficiency in Factors VIII and IX, which

are responsible for Hemophilia A and Hemophilia B, respectively. Both conditions are X-linked genetic disorders that result in bleeding tendencies, with recurrent hemarthrosis (swelling of joints) and spontaneous internal bleeding such as retroperitoneal hemorrhages. The lack of mucosal bleeding further points towards these conditions, as they typically involve deeper bleeding into muscles and joints rather than superficial mucosal bleeds. In this patient, the retroperitoneal hemorrhage and intermittent knee swelling on strenuous exercise are suggestive of hemophilia, as these conditions cause excessive bleeding after minor trauma or exercise. The absence of mucosal bleeding helps differentiate hemophilia from other bleeding disorders such as Von Willebrand disease.

Explanation of other options:

- Factors XI and XII: These factors are involved in bleeding disorders, but the presentation of retroperitoneal hemorrhage and joint bleeding is more characteristic of Hemophilia A or B rather than Factor XI or XII deficiencies.
- Von Willebrand factor: Von Willebrand disease typically presents with mucosal bleeding (e.g., epistaxis, menorrhagia), and this patient's lack of mucosal bleeding makes Von Willebrand disease less likely.
- Lupus anticoagulant: This condition is associated with an increased risk of thrombosis (not bleeding) and would not typically present with hemorrhage or joint swelling.

Quick Tip

Hemophilia A (Factor VIII deficiency) and Hemophilia B (Factor IX deficiency) commonly present with joint bleeds and retroperitoneal hemorrhages. Diagnosis is confirmed by measuring factor levels.

199. A chronic smoker who worked in a cement factory for 20 years developed mesothelioma. The association is likely to be due to

- (1) Silicosis
- (2) Asbestosis
- (3) Coal workers' pneumoconiosis
- (4) Bagassosis

Correct Answer: (2) Asbestosis

Solution:

The most likely diagnosis is Asbestosis, which is strongly associated with the development of mesothelioma. Asbestosis is caused by prolonged inhalation of asbestos fibers, which can occur in workers exposed to asbestos, including those working in cement factories. This exposure increases the risk of both pulmonary fibrosis and mesothelioma, a malignant tumor of the pleura that is strongly linked to asbestos exposure.

Mesothelioma is highly specific to asbestos exposure, and it can occur even after years of exposure, as seen in this patient's 20-year work history in the cement factory. The patient's smoking history may further compound the risk, although smoking itself is not directly related to mesothelioma.

Explanation of other options:

- Silicosis: This is caused by the inhalation of silica dust, often seen in miners or workers involved in stone cutting. While it can cause pulmonary fibrosis, it is not associated with mesothelioma.
- Coal workers' pneumoconiosis: This condition is caused by inhaling coal dust and is associated with pulmonary fibrosis but not with mesothelioma.
- Bagassosis: This is caused by inhaling dust from sugarcane and is also associated with lung disease but does not cause mesothelioma.

Quick Tip

Asbestos exposure is strongly linked to mesothelioma and asbestosis. Workers in cement factories, construction, and shipyards are at higher risk for asbestos-related diseases.

200. The average daily dietary nutrient intake level sufficient to meet the nutrient requirements of nearly all (97-98%) healthy individuals in a particular life stage and gender group is known as?

- (1) Adequate intake
- (2) Dietary goal

- (3) Estimated average requirement
- (4) Recommended dietary allowance

Correct Answer: (4) Recommended dietary allowance

Solution:

The correct answer is Recommended Dietary Allowance (RDA). The RDA represents the average daily dietary nutrient intake level sufficient to meet the nutrient requirements of nearly all (97-98%) healthy individuals in a specific life stage and gender group. It is established by nutrition experts to ensure that individuals in a population have sufficient intake of essential nutrients to maintain good health and prevent deficiencies.

The RDA is set based on scientific research and recommendations from health organizations, and it is used as a guideline for meal planning and nutritional labeling.

Explanation of other options:

- Adequate intake: This is a recommended intake level based on observed or experimentally determined estimates of nutrient intake by a group of healthy people. It is used when an RDA cannot be established but does not represent the intake for the majority of individuals.
- Dietary goal: This term refers to long-term goals set for nutrient intake to promote health, rather than specific daily intake recommendations.
- Estimated average requirement: This represents the average daily nutrient intake level estimated to meet the requirements of half the healthy individuals in a particular life stage and gender group. It is lower than the RDA and does not cover 97-98% of the population.

Quick Tip

The Recommended Dietary Allowance (RDA) is the key guideline for ensuring nutrient adequacy in most individuals. It is based on scientific evidence and is aimed at preventing deficiencies in the general population.