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Nursing Q-Bank Series

For BSc Nursing Students

Adult Health Nursing-I

As per the Revised INC Syllabus



HIGHLIGHTS

- Various University Examination Question Papers
- Learning Pearls
- Clinical Case-based Questions
- Applied Multiple Choice Questions

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Semester-III

JAYPEE

CONTENTS

Unit 1: Introduction 1

Unit 2: Intraoperative Care 25

Unit 3: Nursing Management of Common Signs and Symptoms 57

Unit 4: Nursing Management of Patients with Respiratory Problems 81

Unit 5: Nursing Management of Patients with Disorders of Digestive System 113

Unit 6: Nursing Management of Patients with Cardiovascular Problems 163

Unit 7: Nursing Management of Patients with Disorders of Blood 209

Unit 8: Nursing Management of Patients with Disorders of Endocrine System 237

Unit 9: Nursing Management of Patients with Disorders of Integumentary System 263

Unit 10: Nursing Management of Patients with Musculoskeletal Problems 283

Unit 11: Nursing Management of Patients with Communicable Diseases 313

Learning Pearls 349

University Examination Question Papers 363

1. Atal Bihari Vajpayee Medical University, Uttar Pradesh, 2024 363
   Atal Bihari Vajpayee Medical University, Uttar Pradesh, 2023 366
2. Baba Farid University of Health Sciences, 2024 369
   Baba Farid University of Health Sciences, 2024 372
3. Bharti Vidya Peeth, 2023 375
   Bharti Vidya Peeth, 2024 378
4. Kerala University of Health Sciences (KUHS), 2024 382
   Kerala University of Health Sciences (KUHS), 2024 385
5. Teerthanker Mahaveer University (TMU), 2023–24 388
6. University of Health Sciences, Rohtak (UHSR), 2025 391
   University of Health Sciences, Rohtak (UHSR), 2024 394
   University of Health Sciences, Rohtak (UHSR), 2023 397

Clinical Case-based MCQs 401

Applied Multiple Choice Questions 411

Image-based Questions 425

UNIT 6: NURSING MANAGEMENT OF PATIENTS WITH CARDIOVASCULAR PROBLEMS

Note: *In this unit we have covered following questions. These questions are taken after detailed analysis from the questions bank of various universities.*

LONG QUESTIONS

Sl. No.	Question	Marks
Q1.	a. Define coronary artery diseases. Explain its etiology. b. Describe the management of coronary artery diseases.	2 + 4 + 4 = 10
Q2.	a. Define angina pectoris. List the types of anginas. b. Explain the management of angina pectoris.	2 + 4 + 4 = 10
Q3.	Mr K, a 69-year-old male came to emergency with the complaint of chest pain radiating to left arm, shortness of breath and nauseatic feeling. On duty doctor checks for Trop-T, came positive. a. Identify the diagnosis. b. List down its causes. c. Describe the management of the diagnosis.	2 + 4 + 4 = 10

SHORT QUESTIONS

Sl. No.	Question	Marks
Q1.	Ischemic heart disease.	5
Q2.	Thrombolytic therapy.	5
Q3.	Digoxin toxicity.	5
Q4.	Raynaud's phenomenon.	5
Q5.	Aneurysm.	5
Q6.	Deep vein thrombosis (DVT).	5
Q7.	Peripheral artery diseases.	5
Q8.	Pericarditis.	5
Q9.	Endocarditis.	5
Q10.	Rheumatic heart diseases.	5
Q11.	Cardiac dysrhythmias.	5
Q12.	Heart block.	5
Q13.	Congestive heart failure.	5
Q14.	Cardiac tamponade.	5
Q15.	Cardiopulmonary resuscitation (CPR).	5
Q16.	Difference between right and left heart failure.	5
Q17.	Difference between defibrillation and cardioversion.	5
Q18.	Roles and responsibilities of nurse in cardiac catheterization.	5
Q19.	Roles and responsibilities of nurse in pacemaker care.	5
Q20.	Roles and responsibilities of nurse in percutaneous transluminal coronary angioplasty (PTCA).	5

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Sl. No.	Question	Marks
Q21.	Electrocardiography (ECG).	5
Q22.	Echocardiography.	5
Q23.	Hypertension.	5

VERY SHORT QUESTIONS

Sl. No.	Question	Marks
Q1.	Define syncope.	2
Q2.	Define orthopnea.	2
Q3.	What is cyanosis?	2
Q4.	Difference between central cyanosis and peripheral cyanosis.	2
Q5.	Define hypertension.	2
Q6.	Define hypotension.	2
Q7.	Define paroxysmal nocturnal dyspnea (PND).	2
Q8.	What are the nursing interventions for a patient with hypertension?	2
Q9.	How should a nurse manage a patient with acute myocardial infarction (MI)?	2
Q10.	What are the nursing priorities for a patient with congestive heart failure (CHF)?	2
Q11.	What nursing care should be provided to a patient with deep vein thrombosis (DVT)?	2
Q12.	What are the key nursing interventions for a patient with peripheral artery disease (PAD)?	2
Q13.	What are the nursing considerations for a patient undergoing cardiac catheterization?	2
Q14.	How should a nurse manage a patient with atrial fibrillation (AF)?	2
Q15.	What are the nursing interventions for a patient with cardiogenic shock?	2
Q16.	How can a nurse help in the prevention of coronary artery disease (CAD)?	2
Q17.	What nursing actions should be taken for a patient experiencing angina?	2
Q18.	What are the nursing interventions for a patient with valvular heart disease?	2
Q19.	What nursing care should be provided to a patient with an implanted pacemaker?	2
Q20.	What are the nursing priorities for a patient with endocarditis?	2
Q21.	What are the nursing interventions for a patient with hypertensive crisis?	2
Q22.	What are the nursing responsibilities in thrombolytic therapy for myocardial infarction?	2
Q23.	What postoperative care should be given to a patient after coronary artery bypass graft (CABG) surgery?	2

MULTIPLE CHOICE QUESTIONS

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UNIT 6

NURSING MANAGEMENT OF PATIENTS WITH CARDIOVASCULAR PROBLEMS

LONG QUESTIONS

Q1 **a. Define coronary artery diseases. Explain its etiology.**
b. Describe the management of coronary artery diseases.

Ans:

a. Definition

Coronary artery disease (CAD) is a condition caused by the narrowing or blockage of the coronary arteries due to atherosclerosis, leading to reduced blood supply to the heart muscle, which can result in angina, myocardial infarction (heart attack), or heart failure **(Fig. 6.1)**.

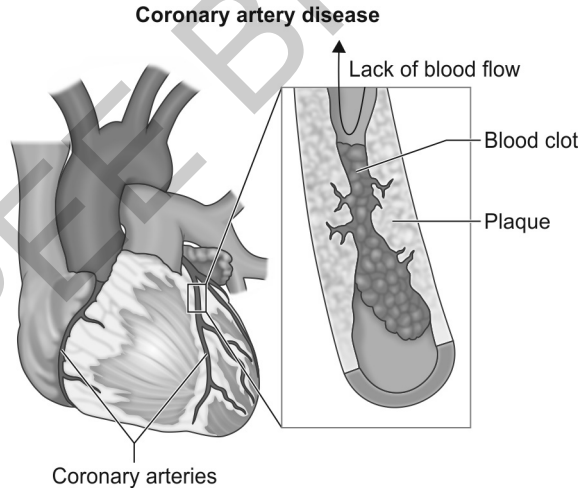

Fig. 6.1: Representation of coronary artery disease.

Etiology (Causes and Risk Factors)

- **Atherosclerosis:** Buildup of fatty plaques in the coronary arteries.
- **Hypertension (high blood pressure):** Increases the workload on the heart.
- **Dyslipidemia (high cholesterol):** Elevated LDL ("bad cholesterol") and low HDL.
- **Diabetes mellitus:** Causes damage to blood vessels.
- **Smoking:** Increases plaque buildup and blood clotting.
- **Obesity:** Associated with hypertension, diabetes, and dyslipidemia.

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- **Sedentary lifestyle:** Lack of exercise contributes to obesity and poor heart health.
- **Unhealthy diet:** High intake of saturated fats, trans fats, and processed foods.
- **Stress:** Can lead to increased blood pressure and heart disease risk.
- **Genetic factors:** Family history of CAD increases the risk.
- **Aging:** Risk increases with age due to arterial wear and tear.

b. Management of Coronary Artery Disease

Lifestyle Modifications

- **Healthy diet:** Low-fat, high-fiber diet; reduce sodium intake.
- **Regular exercise:** At least 30 minutes of moderate exercise most days.
- **Smoking cessation:** Reduces the risk of atherosclerosis.
- **Weight management:** Maintain a healthy BMI.
- **Stress management:** Meditation, yoga, and relaxation techniques.

Pharmacological Management

- **Antiplatelet agents (e.g., aspirin, clopidogrel):** Prevent blood clot formation.
- **Statins (e.g., atorvastatin, rosuvastatin):** Lower cholesterol levels.
- **Beta-blockers (e.g., metoprolol, atenolol):** Reduce heart workload and blood pressure.
- **ACE inhibitors/ARBs (e.g., lisinopril, losartan):** Control blood pressure.
- **Nitrates (e.g., nitroglycerin):** Relieve angina by dilating blood vessels.
- **Calcium channel blockers (e.g., amlodipine, diltiazem):** Improve blood flow.

Surgical and Interventional Management

- **Coronary angioplasty (PCI—percutaneous coronary intervention):** A balloon is used to widen blocked arteries, often with stent placement.
- **Coronary artery bypass grafting (CABG):** A surgical procedure where a healthy blood vessel is grafted to bypass the blocked coronary artery.

Nursing Care and Patient Education

- Monitor vital signs, especially BP, heart rate, and ECG.
- Educate patients about medication adherence and side effects.
- Encourage a heart-healthy lifestyle and routine follow-ups.
- Recognize early signs of chest pain, shortness of breath, and fatigue.

Q2 a. Define angina pectoris. List the types of anginas.
b. Explain the management of angina pectoris.

Ans:

a. Definition

Angina pectoris is a clinical syndrome characterized by chest pain or discomfort due to transient myocardial ischemia (insufficient oxygen supply to the heart muscle) without infarction. It is commonly caused by coronary artery disease (CAD).

Types of Angina

1. **Stable angina (exertional angina):**
   – Occurs during physical exertion or emotional stress.

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- Relieved by rest or nitroglycerin.
- Caused by fixed atherosclerotic narrowing of coronary arteries.

2. **Unstable angina:**
   - Occurs at rest or with minimal exertion.
   - Unpredictable, more severe, and lasts longer than stable angina.
   - A sign of an impending heart attack (acute coronary syndrome).
3. **Variant (Prinzmetal's) angina:**
   - Caused by coronary artery spasm, not atherosclerosis.
   - Occurs at rest, often at night or early morning.
   - Relieved by calcium channel blockers and nitrates.
4. **Microvascular angina (syndrome X):**
   - Caused by dysfunction of small coronary arteries.
   - More common in women and may not show blockages on angiography.
   - Responds poorly to nitrates but improves with lifestyle changes and medications.

b. Management of Angina Pectoris

Immediate Management (During an Angina Attack)

- **Rest:** Stop any physical activity.
- **Nitroglycerin (sublingual):** Dilates blood vessels and relieves pain.
- **Oxygen therapy:** If oxygen saturation is low.
- **Pain assessment:** Monitor intensity, location, and duration of pain.

Long-Term Management

Lifestyle Modifications

- **Healthy diet:** Low-fat, high-fiber, and heart-friendly diet.
- **Regular exercise:** Helps improve cardiovascular health.
- **Smoking cessation:** Reduces coronary artery constriction.
- **Weight management:** Maintain a healthy BMI.
- **Stress management:** Yoga, meditation, and relaxation techniques.

Pharmacological Management

- **Nitrates (e.g., nitroglycerin, isosorbide dinitrate):** Relieves chest pain by dilating coronary arteries.
- **Beta-blockers (e.g., metoprolol, atenolol):** Reduce heart rate and myocardial oxygen demand.
- **Calcium channel blockers (e.g., amlodipine, diltiazem):** Used in variant angina to prevent coronary spasms.
- **Antiplatelet agents (e.g., aspirin, clopidogrel):** Prevent clot formation in coronary arteries.
- **Statins (e.g., atorvastatin, rosuvastatin):** Reduce cholesterol levels and prevent plaque buildup.
- **ACE inhibitors/ARBs (e.g., lisinopril, losartan):** Control blood pressure and improve heart function.

Interventional and Surgical Management:

- **Percutaneous coronary intervention (PCI)/angioplasty:** Balloon dilation of blocked coronary arteries with or without stent placement.
- **Coronary artery bypass grafting (CABG):** Surgical bypass of blocked coronary arteries.

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Nursing Responsibilities

- Monitor vital signs (BP, HR, oxygen saturation).
- Educate the patient about medication adherence.
- Recognize and act upon signs of worsening angina or myocardial infarction.
- Encourage a heart-healthy lifestyle.

Q3 **Mr K, a 69-year-old male came to emergency with the complaint of chest pain radiating to left arm, shortness of breath and nauseatic feeling. On duty doctor checks for Trop-T, came positive.**

a. Identify the diagnosis.
b. List down its causes
c. Describe the management of the diagnosis.

Ans:

a. Diagnosis

Based on the symptoms:
- Chest pain radiating to the left arm
- Shortness of breath
- Nausea
- Positive troponin-T (Trop-T) test
  The most likely diagnosis is acute myocardial infarction (ami)/heart attack.
  A positive Troponin-T test indicates myocardial cell injury, confirming myocardial infarction.

b. Causes of Myocardial Infarction (MI)

- **Atherosclerosis (most common cause):** Plaque buildup in the coronary arteries leading to blockage.
- **Thrombosis (blood clot formation):** Ruptured plaques can cause clots that obstruct blood flow.
- **Coronary artery spasm:** Sudden constriction of a coronary artery, reducing blood supply.
- **Hypertension (high blood pressure):** Increases stress on coronary arteries, leading to damage.
- **Diabetes mellitus:** Causes vascular damage and accelerates atherosclerosis.
- **Smoking:** Increases clot formation and causes arterial damage.
- **Obesity and sedentary lifestyle:** Associated with hypertension, diabetes, and high cholesterol.
- **High cholesterol levels:** Excess LDL ("bad cholesterol") leads to plaque deposition.
- **Stress:** Triggers adrenaline release, increasing heart workload.
- **Cocaine or drug abuse:** Can cause sudden vasospasm and cardiac ischemia.

c. Management of Myocardial Infarction (MI)

Immediate Emergency Management (MONA Protocol)

- **M—morphine:** For pain relief and anxiety reduction.
- **O—oxygen therapy:** If oxygen saturation is below 94%.
- **N—nitroglycerin:** To dilate coronary arteries and improve blood flow.
- **A—aspirin (antiplatelet therapy):** To prevent clot progression (160–325 mg).

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Pharmacological Management

- **Antiplatelet agents (e.g., clopidogrel, ticagrelor):** Prevent clot formation.
- **Anticoagulants (e.g., heparin, enoxaparin):** Reduce thrombus progression.
- **Beta-blockers (e.g., metoprolol):** Lower heart rate and myocardial oxygen demand.
- **Statins (e.g., atorvastatin, rosuvastatin):** Lower cholesterol and stabilize plaques.
- **ACE inhibitors (e.g., lisinopril) or ARBs (e.g., losartan):** Reduce blood pressure and afterload.
- **Thrombolytic therapy (e.g., alteplase, streptokinase):** If PCI is unavailable within 90 minutes.

Interventional/Surgical Management

- **Percutaneous coronary intervention (PCI)/angioplasty:** First-line treatment to restore blood flow (stent placement).
- **Coronary artery bypass grafting (CABG):** If multiple blockages are present and PCI is not feasible.

Nursing Management and Patient Education

- **Monitor vital signs and ECG:** Detect arrhythmias or worsening ischemia.
- **Pain management:** Morphine administration as needed.
- **Oxygen therapy:** If hypoxic.
- Monitor cardiac enzymes (troponin, CK-MB, myoglobin).
- **Educate about lifestyle modifications:**
  - Quit smoking.
  - Adopt a heart-healthy diet.
  - Engage in regular physical activity.
  - Manage stress and hypertension.

Rehabilitation and Secondary Prevention

- **Cardiac rehabilitation program:** Gradual return to normal activities.
- **Medication adherence:** Ensure the patient follows prescribed medications.
- **Follow-up:** Regular check-ups with a cardiologist.

SHORT QUESTIONS

Write short note on:

Q 1 Ischemic heart disease.

Ans:

Definition

Ischemic heart disease (IHD), also known as coronary artery disease (CAD), is a condition caused by reduced blood supply to the heart muscle due to narrowing or blockage of the coronary arteries. This occurs primarily due to atherosclerosis, where fatty deposits (plaques) accumulate in the arteries, restricting oxygen and nutrient delivery to the myocardium (heart muscle).

Causes

- **Atherosclerosis:** Buildup of cholesterol plaques in coronary arteries.
- **Hypertension (high blood pressure):** Increases stress on arterial walls.

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- **Diabetes mellitus:** Contributes to arterial damage and plaque formation.
- **Smoking:** Causes vasoconstriction and increases clot formation.
- **Obesity and sedentary lifestyle:** Leads to increased cholesterol and hypertension.
- **High cholesterol levels:** Excess LDL ("bad cholesterol") contributes to plaque formation.
- **Stress:** Triggers increased heart workload.
- **Family history:** Genetic predisposition plays a role.

Clinical Manifestations

- **Angina pectoris (chest pain):** Occurs due to insufficient oxygen supply to the heart.
- **Shortness of breath:** Due to poor oxygenation.
- **Palpitations:** Irregular or fast heartbeat.
- **Fatigue:** Reduced oxygen supply leads to exhaustion.
- **Dizziness or fainting:** Due to decreased cardiac output.
- **Myocardial infarction (heart attack):** If blood flow is completely blocked.

Management of Ischemic Heart Disease

Lifestyle Modifications

- **Quit smoking:** Reduces risk of plaque buildup.
- **Healthy diet:** Low-fat, low-cholesterol, high-fiber diet.
- **Regular exercise:** Improves circulation and cardiac efficiency.
- **Weight management:** Reduces strain on the heart.
- **Stress reduction:** Through relaxation techniques and counseling.

Pharmacological Treatment

- **Antiplatelets (aspirin, clopidogrel):** Prevents clot formation.
- **Beta-blockers (metoprolol, atenolol):** Reduces heart workload.
- **Calcium channel blockers (amlodipine, diltiazem):** Improves blood flow.
- **Nitrates (nitroglycerin):** Dilates coronary arteries and relieves angina.
- **Statins (atorvastatin, rosuvastatin):** Lowers cholesterol levels.
- **ACE inhibitors (lisinopril) or ARBs (losartan):** Reduces blood pressure and afterload.

Surgical/Interventional Procedures

- **Percutaneous coronary intervention (PCI)/angioplasty:** Balloon or stent placement to open blocked arteries.
- **Coronary artery bypass grafting (CABG):** Bypassing the blocked artery using a graft.

Cardiac Rehabilitation and Follow-Up

- Regular cardiac check-ups.
- Adherence to prescribed medications.
- Lifestyle modifications to prevent progression.

Q2 Thrombolytic therapy.

Ans: Thrombolytic therapy (also known as fibrinolytic therapy) is a treatment used to dissolve blood clots (thrombi) in blood vessels, restoring blood flow and preventing tissue damage. It is commonly used in conditions such as acute myocardial infarction (heart attack), ischemic stroke, and pulmonary embolism.

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Indications

Thrombolytic therapy is used in:

- **Acute myocardial infarction (STEMI):** Within 12 hours of symptom onset if PCI is unavailable.
- **Acute ischemic stroke:** Within 4.5 hours of symptom onset.
- **Massive pulmonary embolism (PE):** If causing hemodynamic instability.
- **Deep vein thrombosis (DVT):** In severe cases with limb-threatening ischemia.
- **Acute arterial thrombosis or embolism:** To restore blood flow in critical ischemia.
- **Occluded central venous catheters:** To restore catheter patency.

Common Thrombolytic Agents

- **Alteplase (tPA—tissue plasminogen activator):** Used in MI, stroke, and PE.
- **Reteplase (rPA):** A longer-acting thrombolytic for MI.
- **Tenecteplase (TNK-tPA):** Used in STEMI due to ease of administration.
- **Streptokinase:** Less commonly used due to antigenicity and allergic reactions.
- **Urokinase:** Used in PE and occluded catheters.

Mechanism of Action

- Thrombolytic agents activate plasminogen, converting it into plasmin, which breaks down fibrin (the main structural component of blood clots).
- This results in clot dissolution and restoration of blood flow.

Contraindications

Absolute Contraindications

- Active internal bleeding
- Recent major surgery (within 2 weeks)
- History of hemorrhagic stroke
- Severe uncontrolled hypertension
- Suspected aortic dissection
- Recent head trauma or brain tumor

Relative Contraindications

- Recent GI bleeding (within 3 weeks)
- Advanced liver disease
- Pregnancy
- Uncontrolled hypertension

Nursing Responsibilities

Before Administration

- Obtain patient history to rule out contraindications.
- Monitor baseline vital signs and neurological status.
- Check coagulation profile (PT, INR, aPTT, platelet count).
- Ensure IV access for emergency medications if needed.

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During Administration

- Administer thrombolytic agent as per protocol.
- Monitor for signs of bleeding (hematemesis, hematuria, ecchymosis).
- Observe for allergic reactions (rash, fever, hypotension).
- Monitor neurological status for signs of hemorrhagic stroke.

After Administration

- Avoid IM injections and unnecessary venipuncture to prevent bleeding.
- Continue ECG monitoring for arrhythmias postthrombolysis.
- Observe for signs of successful reperfusion (e.g., resolution of chest pain in MI, improved neurological status in stroke).
- Monitor Hb, hematocrit, and coagulation parameters.
- Educate the patient on bleeding precautions and antiplatelet therapy (aspirin, clopidogrel) postthrombolysis.

Complications

- Hemorrhage (most common and serious complication)
- Intracranial hemorrhage (ICH) or stroke
- Allergic reactions (especially streptokinase)
- Reperfusion arrhythmias (e.g., ventricular tachycardia)
- Hypotension

Q3 Digoxin toxicity.

Ans: Digoxin toxicity occurs when there is an excessive level of digoxin, a cardiac glycoside used to treat heart failure and atrial fibrillation. Toxicity can lead to life-threatening cardiac arrhythmias, gastrointestinal symptoms, and neurological disturbances.

Causes of Digoxin Toxicity

- Excessive dosage or accidental overdose
- Impaired renal function (digoxin is excreted via kidneys)
- Electrolyte imbalances, especially hypokalemia, hypomagnesemia, and hypercalcemia
- Drug interactions (e.g., diuretics, amiodarone, verapamil, quinidine)
- Dehydration and reduced clearance in elderly patients
- Hypothyroidism (reduces digoxin metabolism)

Clinical Manifestations of Digoxin Toxicity

Cardiac Symptoms

- Bradycardia (slow heart rate)
- Arrhythmias (atrial tachycardia with AV block, ventricular ectopics)
- Heart block (1st, 2nd, or 3rd degree)

Gastrointestinal Symptoms

- Nausea, vomiting, diarrhea
- Loss of appetite (anorexia)

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Neurological Symptoms

- Confusion, dizziness, delirium
- Visual disturbances (yellow-green vision, halos around lights)
- Headache, weakness, fatigue

Diagnosis of Digoxin Toxicity

- **Serum digoxin level:** Toxicity is suspected if >2 ng/mL
- **Electrolytes:** Check for hypokalemia, hypomagnesemia, hypercalcemia
- **ECG findings:**
  - Bradycardia
  - ST-segment depression (scooped or downsloping)
  - AV block or ventricular arrhythmias
- **Renal function tests:** Monitor for reduced clearance

Management of Digoxin Toxicity

Immediate Interventions

- Stop digoxin immediately
- Monitor ECG for arrhythmias
- Correct electrolyte imbalances (especially potassium and magnesium)
- Ensure proper hydration

Specific Treatments

- Activated charcoal (if ingestion occurred within 2 hours)
- Digoxin-specific antibody (digibind or DigiFab):
  - Given in severe toxicity (life-threatening arrhythmias)
  - Works by binding digoxin and neutralizing its effects
- Atropine for symptomatic bradycardia
- Lidocaine or phenytoin for ventricular arrhythmias
- Pacing if heart block is severe

Nursing Responsibilities

Assessment and Monitoring

- Monitor heart rate and ECG for bradycardia/arrhythmias
- Check serum digoxin levels regularly
- Monitor electrolyte levels (K^+, Mg^{++}, Ca^{++})
- Assess for neurological and GI symptoms

Patient Education

- Take digoxin exactly as prescribed
- Do not double the dose if a dose is missed
- Report symptoms of toxicity immediately
- Avoid overuse of diuretics (can cause hypokalemia)
- Maintain a balanced diet rich in potassium (bananas, oranges, potatoes)

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Q4 Raynaud's phenomenon.

Ans: Raynaud's phenomenon is a vasospastic disorder affecting the small arteries of the fingers and toes, leading to episodic color changes (white, blue, and red) due to cold exposure or emotional stress. It can be primary (idiopathic) or secondary (associated with other diseases like systemic sclerosis or lupus).

Causes and Risk Factors

Primary Raynaud's Phenomenon (Idiopathic)

- More common in women (ages 15–30)
- Triggered by cold, stress, caffeine, smoking

Secondary Raynaud's Phenomenon (Associated with Diseases)

- Connective tissue disorders (e.g., Scleroderma, lupus, rheumatoid arthritis)
- Occupational causes (e.g., vibration exposure from tools)
- Medications (e.g., beta-blockers, decongestants)
- Smoking (causes vasoconstriction)

Clinical Manifestations

- Triphasic color changes in fingers/toes:
  - *White (pallor):* Due to lack of blood flow (vasospasm)
  - *Blue (cyanosis):* Due to deoxygenation of stagnant blood
  - *Red (hyperemia):* Due to return of blood flow after vasospasm
- Pain, numbness, or tingling sensation
- Cold sensitivity
- Ulceration and tissue damage (severe cases)

Diagnosis

- Clinical history and physical examination
- Cold stimulation test (exposing hands to cold and observing color changes)
- Nailfold capillaroscopy (for secondary Raynaud's)
- Blood tests (ANA, ESR, RF) to rule out autoimmune diseases

Management of Raynaud's Phenomenon

General Measures

- Avoid cold exposure (wear gloves, warm socks)
- Reduce stress and avoid emotional triggers
- Stop smoking (nicotine worsens vasoconstriction)
- Limit caffeine intake

Medications

- Calcium channel blockers (e.g., nifedipine, amlodipine): first-line treatment
- Vasodilators (e.g., nitroglycerin ointment)
- Alpha-blockers (e.g., prazosin)
- Phosphodiesterase inhibitors (e.g., sildenafil in severe cases)

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Severe Cases

- Nerve block or sympathectomy (for refractory cases)
- Wound care for ulcers/gangrene

Nursing Responsibilities

- Educate the patient about lifestyle modifications (keeping hands warm, avoiding triggers)
- Monitor for ulcer formation or tissue necrosis in severe cases
- Assess for secondary causes (autoimmune disorders)
- Encourage medication adherence
- Provide emotional support, as stress is a key trigger

Q5 Aneurysm.

Ans: An aneurysm is an abnormal dilation or bulging of a blood vessel wall due to weakness in the arterial wall. It can occur in any blood vessel but is most common in the aorta, brain, and peripheral arteries.

Types of Aneurysms

1. **Based on location:**
   - *Aortic aneurysm:* Occurs in the thoracic or abdominal aorta.
   - *Cerebral aneurysm (brain aneurysm):* Affects arteries in the brain (e.g., Berry aneurysm in the circle of Willis).
   - *Peripheral aneurysm:* Found in arteries of the legs (popliteal), spleen, or neck (carotid).
2. **Based on shape:**
   - *Saccular aneurysm:* A small, rounded bulge on one side of the artery.
   - *Fusiform aneurysm:* A symmetrical, spindle-shaped dilation of the vessel.
   - *Pseudoaneurysm (false aneurysm):* A collection of blood outside the vessel wall due to injury.

Causes and Risk Factors

- Atherosclerosis (most common cause)
- Hypertension (high blood pressure)
- Genetic disorders (e.g., Marfan's syndrome, Ehlers-Danlos syndrome)
- Infections (mycotic aneurysm)
- Trauma or injury to blood vessels
- Smoking (damages arterial walls)
- Aging (weakened blood vessels over time)

Clinical Manifestations

Depends on the Location and Size of Aneurysm

- **Aortic aneurysm:**
  - Often asymptomatic until rupture
  - Pulsatile mass in the abdomen
  - Back or abdominal pain

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- **Cerebral aneurysm:**
  - *Before rupture:* Headaches, vision changes, dizziness
  - *After rupture (subarachnoid hemorrhage —SAH):* Sudden severe headache, nausea, stiff neck, loss of consciousness
- **Peripheral aneurysm:** Pain, swelling, and possible limb ischemia (reduced blood flow)

Complications

- Rupture → Life-threatening hemorrhage
- Thrombosis (clot formation) → Can lead to stroke or embolism
- Compression of nearby structures (nerve damage, difficulty swallowing if near the esophagus)

Diagnosis

- Ultrasound (for abdominal aneurysms)
- CT Angiography/MRI (detailed vessel imaging)
- Cerebral angiography (for brain aneurysms)

Management of Aneurysm

Conservative Management (for Small Aneurysms)

- Blood pressure control (beta-blockers, ACE inhibitors)
- Smoking cessation
- Regular monitoring (serial imaging)

Surgical and Interventional Procedures

- **Endovascular repair (EVAR):** Minimally invasive stent placement
- **Open surgical repair:** Grafting to reinforce the vessel wall
- Coiling or clipping (for cerebral aneurysms)

Nursing Responsibilities

Preoperative Care

- Monitor vital signs (BP, HR)
- Educate patient about lifestyle changes (smoking cessation, BP control)
- Prepare for diagnostic tests (e.g., CT scan, angiography)

Postoperative Care

- Monitor for signs of bleeding, infection, or graft failure
- Encourage gradual activity resumption
- Assess for neurological deficits (in cerebral aneurysm cases)
- Educate on long-term follow-up and medication adherence

Q 6 Deep vein thrombosis (DVT).

Ans: Deep vein thrombosis (DVT) is the formation of a blood clot (thrombus) in a deep vein, most commonly in the legs (calf or thigh veins). It is a serious condition because the clot can dislodge and travel to the lungs, causing a pulmonary embolism (PE).

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Causes and Risk Factors

Virchow's Triad (Three Main Factors Leading to DVT)

1. **Venous stasis:** Slow blood flow (e.g., prolonged immobility, bed rest, long flights)
2. **Endothelial injury:** Damage to the vein (e.g., surgery, trauma, catheterization)
3. **Hypercoagulability:** Increased clotting tendency (e.g., pregnancy, cancer, thrombophilia, oral contraceptives)

Other Risk Factors

- Obesity
- Smoking
- Heart failure
- Advanced age
- Varicose veins

Clinical Manifestations

- Swelling (usually unilateral, in the affected leg)
- Pain or tenderness (especially in the calf)
- Redness and warmth over the affected area
- Dilated superficial veins
- Homan's Sign (pain in the calf on dorsiflexion of the foot): Not always reliable

Complications

- **Pulmonary embolism (PE):** The most serious complication, where a clot dislodges and travels to the lungs, causing sudden shortness of breath, chest pain, and hypoxia.
- **Postthrombotic syndrome (PTS):** Chronic swelling, pain, and skin changes due to long-term venous damage.

Diagnosis

- **D-dimer test:** Elevated levels indicate clot formation (not specific for DVT).
- **Doppler ultrasound (venous duplex scan):** The gold standard for DVT detection.
- **Venography or MRI/CT venography:** Used in complex cases.

Management of DVT

Pharmacological Treatment

- **Anticoagulants (blood thinners):**
  - *Heparin (IV)/low molecular weight heparin (LMWH, e.g., enoxaparin):* Used initially
  - *Warfarin (oral anticoagulant) or DOACs (e.g., rivaroxaban, apixaban):* Long-term prevention
- **Thrombolytic therapy (tPA, streptokinase):** Used in severe cases to dissolve large clots.

Nonpharmacological Treatment

- **Leg elevation:** Reduces swelling and improves blood flow.
- **Compression stockings:** Prevents swelling and reduces risk of PTS.
- **Ambulation (if stable):** Helps prevent clot progression.
- **Inferior vena cava (IVC) filter:** Used in patients who cannot take anticoagulants to prevent clot migration to the lungs.

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Nursing Responsibilities

Prevention of DVT

- Encourage early ambulation after surgery.
- Leg exercises and ROM (range of motion) for bedridden patients.
- Use of sequential compression devices (SCDs) or TED stockings.
- Educate patients on hydration and avoiding prolonged immobility (e.g., during travel).

Monitoring and Management

- Assess for signs of DVT and PE (sudden shortness of breath, chest pain).
- Monitor PT/INR for patients on warfarin to maintain therapeutic levels.
- Monitor for signs of bleeding (due to anticoagulants).
- Educate patients about medication adherence and lifestyle modifications.

Q7 Peripheral artery diseases.

Ans: Peripheral artery disease (PAD) is a chronic circulatory condition caused by the narrowing or blockage of peripheral arteries, most commonly affecting the legs and feet due to atherosclerosis (plaque buildup in the arteries). It leads to reduced blood flow (ischemia), causing pain, impaired wound healing, and increased risk of amputation.

Causes and Risk Factors

- **Atherosclerosis (primary cause):** Fatty deposits (plaques) build up in arterial walls, restricting blood flow.
- **Risk factors:**
  - Smoking (major contributor)
  - Diabetes mellitus
  - Hypertension (high blood pressure)
  - Hyperlipidemia (high cholesterol)
  - Obesity and sedentary lifestyle
  - Family history of cardiovascular diseases
  - Age >50 years

Clinical Manifestations

- **Intermittent claudication:** Pain, cramping, or tightness in the calf, thigh, or buttocks during walking, relieved by rest.
- **Rest pain:** Burning pain in feet or toes, worsens at night.
- **Cold, pale, or bluish skin (cyanosis):** Due to reduced blood supply.
- Weak or absent pulses in legs (e.g., dorsalis pedis, posterior tibial)
- Delayed wound healing and nonhealing ulcers (commonly in toes or feet)
- Shiny, thin skin with hair loss on legs
- Gangrene (tissue death) in severe cases

Complications

- **Critical limb ischemia (CLI):** Chronic, severe blockage causing pain, ulcers, or tissue death.
- **Amputation:** Due to nonhealing ulcers or gangrene.
- **Increased risk of heart attack and stroke:** Due to systemic atherosclerosis.

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Diagnosis

1. **Ankle-brachial index (ABI):**
   - ABI <0.9 indicates PAD.
   - ABI <0.4 suggests severe PAD.
2. **Doppler ultrasound:** Assesses blood flow in arteries.
3. **Angiography (CT/MRI or contrast angiography):** Identifies arterial blockages.
4. **Blood tests:** Lipid profile, blood sugar, and inflammatory markers.

Management of PAD

Lifestyle Modifications

- Smoking cessation (most important)
- Regular exercise (supervised walking program): improves circulation.
- Healthy diet (low fat, high fiber, controlled sugar and salt)
- Weight management and blood pressure control

Medications

- **Antiplatelets (aspirin, clopidogrel):** Prevent clot formation.
- **Statins (atorvastatin, rosuvastatin):** Lower cholesterol.
- **Antihypertensives (ACE inhibitors, beta-blockers):** Control blood pressure.
- **Cilostazol and pentoxifylline:** Improve blood flow and reduce symptoms.

Surgical and Interventional Procedures

- **Angioplasty and stenting:** Balloon dilation with stent placement to open blocked arteries.
- **Bypass surgery:** Creating a new path for blood flow using a vein or synthetic graft.
- **Amputation (last resort):** In cases of severe gangrene.

Nursing Responsibilities

Assessment and Monitoring

- Check for pain, pallor, pulselessness, paresthesia, and paralysis in extremities.
- Assess wound healing and signs of infection/gangrene.
- Monitor ABI, Doppler ultrasound reports, and laboratory tests.

Patient Education

- Encourage smoking cessation and lifestyle modifications.
- Advise regular foot care and protective footwear to prevent ulcers.
- Educate on medication adherence and recognizing symptoms of worsening PAD.

Postprocedure Care (After Angioplasty or Bypass Surgery)

- Monitor for bleeding, infection, and circulation changes.
- Assess peripheral pulses and wound healing.
- Encourage gradual mobilization.

Q8 Pericarditis.

Ans: Pericarditis is the inflammation of the pericardium, the thin, double-layered sac surrounding the heart. This condition can lead to chest pain, pericardial effusion (fluid buildup), and in severe cases, cardiac tamponade (compression of the heart due to excessive fluid).

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