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PERICARDITIS: PATHOPHYSIOLOGY, DIAGNOSIS, AND MANAGEMENT

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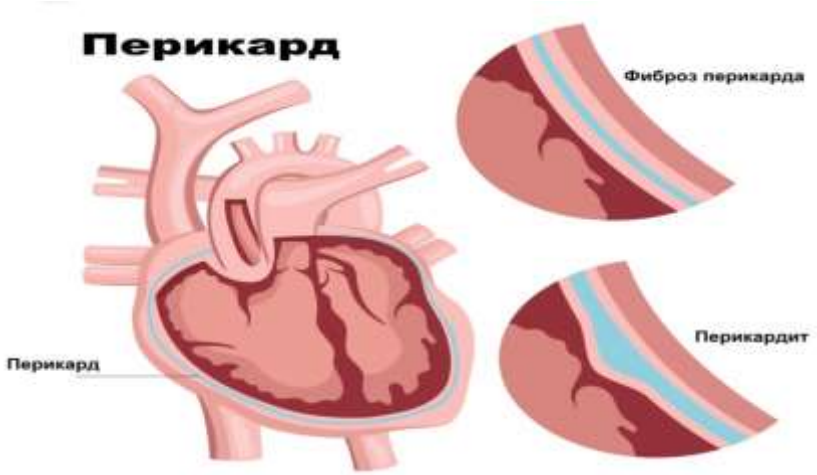
ABSTRACT:

Pericarditis is an inflammatory condition affecting the pericardium, the double-layered sac surrounding the heart. It can result from infections, autoimmune disorders, malignancies, or idiopathic causes. This paper explores the etiology, pathophysiology, clinical presentation, diagnostic criteria, and treatment options for pericarditis based on recent scientific studies. The aim is to provide a comprehensive understanding of the disease and its management strategies.

INTRODUCTION.

Pericarditis is a common cardiovascular disorder characterized by pericardial inflammation, often presenting with chest pain, pericardial friction rub, and electrocardiographic changes. The disease may be acute, recurrent, or chronic, and complications such as pericardial effusion and constrictive pericarditis can lead to severe morbidity and mortality. Understanding the pathophysiology, etiology, and diagnostic criteria is essential for optimal patient management.



Main Body

Etiology (Causes) of Pericarditis

Pericarditis is the inflammation of the pericardium, the thin sac surrounding the heart. It can be caused by various factors, including:

1. Infectious Causes:

Viral infections (e.g., Coxsackievirus, Influenza, HIV, Hepatitis)

Bacterial infections (e.g., Tuberculosis, Streptococcus, Staphylococcus)

Fungal infections (e.g., Histoplasmosis, Aspergillosis)

Parasitic infections (e.g., Toxoplasmosis)

2. Non-infectious Causes:

Autoimmune diseases (e.g., Systemic lupus erythematosus, Rheumatoid arthritis)

Post-myocardial infarction (Dressler's syndrome)

Uremia (kidney failure-related pericarditis)

Malignancy (metastatic cancer, leukemia, lymphoma)

Radiation therapy (chronic damage from radiation exposure)

Drugs and toxins (e.g., hydralazine, procainamide, isoniazid)

Trauma or cardiac surgery

Pathogenesis of Pericarditis

The development of pericarditis involves an inflammatory response triggered by various etiological factors, leading to:

1. Initial Inflammatory Response:

The pericardial tissue becomes irritated due to infection, autoimmune reaction direct injury.

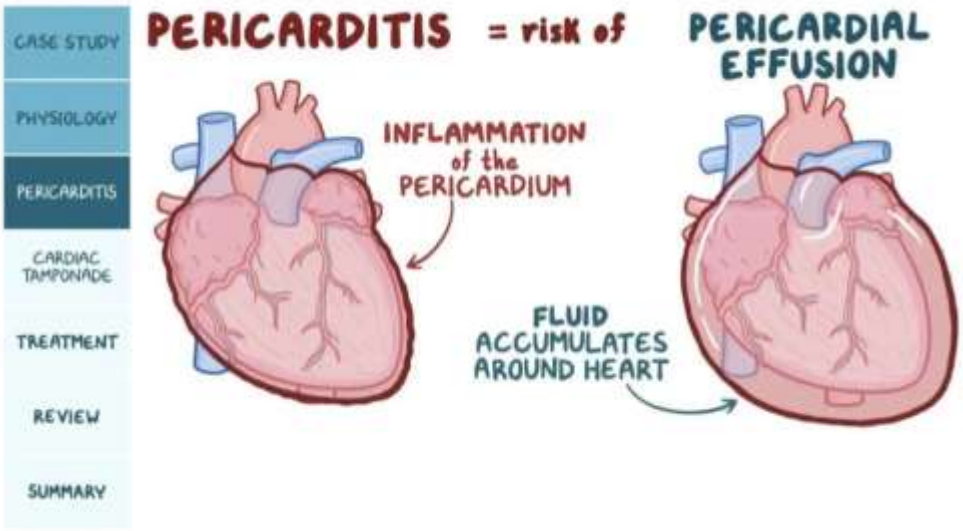
Cytokines and inflammatory mediators (e.g., interleukins, tumor necrosis factor-alpha) are released.

Increased vascular permeability allows immune cells and plasma proteins to enter the pericardial space.

2. Pericardial Effusion Formation:

Inflammatory exudate accumulates in the pericardial sac, leading to pericardial effusion.

Effusion can be serous, fibrinous, purulent, hemorrhagic, or caseous depending on the underlying cause.



3. Pericardial Thickening and Adhesion:

Chronic inflammation may cause fibrous thickening of the pericardium.

This can lead to constrictive pericarditis, where the pericardium becomes stiff and restricts heart movement.

4. Complications:

Cardiac Tamponade: Rapid accumulation of fluid can compress the heart, reducing cardiac output.

3. Diagnosis

Electrocardiography (ECG): Diffuse ST-segment elevation, PR depression.

Echocardiography: Detection of pericardial effusion and hemodynamic impact.

Cardiac MRI and CT: Useful for detecting inflammatory changes and constrictive pericarditis.

Laboratory Tests: Elevated inflammatory markers (CRP, ESR), cardiac enzymes (to rule out myocardial infarction).

4. Treatment and Management

1. General Principles of Treatment

The treatment of pericarditis depends on the underlying cause, severity, and presence of complications. The main goals are:

-Reducing inflammation and pain

-Treating the underlying cause

-Preventing complications (e.g., cardiac tamponade, constrictive pericarditis)

2. First-Line Treatment for Acute Pericarditis

A. Anti-Inflammatory Therapy

1. Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

First-line therapy for viral or idiopathic pericarditis.

Drugs:

Ibuprofen (600–800 mg every 6–8 hours for 1–2 weeks)

Aspirin (650–1000 mg every 8 hours for 1–2 weeks)

Tapering: NSAIDs should be gradually reduced over weeks to prevent recurrence.

Gastroprotection: Proton pump inhibitors (PPIs) like omeprazole should be given to prevent gastric irritation.

2. Colchicine (0.5–1.0 mg/day)Reduces recurrence risk and inflammation. Recommended for 3 months in acute pericarditis and 6 months in recurrent cases.

Contraindications: Kidney or liver disease.

3. Corticosteroids (Prednisone 0.5 mg/kg/day)

Reserved for:

Autoimmune pericarditis (e.g., lupus-related)

Pericarditis not responding to NSAIDs and colchicine

Caution: Steroids increase the risk of recurrence if used as first-line therapy.

3. Treatment Based on Etiology

A. Viral or Idiopathic Pericarditis NSAIDs + Colchicine

Self-limiting in most cases (resolves in 1–3 weeks).

B. Bacterial (Purulent) Pericarditis IV antibiotics (based on culture results).

Urgent pericardiocentesis (drainage of purulent fluid).

Surgical pericardial drainage may be needed in severe cases.

C. Tuberculous Pericarditis Antituberculosis therapy (Rifampin, Isoniazid, Pyrazinamide, Ethambutol) for at least 6 months.

Steroids (e.g., Prednisone) may be used to prevent constrictive pericarditis.

Pericardiectomy in chronic cases with fibrosis.

D. Autoimmune Pericarditis (e.g., SLE, Rheumatoid Arthritis)

Corticosteroids or immunosuppressants (Methotrexate, Azathioprine).NSAIDs and colchicine for symptomatic relief.

E. Uremic Pericarditis (Seen in Kidney Failure) Urgent dialysis is the primary treatment. NSAIDs are avoided due to kidney toxicity.

F. Post-Myocardial Infarction Pericarditis (Dressler's Syndrome)

Aspirin (preferred over NSAIDs to avoid interference with heart healing).

Colchicine to reduce recurrence.

Avoid corticosteroids unless necessary (can delay myocardial healing).

4. Management of Complications

A. Pericardial Effusion

Mild effusion: Monitor with echocardiography.

Moderate-to-large effusion:

Consider pericardiocentesis if symptomatic or hemodynamically unstable.

B. Cardiac Tamponade (Medical Emergency!)Pericardiocentesis (emergency drainage of fluid).IV fluids to maintain blood pressure.Surgical pericardial window for recurrent cases.

C. Recurrent Pericarditis Prolonged colchicine therapy (6 months).Low-dose corticosteroids for refractory cases.Pericardiectomy (surgical removal of the pericardium) in severe recurrent pericarditis.

D. Constrictive Pericarditis

Diuretics to manage symptoms of heart failure.Pericardiectomy (definitive treatment).

5. Lifestyle and Follow-Up Recommendations

Rest and activity restriction until symptoms resolve.Avoid strenuous exercise for at least 3 months in acute pericarditis and 6 months in recurrent cases.Regular echocardiography to monitor for complications.Monitor for recurrence with CRP and ESR levels

5. Prognosis and Complications

Favorable Prognosis: Most patients recover within weeks with appropriate treatment.

Complications: Recurrent pericarditis, pericardial effusion, cardiac tamponade, and constrictive pericarditis.

Conclusion:

Pericarditis remains a significant cause of cardiovascular morbidity, necessitating early recognition and appropriate management. While most cases resolve with medical therapy, severe forms require invasive interventions. Further research is needed to optimize treatment strategies, especially in recurrent and constrictive

Used literature:

1. Adler Y, Charron P, Imazio M, et al. 2015 ESC Guidelines for the Diagnosis and Management of Pericardial Diseases. European Heart Journal. 2015;36(42):2921–2964. DOI: 10.1093/eurheartj/ehv318.

2. Imazio M, Gaita F. Diagnosis and Treatment of Pericarditis. Heart. 2015;101(14):1159–1168. DOI: 10.1136/heartjnl-2014-306362.

3. Maisch B, Seferović PM, Ristić AD, et al. Guidelines on the Diagnosis and Management of Pericardial Diseases: Executive Summary. European Heart Journal. 2004;25(7):587–610. DOI: 10.1016/j.ehj.2004.02.002.

4. Braunwald E, Zipes DP, Libby P. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine. 11th Edition. Philadelphia: Elsevier; 2018.

5. Bonow RO, Mann DL, Zipes DP, Libby P. Braunwald’s Heart Disease: A Companion to Braunwald's Textbook of Cardiovascular Medicine. 2nd Edition. Philadelphia: Elsevier; 2021.

6. Imazio M, Brucato A, Cemin R, et al. Colchicine for Recurrent Pericarditis (CORP): A Randomized Trial. Annals of Internal Medicine. 2011;155(7):409–414. DOI: 10.7326/0003-4819-155-7-201110040-00359.

7. Little WC, Freeman GL. Pericardial Disease. Circulation. 2006;113(12):1622–1632. DOI: 10.1161/CIRCULATIONAHA.105.561514.

8. Imazio M, Gaita F, LeWinter M. Evaluation and Treatment of Pericarditis: A Systematic Review. JAMA. 2015;314(14):1498–1506. DOI: 10.1001/jama.2015.12763.

9. Spodick DH. Acute Pericarditis: Current Concepts and Guidelines. *