

NEET SS 2024 NEET Diploma Family Medicine Paper2 Question Paper with Solutions

Time Allowed :3 Hours	Maximum Marks :100	Total Questions :10
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General Instructions

Read the following instructions very carefully and strictly follow them:

1. The test is of 3 hours duration.
2. The question paper consists of 10 questions. The maximum marks are 100.
3. Each Question is of 10 marks.

1. A 45-year-old man is coming to the OPD with complaints of swelling in the right leg.

(a) What are the clinical features and risk factors for deep vein thrombosis (DVT)?

Solution:

Step 1: Understanding Deep Vein Thrombosis (DVT).

DVT is a condition where a blood clot forms in one of the deep veins of the body, most commonly in the legs. The blood clot can cause serious complications, including pulmonary embolism, if it dislodges and travels to the lungs.

Step 2: Clinical Features of DVT.

The primary clinical features of DVT include:

- **Swelling:** The most common symptom, usually affecting one leg. The swelling often develops gradually.
- **Warmth:** The skin over the affected area may feel warm to the touch.
- **Tenderness:** The affected leg may be painful or tender, particularly when touched or when walking.
- **Redness:** In some cases, the skin may appear red or have a bluish tint due to poor circulation.

Step 3: Risk Factors for DVT.

DVT can occur due to a combination of risk factors, including:

- **Prolonged Bed Rest:** This occurs after surgery, injury, or during long hospital stays. Reduced movement increases the risk of blood clot formation.
- **Recent Surgery:** Particularly surgeries involving the lower limbs (e.g., hip or knee replacement), as these increase the risk of clot formation due to immobility and blood vessel injury.
- **Cancer:** Certain types of cancer (especially pelvic or abdominal) increase the risk of clotting due to the presence of clotting factors released by the tumor.
- **Other Factors:** These include obesity, smoking, older age, pregnancy, use of oral contraceptives, and a family history of clotting disorders.

Step 4: Conclusion.

DVT is a potentially serious condition, and its early detection is critical for preventing complications. The most common clinical features are swelling, warmth, and tenderness, and risk factors include prolonged bed rest, recent surgery, and cancer. Immediate attention to these symptoms is essential to reduce the risk of further complications.

Quick Tip

For DVT, always consider both the clinical symptoms (swelling, tenderness) and risk factors (recent surgery, immobility, cancer). Early detection and treatment can prevent severe complications.

1. b) How will you diagnose DVT?

Solution:

Step 1: Clinical Evaluation.

A thorough history and physical examination are essential. Clinical signs such as swelling, tenderness, and warmth in the affected leg, along with the patient's risk factors (e.g., recent surgery, immobility), should be considered. The Wells score can be used to assess the clinical probability of DVT.

Step 2: Imaging Tests.

- **Duplex Ultrasound:** This is the most commonly used imaging test for diagnosing DVT. It uses sound waves to create an image of the blood flow in the veins, helping to detect the presence of blood clots.
- **Venography:** Though less commonly used today due to the availability of ultrasound, venography involves injecting a contrast dye into the vein and taking X-ray images to detect clots.

Step 3: Laboratory Tests.

- **D-dimer Test:** Elevated levels of D-dimer, a breakdown product of fibrin, may indicate the presence of a clot. However, a negative D-dimer test can rule out DVT in low-risk patients, but a positive result requires further testing.

Quick Tip

Duplex ultrasound is the gold standard for diagnosing DVT. The D-dimer test can help rule out DVT in low-risk patients but is not specific enough for confirmation.

1. c) How will you treat a patient of DVT?

Solution:

Step 1: Anticoagulation Therapy.

The mainstay of DVT treatment is anticoagulation therapy to prevent the clot from growing and to reduce the risk of pulmonary embolism. Commonly used anticoagulants include:

- **Heparin (IV or subcutaneous):** Often used initially due to its rapid onset.
- **Warfarin (oral):** Used for long-term therapy, but requires regular monitoring of the INR.
- **Direct Oral Anticoagulants (DOACs):** Such as rivaroxaban or apixaban, which are often preferred due to their ease of use and fewer monitoring requirements.

Step 2: Compression Stockings.

Compression stockings help reduce swelling and prevent the development of post-thrombotic syndrome. They should be worn continuously during the day, especially in the early stages of recovery.

Step 3: Thrombolytic Therapy or Surgery.

In cases of massive DVT or if the patient is at high risk for pulmonary embolism, thrombolytic therapy (e.g., tissue plasminogen activator) may be considered to break down the clot. In rare cases, surgical removal of the clot may be required.

Step 4: Lifestyle Changes.

Patients should be advised to avoid prolonged immobility and to increase their physical activity, as well as manage underlying risk factors such as obesity or smoking.

Step 5: Monitoring.

Frequent monitoring of the patient's response to anticoagulation therapy is necessary, especially if using warfarin, to ensure therapeutic levels are maintained.

Quick Tip

For DVT treatment, anticoagulation therapy is the cornerstone, but compression stockings can also help manage symptoms and prevent complications. Consider thrombolytics or surgery in severe cases.

2. A 20-year-old male comes to the casualty with complaints of bleeding from nose for the last one hour.

(a) What are the causes and risk factors for epistaxis?

Solution:

Step 1: Understanding Epistaxis.

Epistaxis, commonly known as a nosebleed, occurs when blood vessels inside the nasal cavity rupture, leading to bleeding. It is a common condition and can range from mild to severe, depending on the underlying cause.

Step 2: Causes of Epistaxis.

The most common causes of epistaxis are:

- **Trauma:** Physical injury to the nose or the nasal cavity, such as from a blow to the face or frequent nose picking.
- **Infections:** Upper respiratory infections, sinusitis, or viral infections can inflame the mucosa of the nose, leading to bleeding.
- **Underlying Systemic Conditions:** Conditions like hypertension or blood clotting disorders (e.g., hemophilia, von Willebrand disease) can predispose individuals to nosebleeds.
- **Nasal Tumors:** Benign or malignant growths in the nasal cavity can cause frequent or persistent epistaxis.
- **Use of Medications:** Drugs that affect the blood's ability to clot, such as anticoagulants (warfarin, aspirin) or nasal sprays (which dry out the nasal lining), can cause bleeding.

Step 3: Risk Factors for Epistaxis.

Common risk factors include:

- **Dry Air:** Environments with low humidity, particularly in winter, can dry out the nasal mucosa, making it more prone to bleeding.
- **Hypertension:** High blood pressure can cause the blood vessels in the nose to rupture more easily.
- **Medications:** Anticoagulants (e.g., warfarin, heparin), nonsteroidal anti-inflammatory drugs (NSAIDs), and corticosteroid nasal sprays can increase the likelihood of epistaxis.
- **Alcohol and Smoking:** Both alcohol consumption and smoking can lead to irritation of the nasal mucosa and blood vessels, increasing the risk of bleeding.
- **Age and Gender:** Epistaxis is more common in children (due to frequent nose picking) and older adults (due to fragile blood vessels and systemic health issues).

Step 4: Conclusion.

Epistaxis can have many causes, ranging from minor trauma to more serious systemic conditions. Identifying the underlying cause and risk factors is essential for managing the condition and preventing recurrence.

Quick Tip

For treating epistaxis, it is crucial to manage the underlying cause, whether it's controlling blood pressure, humidifying the air, or adjusting medications. Applying pressure and using decongestant nasal sprays can help stop bleeding in the short term.

2. b) What are anatomical locations of nasal bleed?

Solution:

Step 1: Understanding the Locations.

The two main anatomical locations of nasal bleeding are:

- **Anterior nasal septum (Kiesselbach's plexus):** This is the most common site of bleeding, located in the front part of the nasal septum. It consists of a network of small blood vessels that are easily damaged, leading to anterior epistaxis.
- **Posterior nasal cavity:** Bleeding from this site is less common but more severe. It involves larger blood vessels and can lead to significant blood loss. It is often seen in older adults with underlying conditions such as hypertension or atherosclerosis.

Step 2: Conclusion.

Most nosebleeds originate from the anterior nasal septum, while posterior bleeds are more serious and require more intensive management.

Quick Tip

Kiesselbach's plexus in the anterior nasal septum is the most common site for epistaxis, but posterior bleeds can be more difficult to control and often require medical intervention.

2. c) Discuss clinical features and examination findings in this patient.

Solution:

Step 1: Clinical Features.

- **Active Bleeding:** The most obvious feature is the bleeding from the nose, which can be mild to moderate or severe. Blood may be seen coming from one or both nostrils.
- **Nasal Obstruction:** The patient may experience difficulty breathing through the nose due to the accumulation of blood in the nasal cavity.
- **Associated Symptoms:** In severe cases, the patient may complain of dizziness, weakness, or palpitations due to blood loss, and may exhibit symptoms of hypovolemia such as low blood pressure or tachycardia.

Step 2: Examination Findings.

- **Visible Blood in Nasal Cavity:** During examination, blood may be seen in the anterior part of the nasal cavity, particularly if the bleeding is from Kiesselbach's plexus.
- **Signs of Hypovolemia:** If the patient is losing a significant amount of blood, signs of hypovolemia such as tachycardia, hypotension, and pallor may be present.
- **Anterior and Posterior Nasal Examination:** A careful examination using a nasal speculum can help identify the source of bleeding (anterior or posterior).

Step 3: Conclusion.

Clinical features typically involve active nasal bleeding with nasal obstruction. In severe cases, signs of hypovolemia may be present. Thorough examination helps identify the source and severity of the bleeding.

Quick Tip

Examine the nasal cavity carefully with a speculum to differentiate between anterior and posterior nasal bleeding, as the management strategies differ. Severe blood loss may require volume resuscitation.

2. d) How will you manage a case of epistaxis?

Solution:

Step 1: Initial Management.

- **Pinching the Nostrils:** Instruct the patient to pinch their nostrils together for 10-15 minutes. This compresses the blood vessels and can help stop the bleeding. The patient should lean forward to avoid blood going into the throat.
- **Apply Ice Pack:** Applying an ice pack to the nose and back of the neck can help constrict blood vessels and reduce bleeding.

Step 2: Pharmacological Treatment.

- **Nasal Decongestants:** Topical nasal decongestants (e.g., oxymetazoline) can be used to constrict blood vessels and control the bleeding. These should only be used for short periods.
- **Cauterization:** If bleeding persists, cauterization of the bleeding vessel can be done using silver nitrate or electrical cautery to seal the blood vessel. This is most effective for anterior bleeds.

Step 3: Nasal Packing.

For persistent or severe bleeding, nasal packing may be required. This involves inserting a gauze or a balloon catheter into the nasal cavity to apply pressure to the bleeding site. The packing should be left in place for 24-48 hours, and antibiotics may be given to prevent infection.

Step 4: Surgical Intervention.

In rare cases, if all other methods fail, surgical intervention such as ligation of the internal carotid artery or arterial embolization may be necessary, particularly for posterior bleeds.

Step 5: Conclusion.

Management depends on the severity of the bleeding. Conservative measures such as pinching the nostrils and decongestants are effective in many cases, but more severe or recurrent cases may require cauterization, packing, or surgery.

Quick Tip

For recurrent or severe epistaxis, nasal packing or cauterization can be life-saving. In severe cases, consider the need for surgical intervention or arterial embolization.

3. A 40-year-old man is brought to the casualty with history of RTA and injury to the right thigh.

(a) How will you assess this patient?

Solution:

Step 1: Primary Survey (ABCDE Approach).

The first step is to perform a primary survey to assess and stabilize the patient's condition. This includes:

- **A: Airway:** Ensure the patient's airway is patent and there is no obstruction. If necessary, clear the airway and provide oxygen.
- **B: Breathing:** Check for adequate breathing and chest movement. Ensure there is no pneumothorax, hemothorax, or other breathing issues.
- **C: Circulation:** Assess the patient's circulatory status, including pulse, blood pressure, and signs of shock. Control any external bleeding, especially from the thigh.
- **D: Disability:** Assess the patient's neurological status using the Glasgow Coma Scale (GCS). Check for any signs of head injury or altered consciousness.
- **E: Exposure:** Expose the patient to fully assess all injuries while preventing hypothermia. Look for other injuries, especially if there is a history of trauma like a road traffic accident (RTA).

Step 2: Secondary Survey.

Once the primary survey is completed and the patient is stabilized, perform a more detailed secondary survey to assess the injury to the right thigh and any other possible injuries. This includes:

- **Thigh Examination:** - Inspect the thigh for any signs of external trauma such as abrasions, lacerations, or deformity. - Palpate the thigh for tenderness, crepitus, or abnormal swelling. Check for any obvious fractures or signs of a hematoma. - Assess the range of motion in the hip and knee joints to rule out joint injuries. - Perform a neurovascular assessment of the lower limb, checking for any signs of nerve damage (e.g., femoral nerve) or compromised blood flow (e.g., femoral artery).
- **Abdominal Examination:** Given the mechanism of injury (RTA), assess for any signs of abdominal trauma, which could include organ injury or internal bleeding.
- **Pelvic and Chest Examination:** Assess for any signs of pelvic fractures or chest injuries, especially if the RTA involved impact to the abdomen or chest.

Step 3: Investigations.

- **X-ray:** Perform an X-ray of the right thigh to check for fractures or dislocations, especially of the femur or patella. A pelvic X-ray may also be needed if the mechanism of injury suggests

a pelvic fracture.

- **CT Scan:** A CT scan of the abdomen or chest may be necessary if there is suspicion of internal injuries due to the impact.
- **Blood Tests:** Check for hemoglobin levels to assess blood loss and coagulation status. Cross-match blood if significant trauma or blood loss is suspected.

Step 4: Conclusion.

The initial assessment should focus on stabilizing the patient, followed by a thorough evaluation of the thigh injury and other potential traumatic injuries. Radiological investigations are crucial for diagnosing fractures or internal damage.

Quick Tip

In trauma patients, always prioritize the ABCDE approach to stabilize the patient. Detailed examination and timely investigations are essential to identify hidden injuries.

3. b) How will you manage this patient?

Solution:

Step 1: Initial Stabilization.

- **Airway, Breathing, and Circulation:** First, ensure that the patient's airway is clear, and he is breathing adequately. Administer oxygen if necessary. Establish two large-bore IV lines for fluid resuscitation if signs of shock are present. Monitor blood pressure, heart rate, and oxygen saturation.
- **Resuscitation:** If the patient shows signs of hypovolemia (e.g., tachycardia, hypotension), initiate IV fluid resuscitation with normal saline or Ringer's lactate. Blood transfusion may be needed if there is significant blood loss.

Step 2: Pain Control.

- **Analgesia:** Administer pain relief as needed. Non-steroidal anti-inflammatory drugs (NSAIDs) or opioids may be given for pain management, depending on the severity of pain. Ensure that pain relief does not mask signs of more serious injuries (e.g., abdominal or head trauma).

Step 3: Focused Examination.

- **Thigh Injury:** After stabilization, perform a detailed examination of the thigh. This includes checking for any deformity, swelling, or bruising. Palpate the femur, hip, and knee to assess for fractures. Check for signs of vascular or nerve injury, such as absent pulses or sensory loss in the leg.
- **Imaging:** Perform X-rays of the thigh to assess for fractures or dislocations. A pelvic X-ray may be required if there is suspicion of associated pelvic fractures. If the thigh injury is severe or there is suspected internal injury, a CT scan may be indicated.

Step 4: Fracture Management.

- **Fractures of the Femur:** If a femur fracture is diagnosed, apply traction or a splint to immobilize the limb. Surgery, such as open reduction and internal fixation (ORIF), may be required depending on the type and location of the fracture.
- **Soft Tissue Injury:** If there is a soft tissue injury, such as a contusion or hematoma, elevate the leg and apply ice packs to reduce swelling. In severe cases, surgical intervention may be necessary to repair the muscles or tendons.

Step 5: Monitoring for Complications.

- **Neurovascular Monitoring:** Continuously monitor for signs of neurovascular compromise in the affected limb, such as changes in color, temperature, or pulse.
- **Infection Prevention:** Administer tetanus prophylaxis if there is an open wound. Provide antibiotics if there is a risk of infection, especially with open fractures.
- **Postoperative Care (if surgery is required):** After surgery, ensure proper wound care, monitoring for infection, and rehabilitation to regain function in the limb.

Step 6: Conclusion.

The management of this patient involves stabilizing him initially, followed by a focused examination and appropriate imaging. Treatment will depend on the extent of the injury, including fracture management, soft tissue care, and monitoring for complications. Pain control and preventing further harm to the limb are crucial.

Quick Tip

Always assess the neurovascular status of the limb after trauma, as compartment syndrome and other vascular injuries can cause severe complications if not managed promptly.

4. A 25-year-old lady is posted for hernia surgery under spinal anaesthesia. You are called to monitor this lady.

(a) How will you prepare a patient for spinal anaesthesia?

Solution:

Step 1: Preoperative Assessment.

- **History Taking:** Assess the patient's medical history, including any contraindications for spinal anaesthesia (e.g., allergies, infections, neurological disorders, or prior spinal surgeries).
- **Physical Examination:** Check for any signs of infection at the site of the spinal injection, and assess the patient's general condition (vital signs, cardiovascular and respiratory status).
- **Laboratory Investigations:** Perform routine investigations such as blood tests (hemoglobin, platelets, coagulation profile) to ensure the patient is fit for anaesthesia.
- **Consent:** Obtain informed consent, explaining the procedure, potential risks, and benefits

to the patient.

Step 2: Preoperative Preparation.

- **Fasting:** Ensure that the patient has fasted for at least 6 hours for solids and 2 hours for clear fluids before the procedure.
- **Intravenous Access:** Establish an IV line for fluid administration and emergency medication if required.
- **Monitoring Setup:** Prepare the necessary monitoring equipment such as ECG, pulse oximeter, non-invasive blood pressure cuff, and capnography.
- **Preoperative Medications:** Administer any prescribed premedications (e.g., anxiolytics) if necessary to help the patient relax.

Step 3: Positioning and Local Anesthesia.

- Position the patient in the sitting or lateral position with adequate support to facilitate the lumbar puncture.

Step 4: Conclusion.

The patient should be well-prepared physically and psychologically before undergoing spinal anaesthesia, ensuring safety and reducing anxiety.

Quick Tip

Proper patient positioning and sterile technique are critical to performing a successful spinal anaesthesia. Always check for any contraindications before proceeding.

4. (b) What are the complications anticipated in spinal anaesthesia? How will you manage them?

Solution:

Step 1: Hypotension.

- **Cause:** Spinal anaesthesia can lead to vasodilation and decreased venous return, causing hypotension.
- **Management:** Preload the patient with IV fluids before the procedure. If hypotension occurs, administer IV fluids and vasopressors (e.g., ephedrine, phenylephrine). Adjust the position to improve venous return (e.g., Trendelenburg position).
- **Prevention:** Administer fluid boluses before anaesthesia and consider using low-dose local anaesthetics to minimize the effects on the cardiovascular system.

Step 2: Post-Dural Puncture Headache (PDPH).

- **Cause:** Leakage of cerebrospinal fluid through the puncture site can result in a headache.
- **Management:** Encourage the patient to lie flat and hydrate well. If the headache persists, consider an epidural blood patch or other interventions.

- **Prevention:** Use a fine-gauge spinal needle and avoid multiple attempts at lumbar puncture.

Step 3: Infection.

- **Cause:** Infection at the puncture site or meningitis can occur if proper sterile techniques are not followed.
- **Management:** If infection is suspected, administer broad-spectrum antibiotics and manage accordingly. Strict aseptic technique during the procedure is essential to prevent infection.

Step 4: Neurological Injury.

- **Cause:** Accidental puncture of the nerve root or spinal cord during the procedure can lead to neurological deficits.
- **Management:** If neurological symptoms such as numbness, weakness, or tingling occur, discontinue the procedure and consult a neurologist. Immediate MRI or CT of the spine may be required to assess injury.
- **Prevention:** Correct needle placement and careful anatomical knowledge are essential to avoid nerve injury.

Step 5: Conclusion.

Spinal anaesthesia is generally safe, but complications such as hypotension, PDPH, infections, and neurological injuries can occur. Proper preparation, technique, and timely management of these complications ensure patient safety.

Quick Tip

Monitoring for hypotension and using appropriate fluid management techniques are key in preventing and managing complications in spinal anaesthesia. Always be alert for neurological symptoms during the procedure.

5. A 45-year-old patient presents with swelling in the axillary region. (a) What are the causes of swelling in the axillary region?

Solution:

Step 1: Common Causes of Axillary Swelling.

- **Infections:** A common cause of axillary swelling is an abscess, which can result from a bacterial infection. It may present with redness, warmth, and tenderness.
- **Lymphadenopathy:** Swelling of the lymph nodes (e.g., due to infection, lymphoma, or metastatic cancer) can cause axillary swelling.
- **Lipomas:** Benign fatty tumors can cause a painless, mobile mass in the axillary region.
- **Breast Cancer:** Advanced breast cancer may present with axillary lymphadenopathy due to metastasis.
- **Hidradenitis Suppurativa:** Chronic skin condition involving blocked sweat glands can cause abscesses and swelling in the axillary region.

- **Cysts:** Sebaceous or epidermal cysts can form in the axillary region and cause localized swelling.

Step 2: Conclusion.

Axillary swelling can be caused by various conditions, ranging from benign conditions like lipomas and cysts to serious conditions like lymphoma or metastatic breast cancer.

Quick Tip

When assessing axillary swelling, always consider both infectious and non-infectious causes. A thorough physical examination and appropriate imaging are essential for a correct diagnosis.

5. (b) What relevant history and examination would you like to do?

Solution:

Step 1: Relevant History.

- **Onset and Duration:** When did the swelling begin? Is it sudden or gradual? A sudden onset may suggest infection or trauma, while gradual onset could indicate a tumor or benign lesion.
- **Pain:** Is the swelling painful or tender? Tenderness can point to an infection or abscess.
- **Associated Symptoms:** Ask about systemic symptoms such as fever, weight loss, or night sweats, which could suggest malignancy or infection.
- **Risk Factors:** Inquire about a history of breast cancer, immunosuppression (e.g., HIV, chemotherapy), recent infections, or trauma.
- **Family History:** A family history of cancer (especially breast cancer) or autoimmune conditions may be relevant.

Step 2: Physical Examination.

- **Inspection:** Examine the axilla for any visible swelling, redness, or warmth. Look for signs of infection such as abscess or erythema.
- **Palpation:** Palpate the axillary region to assess the size, consistency, and mobility of the swelling. A firm, fixed mass may suggest malignancy, while a soft, mobile mass may indicate a benign condition like a lipoma.
- **Lymph Node Examination:** Examine other regional lymph nodes (e.g., cervical, supraclavicular) for signs of generalized lymphadenopathy, which can point to systemic causes.
- **Breast Examination:** Conduct a thorough breast examination to check for any masses or skin changes that could indicate breast cancer or metastasis.
- **Other Systems:** Check for signs of systemic infection, such as fever, and assess for signs of hidradenitis suppurativa, such as abscesses or draining sinuses.

Step 3: Conclusion.

A detailed history and physical examination are crucial in differentiating the cause of axillary swelling. Further investigations may be required based on clinical findings.

Quick Tip

A careful history and physical examination will help distinguish between infectious, benign, and malignant causes of axillary swelling. Always perform a breast examination in female patients presenting with axillary masses.

5. (c) How will you manage this patient?

Solution:

Step 1: Management of Infection.

- **Abscesses or Infections:** If the axillary swelling is due to an abscess or localized infection (e.g., hidradenitis suppurativa), initiate antibiotic therapy based on culture results. Incision and drainage (ID) may be necessary for abscesses.
- **Lymphadenitis:** If the swelling is due to lymphadenitis, treat the underlying infection with appropriate antibiotics, considering the patient's risk factors (e.g., immunocompromised).

Step 2: Management of Benign Conditions.

- **Lipomas or Cysts:** If the axillary swelling is due to a benign lesion like a lipoma or sebaceous cyst, monitor the condition. Surgical excision may be performed if the lesion is symptomatic or cosmetically bothersome.

Step 3: Management of Malignancy.

- **Breast Cancer or Lymphoma:** If there is suspicion of malignancy (e.g., firm, fixed lymphadenopathy or associated breast mass), refer the patient for further investigation, such as a biopsy or imaging (e.g., mammography, ultrasound). Multidisciplinary management with oncology may be required.

Step 4: Follow-Up and Monitoring.

- Schedule a follow-up visit to assess the response to treatment. If malignancy is suspected, refer promptly to oncology for staging and treatment planning.

Step 5: Conclusion.

Management depends on the diagnosis. Infections are treated with antibiotics and drainage, benign conditions with observation or surgery, and malignancies with appropriate oncological care.

Quick Tip

Ensure timely referral and follow-up for suspected malignancies. Early diagnosis and treatment of infections and benign lesions can prevent complications and improve patient outcomes.

6. A 40-year-old man comes to the OPD with complaints of spinning around him.
(a) What are the causes of vertigo?

Solution:

Step 1: Peripheral Causes of Vertigo.

- **Benign Paroxysmal Positional Vertigo (BPPV):** The most common cause of peripheral vertigo. It occurs due to dislodged otoliths (calcium carbonate crystals) in the semicircular canals, causing a sudden sensation of spinning when the head is moved.
- **Meniere's Disease:** Characterized by episodic vertigo, tinnitus, and hearing loss due to fluid buildup in the inner ear.
- **Vestibular Neuritis:** Inflammation of the vestibular nerve, usually following a viral infection, leading to sudden vertigo without hearing loss.
- **Labyrinthitis:** Inflammation of both the cochlear and vestibular nerves, typically associated with hearing loss and vertigo following an upper respiratory infection.

Step 2: Central Causes of Vertigo.

- **Cerebrovascular Events:** A stroke or transient ischemic attack (TIA) affecting the brainstem or cerebellum can cause vertigo.
- **Multiple Sclerosis (MS):** MS can cause vertigo due to demyelination of the vestibular pathways.
- **Brain Tumors:** Tumors in the cerebellum or brainstem can cause vertigo, often with other neurological signs.

Step 3: Conclusion.

Vertigo can result from a variety of peripheral or central causes. A thorough history and examination are required to differentiate between these causes.

Quick Tip

Always consider both peripheral (e.g., BPPV, Meniere's) and central causes (e.g., stroke, brain tumors) when evaluating vertigo. A proper diagnosis guides the management.

6. (b) What examination would you like to do?

Solution:

Step 1: General Examination.

- Assess the patient's general condition, including vital signs and signs of systemic illness (e.g., fever or signs of infection).
- Check for any signs of neurological deficits such as facial asymmetry, speech difficulties, or limb weakness.

Step 2: Ear Examination.

- Inspect the external ear for any abnormalities (e.g., discharge, swelling, or perforation).
- Perform a tympanic membrane examination to rule out middle ear pathology, such as infection or effusion.

Step 3: Neurological Examination.

- **Dix-Hallpike Maneuver:** This is the hallmark test for diagnosing BPPV. It involves rapidly moving the patient's head from a sitting position to a supine position with the head tilted 45 degrees to each side, observing for nystagmus.
- **Head Impulse Test:** This test evaluates the function of the vestibular system. The examiner rapidly turns the patient's head in one direction and observes for corrective saccadic eye movements, which would indicate a vestibular abnormality.
- **Romberg Test:** Ask the patient to stand with feet together and eyes closed. A positive Romberg sign (loss of balance) indicates proprioceptive or central vestibular dysfunction.
- **Neurological Testing:** Perform cranial nerve examination, gait assessment, and coordination tests (e.g., finger-nose test) to rule out central causes such as a stroke or MS.

Step 4: Conclusion.

A detailed examination with a focus on vestibular function helps to differentiate between peripheral and central causes of vertigo. The Dix-Hallpike maneuver is particularly useful in diagnosing BPPV.

Quick Tip

The Dix-Hallpike test is a key diagnostic tool for BPPV. A positive test with characteristic nystagmus strongly supports the diagnosis.

6. (c) What is BPPV, and how will you manage it?

Solution:

Step 1: Understanding BPPV.

Benign Paroxysmal Positional Vertigo (BPPV) is a common cause of vertigo, resulting from the displacement of calcium carbonate crystals (otoliths) in the semicircular canals, typically the posterior canal. This leads to abnormal stimulation of the vestibular system, causing a sudden

sensation of spinning when the head is moved in certain positions.

- The hallmark symptom is brief episodes of vertigo triggered by positional changes (e.g., turning in bed, looking upward).

Step 2: Diagnosis of BPPV.

- **Dix-Hallpike Maneuver:** This diagnostic test induces vertigo and characteristic nystagmus when the head is positioned in certain ways. The nystagmus typically lasts for less than a minute and is indicative of BPPV.

Step 3: Management of BPPV.

- **Repositioning Maneuvers:** The first-line treatment for BPPV is repositioning maneuvers, such as the Epley maneuver, which involves a series of head movements designed to move the otoliths from the semicircular canals back to the utricle, where they no longer cause symptoms.
- **Brandt-Daroff Exercises:** These are exercises that patients can perform at home to help resolve symptoms of BPPV by habituating the vestibular system.
- **Symptomatic Treatment:** Antihistamines or benzodiazepines may be used to relieve acute symptoms, but they are not recommended for long-term management.
- **Follow-Up:** Most patients respond well to repositioning maneuvers, but some may require repeated treatments. Patients should be reassured that BPPV is a benign condition.

Step 4: Conclusion.

BPPV is a benign condition that can be effectively managed with repositioning maneuvers such as the Epley maneuver. Symptomatic treatment and follow-up are also important in managing this condition.

Quick Tip

The Epley maneuver is the most effective treatment for BPPV. It is highly successful in resolving symptoms and should be performed under supervision initially.

7. A 60-year-old lady comes to see you with complaints of dimness of her vision.

(a) What are the causes of reduced vision?

Solution:

Step 1: Common Causes of Reduced Vision.

- **Refractive Errors:** The most common cause of reduced vision in older adults is uncorrected refractive errors (e.g., myopia, hyperopia, presbyopia, astigmatism). These can be easily corrected with glasses or contact lenses.
- **Cataracts:** Clouding of the lens inside the eye is a leading cause of vision loss in the elderly. Symptoms include gradual, painless vision loss and glare.
- **Glaucoma:** Increased intraocular pressure damages the optic nerve, leading to gradual peripheral vision loss. It is asymptomatic in the early stages and often goes unnoticed.

- **Macular Degeneration:** Age-related macular degeneration (AMD) leads to central vision loss, making it difficult to read or recognize faces. It is common in older adults.
- **Diabetic Retinopathy:** Chronic diabetes can damage blood vessels in the retina, leading to vision loss. Early stages may be asymptomatic, but it can progress to blindness.
- **Retinal Disorders:** Conditions like retinal detachment, diabetic macular edema, or retinal vein occlusion can cause sudden or progressive vision loss.
- **Other Causes:** Conditions like optic neuritis, uveitis, or brain tumors can also affect vision.

Step 2: Conclusion.

Several causes contribute to reduced vision in older adults, ranging from refractive errors to serious retinal and neurological conditions. A thorough assessment is needed to identify the cause.

Quick Tip

The most common cause of reduced vision in older adults is cataracts, followed by macular degeneration and diabetic retinopathy. Always assess for treatable causes first, such as refractive errors or cataracts.

7. (b) How will you approach this lady with reduced vision?

Solution:

Step 1: History Taking.

- **Duration of Vision Problems:** Ask when the patient first noticed the dimness of vision and if it was gradual or sudden. Gradual loss suggests cataracts or macular degeneration, while sudden loss may point to retinal or optic nerve issues.
- **Associated Symptoms:** Inquire about associated symptoms such as glare, difficulty reading, loss of peripheral vision, floaters, or flashes of light.
- **Medical History:** Ask about a history of diabetes, hypertension, or glaucoma, which are common risk factors for retinal conditions.
- **Family History:** A family history of cataracts, macular degeneration, or glaucoma may be relevant.
- **Lifestyle and Medications:** Ask about smoking, alcohol use, and any medications (e.g., steroids) that could contribute to visual changes.

Step 2: Visual Acuity Testing.

- Perform a Snellen chart test to assess the patient's visual acuity. This will help determine the severity of vision loss and monitor progress.

Step 3: Ocular Examination.

- **Inspection:** Examine the external eye for signs of infection, redness, or abnormalities.
- **Pupillary Reactions:** Test for direct and consensual pupillary light reflexes, as afferent pupillary defects may suggest optic nerve problems.

- **Fundoscopy:** Examine the retina and optic nerve for signs of diabetic retinopathy, macular degeneration, cataracts, or glaucoma. Look for abnormalities such as retinal hemorrhages, exudates, or disc swelling.
- **Tonometry:** Measure intraocular pressure (IOP) to check for glaucoma. Elevated IOP is a key sign of glaucoma.
- **Slit Lamp Examination:** Evaluate the anterior segment of the eye for cataracts, corneal abnormalities, or other lesions.

Step 4: Additional Investigations.

- If indicated, refer for further imaging (e.g., OCT for macular degeneration, fluorescein angiography for diabetic retinopathy, or OCT angiography for retinal vein occlusion).
- If suspected, an ultrasound or MRI of the brain may be needed if there are concerns about neurological causes.

Step 5: Conclusion.

A thorough history, visual acuity testing, and detailed ocular examination are essential in determining the cause of reduced vision. Further investigations may be required based on initial findings.

Quick Tip

Always perform fundoscopy in patients with reduced vision to assess for retinal pathology, such as diabetic retinopathy or macular degeneration. Tonometry is essential for detecting glaucoma.

8. A 45-year-old man is admitted in the ward with complaints of headache. You are called to do an assessment of the eye.

(a) What relevant history would you like to ask related to the eye?

Solution:

Step 1: Onset and Duration of the Headache.

- Ask the patient when the headache started, how long it lasts, and its frequency. A recent onset of headache may suggest acute issues such as acute angle-closure glaucoma or temporal arteritis.

Step 2: Associated Visual Symptoms.

- Inquire about any visual disturbances associated with the headache, such as blurred vision, diplopia (double vision), scotomas (blind spots), or flashes of light. These symptoms may indicate ocular causes such as optic neuritis or retinal conditions.

Step 3: Past Medical History.

- **Hypertension:** A common risk factor for conditions like hypertensive retinopathy or retinal vein occlusion.

- **Diabetes:** Can lead to diabetic retinopathy and other ocular complications.
- **Head Injury or Trauma:** Any recent history of head injury or trauma should be asked, as it may cause conditions like retinal hemorrhage or optic nerve damage.

Step 4: Family History.

- Ask if there is a family history of eye diseases such as glaucoma, macular degeneration, or retinal disorders, which could predispose the patient to similar conditions.

Step 5: Conclusion.

A detailed history, including headache characteristics and visual symptoms, is crucial for determining the potential ocular cause.

Quick Tip

When evaluating a headache, always consider whether it is primary or secondary to an eye condition. Key symptoms like visual disturbances can help narrow down the cause.

8. (b) What relevant eye examination would you do for this person?

Solution:

Step 1: Visual Acuity Testing.

- Assess the patient's vision using a Snellen chart to check for any reduction in visual acuity. This helps in identifying refractive errors, macular conditions, or optic nerve involvement.

Step 2: Pupillary Reflexes.

- Test both direct and consensual pupillary responses to light. An afferent pupillary defect (APD) may suggest optic nerve pathology, such as optic neuritis or glaucoma.

Step 3: Ocular Motility.

- Check the patient's eye movements by asking them to follow a target in all directions. Abnormalities in eye movements may indicate a cranial nerve lesion or extraocular muscle dysfunction.

Step 4: Fundoscopy.

- Perform fundoscopy to examine the retina and optic disc for signs of conditions such as papilledema, diabetic retinopathy, retinal hemorrhages, or optic neuritis. Look for signs of raised intracranial pressure (e.g., swollen optic disc).

Step 5: Intraocular Pressure (IOP).

- Measure IOP using a tonometer to check for glaucoma, especially in patients with a family history of glaucoma or those at high risk.

Step 6: Conclusion.

A thorough eye examination is essential in assessing potential causes of reduced vision or eye-related headaches. Fundoscopy and pupillary reflex tests provide key diagnostic information.

Quick Tip

Always perform fundoscopy and check IOP in patients presenting with headache and visual symptoms to rule out conditions like glaucoma or optic neuropathy.

8. (c) What are the conditions you would like to have an emergency or same-day referral to an ophthalmologist?

Solution:

Step 1: Acute Angle-Closure Glaucoma.

- Symptoms include severe headache, sudden vision loss, nausea, vomiting, and a red eye with a fixed, dilated pupil. Immediate referral is necessary to prevent permanent vision loss.

Step 2: Optic Neuritis.

- Characterized by rapid vision loss, pain with eye movement, and an afferent pupillary defect. It often requires emergency referral for evaluation and treatment, as it can be associated with multiple sclerosis or other systemic conditions.

Step 3: Retinal Detachment.

- Symptoms include sudden flashes of light, floaters, and loss of vision in one eye. This is a medical emergency requiring prompt referral to prevent permanent vision loss.

Step 4: Significant Retinal Hemorrhage.

- Retinal hemorrhages can occur in conditions like diabetic retinopathy or retinal vein occlusion and may require urgent referral, especially if there is significant vision loss or risk of further damage.

Step 5: Conclusion.

Conditions like acute angle-closure glaucoma, optic neuritis, and retinal detachment are ophthalmic emergencies that require same-day referral for treatment to prevent long-term visual impairment.

Quick Tip

Any sudden and severe vision changes, especially with associated pain, should raise suspicion for emergency conditions like glaucoma, retinal detachment, or optic neuritis, which require immediate referral.

9. You are called to the casualty to assist for an intubation.

(a) How will you do an airway assessment?

Solution:

Step 1: Mallampati Classification.

- Assess the patient's ability to open their mouth and the visibility of the oropharyngeal structures. The Mallampati score classifies the airway based on the visibility of the soft palate, uvula, and tonsils.
- **Class I:** Full visibility of the soft palate, uvula, and tonsils.
- **Class II:** Soft palate and uvula visible, but tonsils partially obstructed.
- **Class III:** Only the soft palate is visible.
- **Class IV:** Only the hard palate is visible, indicating a potentially difficult airway.

Step 2: Jaw Movement and Mouth Opening.

- Assess the patient's ability to open the mouth widely (more than 3 cm). Restricted mouth opening suggests potential difficulty in inserting a laryngoscope.
- Evaluate jaw protrusion (the ability to bring the lower teeth forward) and the flexibility of the temporomandibular joint, which affects laryngoscopy.

Step 3: Neck Mobility and Thyromental Distance.

- Assess the patient's neck mobility, particularly the ability to extend the neck. A rigid or fixed neck may complicate intubation.
- Measure the thyromental distance (from the thyroid cartilage to the chin). A distance of less than 6 cm suggests difficulty in intubation.

Step 4: Conclusion.

A thorough airway assessment includes the Mallampati score, jaw movement, neck mobility, and thyromental distance. This helps in anticipating difficulties during intubation.

Quick Tip

The Mallampati classification is a simple, quick tool to assess airway difficulty. Combining it with jaw movement and neck flexibility provides a more complete evaluation.

9. (b) Which conditions do you anticipate difficult intubation?

Solution:

Step 1: Anatomical Factors.

- **Obesity:** Excess fat in the neck or airway can make visualization difficult and cause airway collapse during intubation.
- **Short Neck:** A short or thick neck makes it harder to extend the head and visualize the larynx.
- **Large Tongue:** A large tongue (e.g., in patients with Down syndrome or acromegaly) may obstruct the airway and make intubation difficult.
- **Limited Mouth Opening:** A small or restricted mouth opening (e.g., in temporomandibular joint disorders or anatomical anomalies) can limit access to the airway.

Step 2: Medical Conditions.

- **Cervical Spine Issues:** Conditions like ankylosing spondylitis or rheumatoid arthritis may cause limited neck mobility, complicating intubation.
- **Facial Trauma:** Facial fractures or swelling (e.g., after trauma) can distort the anatomy, making it challenging to visualize the airway.
- **Edema or Infection:** Swelling due to anaphylaxis, infections, or burns can significantly compromise the airway.

Step 3: Other Considerations.

- **Previous Surgery:** Previous neck or oral surgery can cause scar tissue and anatomical distortion, complicating intubation.
- **Pregnancy:** Pregnancy, particularly in the third trimester, can lead to a higher risk of aspiration and airway obstruction due to the increased size of the uterus and decreased lung volume.

Step 4: Conclusion.

Anatomical and medical conditions, such as obesity, short neck, large tongue, facial trauma, and limited mouth opening, increase the risk of difficult intubation.

Quick Tip

Always evaluate the patient's neck mobility and airway anatomy to anticipate potential challenges. Difficult intubation can often be anticipated by careful preoperative assessment.

9. (c) How will you prepare for a difficult intubation?

Solution:

Step 1: Preoperative Preparation.

- **Assessment:** Ensure a thorough airway assessment is done, as described earlier. Identify any potential difficulties based on the patient's anatomy or medical conditions.
- **Plan for Alternatives:** Always have an alternative plan in case direct laryngoscopy fails. Prepare for supraglottic airway devices (e.g., LMA), fiberoptic intubation, or surgical airway access if needed.

Step 2: Equipment Preparation.

- **Airway Equipment:** Ensure the availability of different sized endotracheal tubes, laryngoscope blades, and stylets. Have a bougie or airway exchange catheter available for difficult intubations.
- **Backup Equipment:** Prepare supraglottic devices (e.g., LMA) and fiberoptic equipment in case conventional methods fail. Ensure that cricothyrotomy or tracheostomy kits are ready in extreme situations.

Step 3: Personnel.

- **Team Communication:** Have a skilled team available, including an experienced anesthesiologist, respiratory therapist, and additional support for backup equipment.
- **Assistant Role:** Designate a team member to assist with mask ventilation, cricothyrotomy preparation, or managing medications.

Step 4: Patient Positioning.

- **Optimal Positioning:** Position the patient to facilitate intubation, typically the "sniffing" position (head slightly extended and neck flexed) unless contraindicated by injury or deformity.

Step 5: Conclusion.

Preparation for a difficult intubation includes ensuring the right equipment, having alternative strategies, and coordinating a skilled team. Early identification of difficulties allows for a more organized and safer procedure.

Quick Tip

For difficult intubations, always prepare for alternatives like fiberoptic intubation or supraglottic airway devices. Having backup plans and equipment is essential for patient safety.

10. A 70-year-old gentleman comes with lower urinary symptoms. You suspect benign enlarged prostate.

(a) What history and relevant examination will help you in diagnosing BPH?

Solution:

Step 1: History Taking.

- **Urinary Symptoms:** Ask the patient about symptoms such as:
- **Increased Frequency:** More frequent urination, especially at night (nocturia).
- **Urgency:** A sudden, strong urge to urinate.
- **Weak Urine Stream:** Difficulty starting the flow of urine or a weak, intermittent stream.
- **Incomplete Emptying:** Sensation of incomplete bladder emptying after urination.
- **Straining:** Difficulty in initiating urination, or having to strain to pass urine.
- **Duration and Severity:** Understand the duration of symptoms and their impact on the patient's quality of life.
- **Medical History:** Inquire about conditions such as diabetes, hypertension, and cardiovascular disease, which may influence the management of BPH.
- **Medications:** Ask about medications, particularly those affecting the prostate or urinary tract (e.g., alpha-blockers, diuretics).
- **Family History:** A family history of BPH or prostate cancer can increase the likelihood of the condition.

Step 2: Physical Examination.

- **Digital Rectal Examination (DRE):** This is crucial for evaluating the size, consistency, and tenderness of the prostate. In BPH, the prostate is typically enlarged, smooth, and non-tender.
- **Abdominal Examination:** Check for bladder distension or signs of urinary retention.
- **Neurological Examination:** To assess for any potential neurological causes of lower urinary tract symptoms.

Step 3: Conclusion.

A thorough history and physical examination, including DRE, are essential for diagnosing BPH. Consider further tests, such as PSA levels, for a more definitive diagnosis.

Quick Tip

A smooth, enlarged prostate on DRE with lower urinary tract symptoms is highly suggestive of BPH. Further evaluation with PSA can help rule out prostate cancer.

10. (b) What are the complications of BPH?

Solution:

Step 1: Acute Urinary Retention.

- This is one of the most common and serious complications of BPH, where the patient is unable to pass urine. It is often caused by a sudden worsening of the prostate obstruction and requires immediate catheterization.

Step 2: Urinary Tract Infections (UTIs).

- Due to incomplete bladder emptying, residual urine can increase the risk of UTIs in patients with BPH. Symptoms may include dysuria, frequency, and urgency.

Step 3: Bladder Stones.

- Chronic urinary retention and incomplete bladder emptying can lead to the formation of bladder stones, which may cause pain, hematuria, and further obstruction.

Step 4: Chronic Kidney Disease (CKD).

- Long-term bladder outlet obstruction can lead to increased pressure in the kidneys, potentially causing hydronephrosis and, over time, leading to renal dysfunction.

Step 5: Hematuria.

- Blood in the urine can occur due to the increased pressure in the bladder, rupture of small blood vessels in the prostate, or infection.

Step 6: Conclusion.

BPH can lead to several complications, especially if left untreated. Timely intervention can help prevent or manage these complications effectively.

Quick Tip

Acute urinary retention is a medical emergency in BPH. Early treatment can prevent complications like kidney damage or infections.

10. (c) How will you manage BPH?**Solution:****Step 1: Lifestyle Modifications.**

- **Fluid Management:** Encourage patients to reduce fluid intake before bedtime to decrease nocturia.

- **Diet and Exercise:** Recommend a healthy diet and regular exercise to maintain healthy prostate function and prevent obesity, which can worsen symptoms.

Step 2: Pharmacological Treatment.

- **Alpha-Blockers:** Medications like tamsulosin and alfuzosin help relax the smooth muscles in the prostate and bladder neck, improving urinary flow and reducing symptoms.

- **5-Alpha Reductase Inhibitors:** Drugs like finasteride or dutasteride reduce prostate size by inhibiting the conversion of testosterone to dihydrotestosterone (DHT), which is responsible for prostate enlargement.

- **Combination Therapy:** In some cases, a combination of alpha-blockers and 5-alpha reductase inhibitors is used for better symptom control.

- **Phosphodiesterase-5 Inhibitors:** Medications like tadalafil may be used in patients with concurrent erectile dysfunction.

Step 3: Surgical Treatment.

- **Transurethral Resection of the Prostate (TURP):** The gold standard surgical treatment for moderate to severe BPH. It involves removing part of the prostate to relieve the obstruction.

- **Laser Therapy:** Laser procedures can vaporize prostate tissue and relieve obstruction with less bleeding compared to TURP.

- **Prostatectomy:** In severe cases or when other treatments fail, a prostatectomy may be performed, especially if there is a large prostate.

- **Minimally Invasive Procedures:** Techniques such as prostatic stenting or balloon dilation may be considered for patients who are not candidates for surgery.

Step 4: Follow-Up.

- Regular follow-up to monitor symptom progression and evaluate for complications such as urinary retention, infection, or kidney dysfunction.

Step 5: Conclusion.

BPH can be managed effectively with medications, lifestyle changes, or surgery, depending on the severity of symptoms and complications.

Quick Tip

Alpha-blockers and 5-alpha reductase inhibitors are the first-line pharmacological treatments for BPH. Surgical options should be considered if symptoms are severe or complications arise.