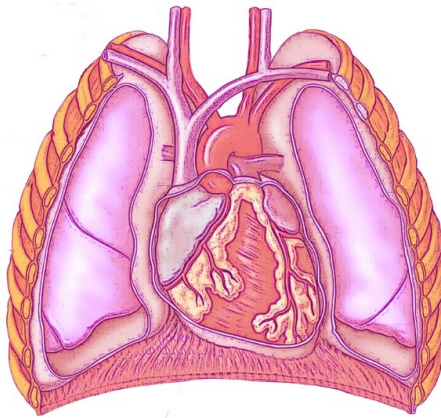




Internal Medicine



Topic : Cardiovascular Diseases
Done by : Johainah Taha

Ischemic heart diseases



Ischemic heart disease encompasses conditions characterized by **reduced blood flow** to the heart muscle, primarily due to **coronary artery disease**. Two critical manifestations are unstable angina and myocardial infarction (MI), both falling under the umbrella of acute coronary syndromes (ACS).

Unstable Angina (UA):

Unstable angina is characterized by **sudden chest pain or discomfort** resulting from insufficient blood flow to the heart muscle. Unlike **stable angina**, which occurs predictably with **exertion**, unstable angina can occur **at rest** or **with minimal exertion** and represents a more serious condition. It **does not** typically result in **permanent heart muscle damage**.

Myocardial Infarction (MI):

Myocardial infarction, commonly known as a **heart attack**, occurs when blood flow to a part of the heart muscle is **completely blocked**, leading to tissue damage or death. MIs are classified into:

- **ST-Elevation Myocardial Infarction (STEMI)**: Characterized by a **complete** blockage of a coronary artery, resulting in significant **damage** to the heart muscle.
- **Non-ST-Elevation Myocardial Infarction (NSTEMI)**: Involves a **partial** blockage, leading to **less extensive damage** compared to STEMI.

Both types of MI require prompt medical attention to restore blood flow and minimize heart damage.

Diagnosis:

The initial evaluation of suspected ACS includes:

- **Electrocardiogram (ECG)**: Identifies **ST-segment changes** indicative of ischemia or infarction.
- **Cardiac Biomarkers**: Elevated levels of **troponins** in the blood confirm myocardial injury.

These diagnostic tools help **differentiate** between unstable angina, NSTEMI, and STEMI, guiding appropriate treatment strategies.

Management:

Management of unstable angina and MI focuses on **relieving symptoms**^①, **preventing further ischemia**^②, and **reducing mortality risk**^③. Key interventions include:

- **Antiplatelet Therapy**: Medications like **aspirin** and **P2Y12 inhibitors** **prevent clot formation**.
- **Anticoagulants**: Agents such as **heparin** **reduce the risk of new clot development**.
- **Beta-Blockers**: **Lower heart rate** and **blood pressure**, **decreasing myocardial oxygen demand**.
- **Reperfusion Therapy**: For STEMI patients, timely restoration of blood flow via **percutaneous coronary intervention** (PCI) or **thrombolytic therapy** is crucial.

Long-term management includes **lifestyle modifications** and medications like **statins to prevent recurrence**.

Heart failure

Heart failure (HF) is a complex clinical syndrome resulting from any structural or functional impairment of ventricular filling or ejection of blood, leading to insufficient blood supply to meet the body's needs.

Etiology:

Common causes of heart failure include:

- **Coronary Artery Disease (CAD):** Reduced blood flow to the heart muscle due to plaque buildup.
- **Hypertension:** Chronic high blood pressure increases the heart's workload, leading to hypertrophy and eventual failure.
- **Cardiomyopathies:** Diseases of the heart muscle, which may be genetic or acquired.
- **Valvular Heart Disease:** Dysfunctional heart valves can lead to volume or pressure overload.
- **Arrhythmias:** Abnormal heart rhythms can impair cardiac function.

Pathophysiology:

Heart failure can result from:

- **Systolic Dysfunction:** Impaired ventricular contraction leading to reduced ejection fraction.
- **Diastolic Dysfunction:** Impaired ventricular relaxation and filling with preserved ejection fraction.

Compensatory mechanisms, such as activation of the renin-angiotensin-aldosterone system (RAAS) and sympathetic nervous system, initially help maintain cardiac output but eventually contribute to disease progression.

Clinical Presentation:

Patients with heart failure may present with:

- **Dyspnea:** Shortness of breath, especially on exertion or when lying flat.
- **Fatigue and Weakness:** Due to reduced cardiac output.
- **Edema:** Swelling in the legs, ankles, and feet from fluid accumulation.
- **Orthopnea and Paroxysmal Nocturnal Dyspnea:** Difficulty breathing when lying down and sudden nighttime breathlessness.

Diagnosis:

Diagnostic evaluation includes:

- **History and Physical Examination:** Assessing symptoms and signs like jugular venous distension and rales.
- **Laboratory Tests:** Elevated B-type natriuretic peptide (BNP) levels suggest heart failure.
- **Imaging:** Chest X-ray may show cardiomegaly and pulmonary congestion.
- **Echocardiography:** Evaluates ventricular function, ejection fraction, and structural abnormalities.

Management:

Treatment aims to alleviate symptoms, improve quality of life, and reduce mortality:

- **Lifestyle Modifications:** Sodium restriction, fluid management, and regular physical activity.
- **Pharmacotherapy:**
- **ACE Inhibitors/ARBs:** Reduce afterload and inhibit RAAS.
- **Beta-Blockers:** Decrease sympathetic activation and heart rate.
- **Diuretics:** Manage fluid overload and congestion.
- **Mineralocorticoid Receptor Antagonists:** Provide additional RAAS inhibition.
- **Device Therapy:**
- **Implantable Cardioverter-Defibrillators (ICDs):** Prevent sudden cardiac death in select patients.
- **Cardiac Resynchronization Therapy (CRT):** Improves ventricular synchrony in patients with conduction delays.
- **Advanced Therapies:** In refractory cases, options include ventricular assist devices or heart transplantation.

Congenital heart disease

Congenital heart disease (CHD) refers to structural abnormalities of the heart or its associated blood vessels present at birth. These defects can alter normal blood flow, potentially leading to a range of health issues.

Types of Congenital Heart Defects:

CHDs vary widely in form and severity. Common types include:

- **Septal Defects:** Openings in the heart's septum, such as atrial septal defects (ASD) and ventricular septal defects (VSD), allowing blood to pass between chambers.
- **Obstructive Defects:** Narrowed or blocked heart valves or vessels, including pulmonary stenosis and aortic coarctation, restricting blood flow.
- **Cyanotic Defects:** Conditions like tetralogy of Fallot, where oxygen-poor blood is circulated to the body, leading to cyanosis (bluish skin).

Causes and Risk Factors:

The exact cause of most CHDs is unknown, but several factors may contribute:

- **Genetic Factors:** Chromosomal abnormalities or inherited genetic mutations.
- **Environmental Influences:** Maternal illnesses (e.g., diabetes, viral infections), certain medications, alcohol consumption, and smoking during pregnancy.

Symptoms:

Symptoms depend on the type and severity of the defect and may include:

- Bluish skin, lips, and nails (cyanosis).
- Rapid breathing or difficulty breathing.
- Fatigue, especially during feeding or exercise.
- Swelling in the legs, abdomen, or areas around the eyes.
- Heart murmurs detected during a physical exam.

Diagnosis:

CHDs are often diagnosed through:

- **Prenatal Ultrasound:** Detects some defects before birth.
- **Echocardiography:** Uses sound waves to create detailed images of the heart's structure and function.
- **Electrocardiogram (ECG):** Measures the heart's electrical activity.
- **Cardiac MRI:** Provides detailed images of the heart.
- **Cardiac Catheterization:** Involves inserting a catheter into the heart to examine its structure and function.

Treatment:

Management depends on the specific defect and its severity:

- **Medication:** To manage symptoms or prevent complications.
- **Interventional Procedures:** Catheter-based techniques to repair certain defects without open surgery.
- **Surgery:** To correct or palliate complex defects.
- **Heart Transplant:** In severe cases where repair isn't feasible.

Advancements in medical care have significantly improved outcomes for individuals with CHD, allowing many to lead healthy lives into adulthood.

Valvular heart disease

Valvular heart disease (VHD) involves damage to or a defect in one of the four heart valves: the mitral, aortic, tricuspid, or pulmonary. These valves ensure unidirectional blood flow through the heart's chambers. When they malfunction, it can disrupt normal circulation and strain the heart.

Types of Valvular Heart Disease:

1. **Stenosis:** This occurs when a valve doesn't fully open due to thickening or stiffening, restricting blood flow. For example, aortic stenosis involves narrowing of the aortic valve, impeding blood flow from the heart to the body.
2. **Regurgitation (Insufficiency):** In this condition, a valve doesn't close properly, allowing blood to leak backward. Mitral valve regurgitation, for instance, permits blood to flow back into the left atrium from the left ventricle.
3. **Prolapse:** This is characterized by valve leaflets bulging back into the preceding chamber, which can lead to regurgitation. Mitral valve prolapse is a common example.

Causes:

- **Congenital Defects:** Some individuals are born with malformed valves, such as a bicuspid aortic valve, which has two leaflets instead of three.
- **Age-Related Changes:** Over time, valves can thicken or calcify, leading to stenosis or regurgitation.
- **Infections:** Conditions like rheumatic fever or infective endocarditis can damage valves.
- **Other Conditions:** Heart attacks, cardiomyopathy, or high blood pressure can contribute to valve dysfunction.

Symptoms:

VHD may be asymptomatic in its early stages. As the condition progresses, symptoms can include:

- Shortness of breath, especially during activity or when lying down.
- Fatigue and weakness.
- Swelling in the ankles, feet, or abdomen.
- Chest pain or discomfort.
- Palpitations or irregular heartbeats.
- Dizziness or fainting.

Diagnosis:

Diagnosis typically involves:

- **Physical Examination:** Listening for heart murmurs that suggest turbulent blood flow.
- **Echocardiography:** Ultrasound imaging to assess valve structure and function.
- **Electrocardiogram (ECG):** Recording the heart's electrical activity to detect abnormalities.
- **Chest X-ray:** Identifying heart enlargement or fluid in the lungs.
- **Cardiac MRI or CT Scan:** Providing detailed images of the heart and valves.

Treatment:

Management depends on the severity and type of valve disease:

- **Monitoring:** Regular check-ups for mild cases without symptoms.
- **Medications:** To manage symptoms or underlying conditions, though they can't correct valve defects.
- **Surgical Procedures:**
 - **Valve Repair:** Modifying the existing valve to function properly.
 - **Valve Replacement:** Replacing the damaged valve with a mechanical or biological prosthesis.

Early detection and appropriate management of valvular heart disease are crucial to prevent complications such as heart failure, stroke, or sudden cardiac arrest. Regular medical evaluations are essential, especially for individuals with risk factors or existing heart conditions.

Rheumatic fever

Rheumatic fever (RF) is an inflammatory disease that can develop as a complication of untreated or inadequately treated group A streptococcal (GAS) pharyngitis, commonly known as strep throat. It primarily affects children between the ages of 5 and 15 but can occur at any age. The condition can cause long-term damage to the heart and other organs.

Causes and Pathophysiology:

Rheumatic fever results from an autoimmune response to GAS infection. The body's immune system mistakenly attacks its own tissues, particularly the heart, joints, skin, and central nervous system, leading to inflammation and tissue damage.

Symptoms:

Symptoms of rheumatic fever typically appear 2 to 4 weeks after a strep throat infection and may include:

- Fever
- Painful and swollen joints, often migrating from one joint to another
- Chest pain or palpitations
- Fatigue
- Shortness of breath
- Skin rash (erythema marginatum)
- Uncontrolled movements of the limbs or face (Sydenham chorea)
- Painless nodules under the skin

Diagnosis (based on the modified Jones criteria) :

Major criteria:

- Carditis
- Polyarthritis
- Chorea
- Erythema marginatum
- Subcutaneous nodules

Minor criteria:

- Fever
- Arthralgia
- Elevated acute phase reactants (e.g., ESR, CRP)
- Prolonged PR interval on ECG

A diagnosis requires evidence of a preceding GAS infection along with the presence of either two major criteria or one major and two minor criteria.

Treatment:

- **Antibiotics:** To eradicate any remaining GAS infection.
- **Anti-inflammatory treatment:** Such as aspirin or corticosteroids to reduce inflammation and alleviate symptoms.
- **Long-term antibiotic prophylaxis:** To prevent recurrence, often continued for several years or longer, depending on individual risk factors.

Prevention:

Primary prevention involves prompt and appropriate antibiotic treatment of streptococcal throat infections to prevent the initial occurrence of rheumatic fever. Secondary prevention includes long-term antibiotic prophylaxis to prevent recurrent attacks in individuals with a history of rheumatic fever.

Early recognition and treatment of streptococcal infections are crucial in preventing rheumatic fever and its complications.

Hypertension

Commonly known as high blood pressure, is a condition where the force of the blood against the artery walls is consistently too high. It is categorized into two main types: essential (primary) hypertension and secondary hypertension.

Essential (Primary) Hypertension:

Essential hypertension accounts for approximately 90–95% of all hypertension cases. It is characterized by elevated blood pressure without an identifiable underlying cause. While the exact etiology remains unclear, several factors are associated with its development:

- **Genetic Predisposition:** A family history of hypertension increases the likelihood of developing the condition.
- **Lifestyle Factors:** High sodium intake, excessive alcohol consumption, physical inactivity, and obesity contribute to elevated blood pressure.
- **Age:** The risk of hypertension increases with age due to arterial stiffness and other age-related changes.
- **Ethnicity:** Certain populations, such as African Americans, have a higher prevalence of hypertension.

Management primarily focuses on lifestyle modifications and, if necessary, antihypertensive medications to control blood pressure levels.

Secondary Hypertension:

Secondary hypertension constitutes about 5–10% of hypertension cases and results from an identifiable underlying condition. Common causes include:

- **Kidney Disease:** Conditions like chronic kidney disease or renal artery stenosis can lead to elevated blood pressure.
- **Endocrine Disorders:** Diseases such as hyperthyroidism, Cushing's syndrome, or primary aldosteronism affect hormone levels that regulate blood pressure.
- **Obstructive Sleep Apnea:** This sleep disorder is associated with increased blood pressure due to intermittent hypoxia and sympathetic activation.
- **Medications:** Certain drugs, including oral contraceptives, nonsteroidal anti-inflammatory drugs (NSAIDs), and decongestants, can raise blood pressure.

Identifying and treating the underlying cause is crucial in managing secondary hypertension. In some cases, addressing the root issue can normalize blood pressure without the need for long-term antihypertensive therapy.

Diagnosis and Management:

Accurate blood pressure measurement is essential for diagnosis. Recent studies emphasize proper arm positioning during measurement to avoid misdiagnosis. For instance, supporting the arm at heart level yields more accurate readings.

In cases of resistant hypertension, where blood pressure remains high despite the use of multiple medications, advanced treatments like renal denervation have emerged. This procedure targets overactive renal nerves to help regulate blood pressure.

Regular monitoring and appropriate management of hypertension are vital to reduce the risk of complications such as heart disease, stroke, and kidney failure.

Cardiomyopathies and pericardial diseases

Cardiomyopathies and pericardial diseases are distinct conditions affecting the heart's muscle and surrounding sac, respectively. Understanding their types, causes, symptoms, and management is crucial for effective diagnosis and treatment.

Cardiomyopathies: Cardiomyopathy refers to diseases of the heart muscle that impair its ability to pump blood effectively. The main types include:

- **Dilated Cardiomyopathy (DCM):** Characterized by enlargement and weakening of the heart chambers, leading to reduced cardiac output. Causes encompass genetic factors, alcohol abuse, and viral infections. Symptoms often involve fatigue, shortness of breath, and swelling in the legs.
- **Hypertrophic Cardiomyopathy (HCM):** Involves abnormal thickening of the heart muscle, particularly the left ventricle, which can obstruct blood flow and lead to arrhythmias. It's often hereditary and may present with chest pain, dizziness, or sudden cardiac arrest. Notably, women are frequently underdiagnosed with HCM due to traditional diagnostic criteria not accounting for sex differences.
- **Restrictive Cardiomyopathy (RCM):** The heart muscle becomes rigid, restricting proper filling during diastole. This can result from conditions like amyloidosis or fibrosis. Patients may experience shortness of breath and peripheral edema.
- **Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC):** A rare form where fatty or fibrous tissue replaces the right ventricular muscle, leading to arrhythmias. It has a genetic basis and may cause palpitations or fainting spells.

Pericardial Diseases: Pericardial diseases affect the pericardium, the double-layered sac surrounding the heart. Common conditions include:

- **Pericarditis:** Inflammation of the pericardium, often due to viral infections, autoimmune diseases, or post-cardiac injury. Symptoms typically include sharp chest pain that may radiate to the back. Diagnosis involves clinical evaluation and imaging studies.
- **Pericardial Effusion:** Accumulation of excess fluid between the pericardial layers, which can result from pericarditis, kidney failure, or malignancies. Small effusions might be asymptomatic, while larger ones can cause chest discomfort and breathing difficulties. Significant effusions may lead to cardiac tamponade, a life-threatening condition requiring prompt intervention.
- **Constrictive Pericarditis:** Chronic inflammation leading to a thickened, inelastic pericardium that restricts heart movement, mimicking restrictive cardiomyopathy. Patients may present with signs of heart failure, such as swelling and fatigue. Differentiating between constrictive pericarditis and restrictive cardiomyopathy is essential, as treatment approaches differ.

Diagnosis and Management:

Accurate diagnosis of these conditions often requires multimodality imaging, including echocardiography, cardiac computed tomography (CT), and magnetic resonance imaging (MRI). For instance, in cardiac amyloidosis, these imaging techniques are vital for assessing pericardial involvement.

Treatment:

Management strategies vary based on the specific condition and its severity:

- **Cardiomyopathies:** Treatment may involve lifestyle modifications, medications to manage symptoms and prevent complications, and in some cases, surgical interventions like implantable cardioverter-defibrillators (ICDs) or heart transplantation. For example, hypertrophic cardiomyopathy may require medications to reduce heart muscle thickness and control arrhythmias.
- **Pericardial Diseases:** Treatment options include anti-inflammatory medications for pericarditis, pericardiocentesis to remove excess fluid in pericardial effusion, and surgical procedures like pericardiectomy in cases of constrictive pericarditis. Early recognition and appropriate management are crucial to prevent complications.

Understanding the nuances of cardiomyopathies and pericardial diseases is essential for timely diagnosis and effective treatment, ultimately improving patient outcomes.

Arrhythmias

Arrhythmias are disturbances in the heart's rhythm, which can be categorized based on their origin, characteristics, and clinical implications.

1. Distinction Between Ventricular and Supraventricular Rhythms:

- **Supraventricular Arrhythmias:** Originate above the ventricles, typically in the atria or the atrioventricular (AV) node. They often present with narrow QRS complexes on an electrocardiogram (ECG). Common types include atrial fibrillation, atrial flutter, and supraventricular tachycardia.
- **Ventricular Arrhythmias:** Originate within the ventricles and are generally more serious. They usually present with wide QRS complexes on an ECG. Examples include ventricular tachycardia and ventricular fibrillation.

2. Atrial Fibrillation and Atrial Flutter:

- **Atrial Fibrillation (AF):** Characterized by rapid and irregular atrial contractions leading to an irregularly irregular ventricular response. Symptoms may include palpitations, fatigue, and shortness of breath. AF increases the risk of stroke and heart failure. Management includes rate or rhythm control strategies and anticoagulation therapy to prevent thromboembolic events.
- **Atrial Flutter:** Involves a reentrant circuit within the atria, causing regular but rapid atrial contractions, typically around 250-350 beats per minute. The ventricular rate may be regular or irregular, depending on the conduction through the AV node. Symptoms and management are similar to those of AF.

3. Heart Block (Atrioventricular Block):

- **First-Degree AV Block:** Characterized by a prolonged PR interval (>200 ms) on the ECG without interruption in atrial to ventricular conduction. It is often asymptomatic and may not require treatment.
- **Second-Degree AV Block:**
 - *Mobitz Type I (Wenckebach):* Progressive prolongation of the PR interval until a dropped QRS complex occurs. It is usually benign and may not necessitate intervention.
 - *Mobitz Type II:* Intermittent non-conducted P waves without progressive PR prolongation. This type is more likely to progress to complete heart block and often requires pacemaker implantation.
- **Third-Degree (Complete) AV Block:** There is no conduction between the atria and ventricles, leading to independent atrial and ventricular rhythms. Patients may experience dizziness, syncope, or heart failure. Permanent pacemaker placement is typically indicated.

4. Bundle Branch and Hemiblocks:

- **Bundle Branch Blocks (BBB):** Occur when there's a delay or blockage along the pathway that electrical impulses travel to make the heart beat.
 - *Right Bundle Branch Block (RBBB):* Delay in the right ventricle's depolarization, often seen as an "M-shaped" pattern in leads V1-V3 on the ECG. It can be benign or associated with conditions like pulmonary embolism.
 - *Left Bundle Branch Block (LBBB):* Delay in the left ventricle's depolarization, presenting with a broad or notched R wave in leads I, V5, and V6. LBBB may indicate underlying cardiac disease and can interfere with the diagnosis of other conditions on the ECG.
- **Hemiblocks (Fascicular Blocks):** Involve blockage of one of the fascicles of the left bundle branch.
 - *Left Anterior Fascicular Block (LAFB):* Results in left axis deviation on the ECG.
 - *Left Posterior Fascicular Block (LPFB):* Leads to right axis deviation. Isolated LPFB is rare and often suggests significant underlying heart disease.

5. Main Supraventricular Tachycardias (SVTs):

- **Atrioventricular Nodal Reentrant Tachycardia (AVNRT):** The most common type of SVT, caused by a reentrant circuit within or near the AV node. It presents with a regular, rapid heart rate and sudden onset and termination. Management may include vagal maneuvers, medications, or catheter ablation.
- **Atrioventricular Reentrant Tachycardia (AVRT):** Involves an accessory pathway outside the AV node, such as in Wolff-Parkinson-White syndrome. It can lead to rapid heart rates and may be associated with pre-excitation on the ECG. Treatment options include medications and catheter ablation.
- **Atrial Tachycardia:** Originates from an ectopic focus within the atria, leading to a regular atrial rate typically between 140-240 beats per minute. P-wave morphology differs from sinus rhythm. Management includes rate control, antiarrhythmic medications, and possibly ablation.

Infective endocarditis

Infective endocarditis (IE) is an infection of the endocardial surface of the heart, typically involving the heart valves. It is a serious condition that can lead to significant morbidity and mortality if not promptly diagnosed and treated.

Etiology and Risk Factors:

IE is most commonly caused by bacterial pathogens, with *Staphylococcus aureus* and *Streptococcus* species being the predominant culprits. Fungal infections are less common but can occur, especially in immunocompromised individuals. Risk factors for developing IE include:

- Pre-existing valvular heart disease, such as rheumatic heart disease or congenital heart defects.
- Presence of prosthetic heart valves or intracardiac devices.
- Intravenous drug use, which can introduce pathogens directly into the bloodstream.
- Chronic hemodialysis, due to repeated vascular access.
- Immunosuppression, increasing susceptibility to infections.

Clinical Presentation:

- Fever and chills.
- New or changing heart murmurs.
- Fatigue and weakness.
- Petechiae (small red or purple spots on the skin).
- Osler's nodes (tender subcutaneous nodules on fingers or toes).
- Janeway lesions (painless erythematous lesions on palms or soles).
- Splenomegaly (enlarged spleen).

Diagnosis:

The diagnosis of IE is based on a combination of clinical findings, blood cultures, and imaging studies. The modified Duke criteria are commonly used to aid in diagnosis, incorporating:

- **Major Criteria:**
 - Positive blood cultures with typical IE microorganisms.
 - Evidence of endocardial involvement on echocardiography (e.g., vegetations, abscess).
- **Minor Criteria:**
 - Predisposing heart condition or intravenous drug use.
 - Fever $\geq 38^{\circ}\text{C}$ (100.4°F).
 - Vascular phenomena (e.g., arterial emboli, Janeway lesions).
 - Immunologic phenomena (e.g., Osler's nodes, Roth's spots).
 - Microbiological evidence not meeting major criteria.

Blood cultures are essential and should be obtained before initiating antibiotic therapy. Transthoracic echocardiography (TTE) is often the first imaging modality used, but transesophageal echocardiography (TEE) offers higher sensitivity, especially for detecting smaller vegetations or abscesses.

Treatment:

Management of IE typically involves prolonged courses of intravenous antibiotics, tailored to the identified organism and its susceptibilities. Empiric therapy may be initiated in acutely ill patients, often including agents effective against *Staphylococcus aureus*, *Streptococcus* species, and enterococci. The duration of antibiotic therapy usually ranges from 4 to 6 weeks, depending on the pathogen and the presence of prosthetic material.

Surgical intervention may be necessary in cases of:

- Heart failure due to valvular dysfunction.
- Uncontrolled infection despite appropriate antibiotic therapy.
- Prevention of systemic embolization from large vegetations.
- Prosthetic valve endocarditis with dehiscence or obstruction.

Prognosis and Prevention:

Despite advances in medical and surgical therapies, IE remains associated with high morbidity and mortality. Early diagnosis and appropriate treatment are crucial for improving outcomes. Preventive measures include maintaining good oral hygiene and, in certain high-risk individuals, prophylactic antibiotics before specific dental or surgical procedures.

Cardiac tumors

Cardiac tumors are abnormal growths within the heart or its surrounding structures. They can be classified based on their origin and nature:

Classification:

1. **Primary Cardiac Tumors:** Originate within the heart.

- **Benign Tumors:**

- **Myxomas:** The most common primary cardiac tumors, often located in the left atrium. They can cause symptoms by obstructing blood flow or through embolization.
- **Lipomas:** Composed of fatty tissue, these tumors can occur in various heart chambers and are usually asymptomatic.
- **Rhabdomyomas:** Frequently seen in children and often associated with tuberous sclerosis.

- **Malignant Tumors:**

- **Sarcomas:** The most prevalent malignant primary cardiac tumors, including angiosarcomas and rhabdomyosarcomas. They tend to have a poor prognosis due to aggressive local invasion.

2. **Secondary (Metastatic) Cardiac Tumors:** Originate elsewhere in the body and spread to the heart. Common primary sites include the lungs, breasts, kidneys, and melanomas. These tumors are more common than primary cardiac tumors.

Symptoms:

Clinical manifestations depend on the tumor's size, location, and type. Common symptoms include:

- **Obstructive Symptoms:** Dyspnea, syncope, or heart failure due to impaired blood flow.
- **Embolic Events:** Stroke or peripheral embolization from tumor fragments entering the bloodstream.
- **Arrhythmias:** Palpitations or syncope resulting from interference with the heart's electrical pathways.
- **Constitutional Symptoms:** Fever, weight loss, or malaise, particularly with myxomas.

Diagnosis:

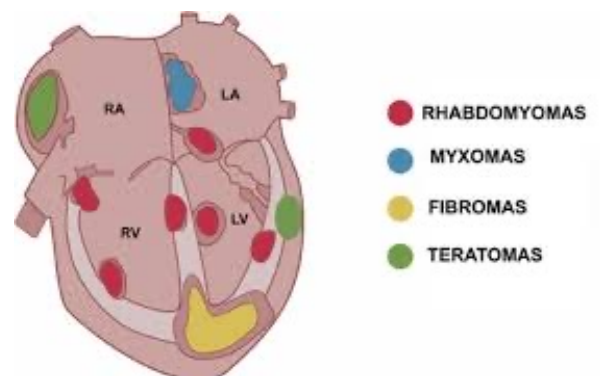
Diagnostic evaluation typically involves:

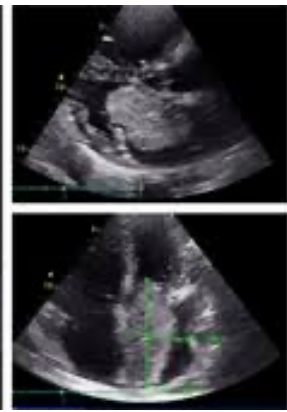
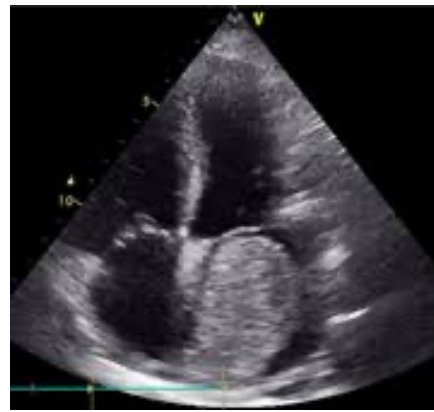
- **Echocardiography:** First-line imaging to visualize tumor size, location, and mobility.
- **Cardiac Magnetic Resonance Imaging (MRI):** Provides detailed tissue characterization and assessment of tumor extent.
- **Computed Tomography (CT) Scan:** Useful for evaluating calcifications and involvement of adjacent structures.
- **Biopsy:** May be necessary for definitive diagnosis, especially in malignant cases.

Treatment:

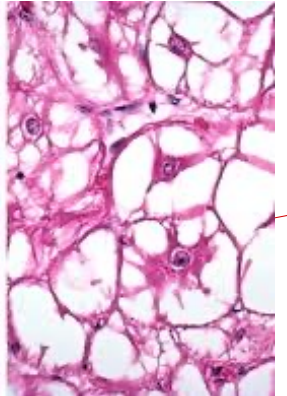
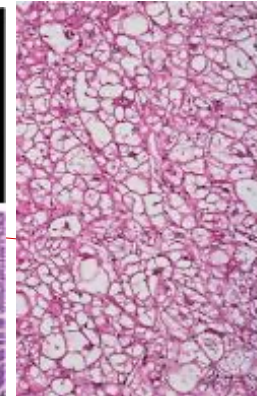
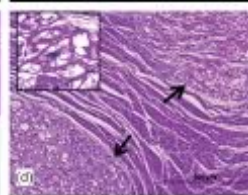
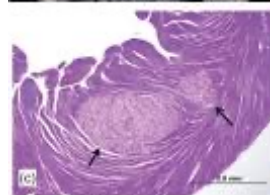
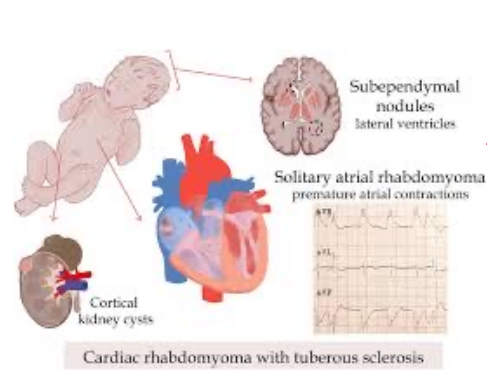
Management strategies depend on the tumor type:

- **Benign Tumors:** Surgical resection is the treatment of choice, often resulting in excellent outcomes. Regular follow-up is essential to monitor for recurrence.
- **Malignant Tumors:** Treatment may involve a combination of surgery, chemotherapy, and radiation therapy. Prognosis remains poor due to the aggressive nature of these tumors.
- **Metastatic Tumors:** Management focuses on the primary cancer, with treatment options including chemotherapy, radiation, and palliative care.





Myxoma



Rhabdomyomas

Pulmonary cardiac diseases

Pulmonary cardiac diseases encompass a range of conditions where the heart and lungs interact, leading to mutual dysfunction. These interrelated disorders often result from chronic pulmonary diseases that impose increased workload on the heart, particularly the right ventricle.

Key Conditions:

1. **Pulmonary Hypertension (PH):** Characterized by elevated blood pressure in the pulmonary arteries, PH can arise from various causes, including chronic obstructive pulmonary disease (COPD), interstitial lung disease, and sleep apnea. The increased pressure forces the right side of the heart to work harder, potentially leading to right heart failure.

2. **Cor Pulmonale:** This condition refers to right-sided heart failure resulting from chronic lung diseases that cause pulmonary hypertension. The right ventricle's hypertrophy and eventual failure are direct consequences of prolonged pulmonary hypertension.

3. **Pulmonary Embolism (PE):** A blockage in one of the pulmonary arteries, usually due to a blood clot that has traveled to the lungs from the legs or other parts of the body (deep vein thrombosis). PE can lead to acute right heart strain and failure.

4. **Chronic Obstructive Pulmonary Disease (COPD):** A group of lung diseases that block airflow and make breathing difficult. COPD can lead to pulmonary hypertension and cor pulmonale over time.

Please Read His Text

P	Peripheral edema
R	Raised JVP
H	Hepatomegaly
T	Tricuspid incompetence

Symptoms:

Symptoms often overlap between pulmonary and cardiac systems and may include:

- Shortness of breath, especially during exertion.
- Fatigue and weakness.
- Chest discomfort or pain.
- Swelling in the ankles, legs, or abdomen.
- Cyanosis (bluish discoloration of lips and skin).

Diagnosis:

Diagnostic approaches include:

- **Echocardiography:** To assess heart function and estimate pulmonary artery pressures.
- **Right Heart Catheterization:** To directly measure pulmonary artery pressures.
- **Pulmonary Function Tests:** To evaluate lung function and identify underlying pulmonary diseases.
- **Chest Imaging:** Such as X-rays or CT scans to visualize lung and heart structures.

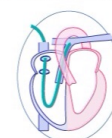
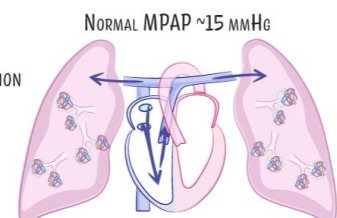
Treatment:

- **Medications:** Such as diuretics, vasodilators, and anticoagulants.
- **Oxygen Therapy:** To maintain adequate oxygen levels.
- **Lifestyle Modifications:** Including smoking cessation and weight management.
- **Surgical Interventions:** In cases of severe PE or congenital heart defects.

Pulmonary Hypertension

Key Points

- ✓ **DEFINITION —**
INCREASED PRESSURE IN PULMONARY VASCULATURE.
MPAP ≥ 25 mmHg AT REST
✓ SOME ARGUE > 20 mmHg
- ✓ **SYMPTOMS —**
SHORTNESS OF BREATH ESP. ON EXERTION
- ✓ **CONSEQUENCES —**
RIGHT HEART FAILURE
ARRHYTHMIAS
CLOTS
BLEEDING INTO THE LUNGS
- ✓ **DIAGNOSIS**
CHEST RADIOGRAPH
CONTRAST CHEST CT
ECHOCARDIOGRAPHY, ECG, & CARDIAC MRI
LUNG TESTS
DEFINITIVE TEST:
RH CATHETERIZATION
- ✓ **TREATMENT**
TREAT CAUSE
O₂, DIURETICS, DIGOXIN, ANTI-COAG, EXERCISE
VASODILATORS HELPFUL FOR SOME (GI, PAH)



Hyperlipidemia

Hyperlipidemia refers to elevated levels of lipids—primarily cholesterol and triglycerides—in the blood. This condition is a significant risk factor for cardiovascular diseases, including coronary artery disease, heart attack, and stroke.

Types of Lipids:

- **Cholesterol:** A fatty substance essential for building cell membranes and producing certain hormones. It is carried through the bloodstream by lipoproteins:
 - **Low-Density Lipoprotein (LDL):** Often termed “bad” cholesterol, high levels of LDL can lead to plaque buildup in arteries, increasing the risk of atherosclerosis.
 - **High-Density Lipoprotein (HDL):** Known as “good” cholesterol, HDL helps remove LDL from the bloodstream, thereby reducing cardiovascular risk.
- **Triglycerides:** The most common type of fat in the body, elevated triglyceride levels can also contribute to the hardening and narrowing of arteries.

Causes:

- **Dietary Factors:** High intake of saturated and trans fats.
- **Genetic Factors:** Inherited conditions like familial hypercholesterolemia lead to high cholesterol levels.
- **Medical Conditions:** Diabetes, hypothyroidism, and kidney diseases.
- **Lifestyle Factors:** Physical inactivity, smoking, and excessive alcohol consumption.

Symptoms:

Hyperlipidemia is typically asymptomatic. However, severe cases can lead to:

- **Xanthomas:** Fatty deposits under the skin.
- **Arcus senilis:** A gray or white arc visible around the cornea.

Diagnosis: ((These measurements help assess cardiovascular risk))

Routine blood tests, such as a lipid panel, measure:

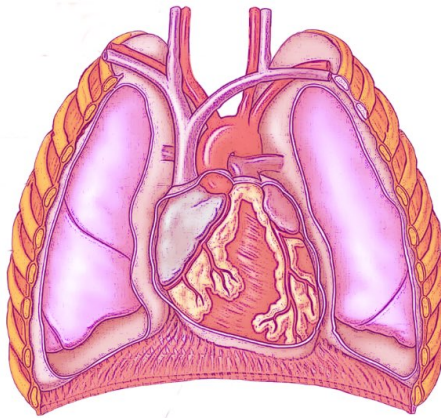
- Total cholesterol
- LDL cholesterol
- HDL cholesterol
- Triglycerides

Treatment:

- **Lifestyle Modifications:**
 - Adopting a heart-healthy diet rich in fruits, vegetables, and whole grains.
 - Engaging in regular physical activity.
 - Avoiding tobacco and limiting alcohol intake.
- **Medications:**
 - **Statins:** Lower LDL cholesterol levels.
 - **Fibrates:** Reduce triglyceride levels.
 - **PCSK9 inhibitors:** Used in certain genetic conditions.



Internal Medicine



Topic : CVS - Therapeutic Interventions
Done by : Johainah Taha