MITRAL VALVE DISORDERS

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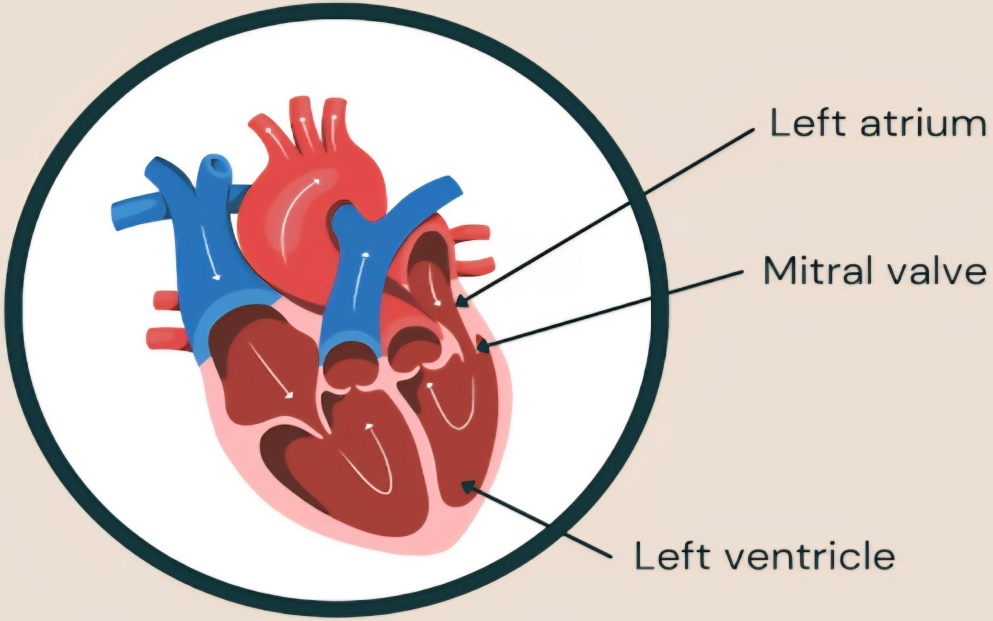
Mitral Valve Diseases :

- Mitral Stenosis
- Mitral Regurgitation

- A heart valve located between the left atrium and the left ventricle that ensures oxygen-rich blood flows in the correct direction.
- It has two leaflets that open to allow blood to enter the left ventricle and then close to prevent backflow

The mitral valve



MITRAL STENOSIS

- Narrowing of the mitral valve orifice → obstruction to LV filling
- Normal area: 5 cm^2
- Asymptomatic : until < 2 cm^2
- Severe MS: <1.0 cm^2

- **The valve orifice is slowly diminished by progressive fibrosis, leaflet Restriction and fusion of the cusps and subvalvular apparatus.**

TABLE 3.25: Etiology of mitral stenosis

- Rheumatic heart disease
- Congenital mitral stenosis
- Carcinoid tumors
- Amyloidosis
- Systemic lupus erythematosus
- Rheumatoid arthritis
- Mucopolysaccharidoses (Hurler syndrome)
- Gout
- Fabry disease
- Whipple disease

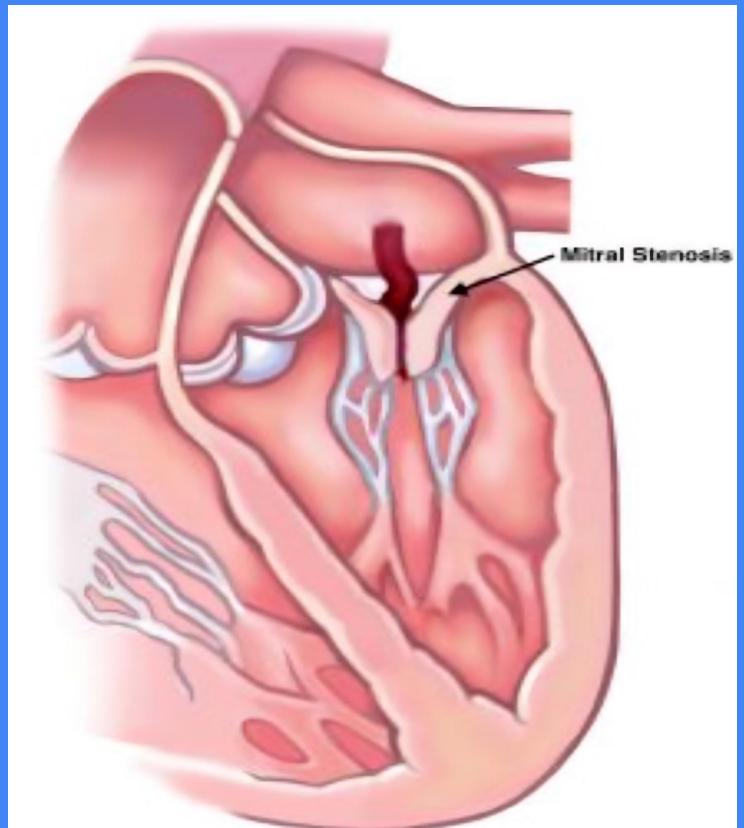
- Resticted blood flow from LA to ventricles
- Rise in left atrial pressure
- Pulmonary venous congestion -> breathlessness
- Low cardiac output -> fatigue

- Progressive left atrial dilatation-> stretching of atrial muscles -> electrical instability-> AF
- AF onset -> loss of atrial contraction and very rapid heart rate->reduces LV filling-> LA pressure rises ->backflow to lungs -> fluid leaks from pulm. capillaries and collects in lung alveoli ->pulmonary edema

More rise in LA pressure causes:

- Pulmonary Hypertension
- RV must push blood into a high-pressure pulmonary artery → workload increases → RV hypertrophy develops.
- RV hypertrophies-> then dilates ->tricuspid annulus dilates -> tricuspid regurgitation

- TR -> RV cannot pump enough blood -> Right heart failure



CLINICAL FEATURES

- Effort related dyspnea -> gradual reduction in exercise tolerance -> culminating in dyspnea at rest.
- Haemoptysis due to pulmonary hypertension.
- Malar flush
- Apex beat is tapping in nature
- On auscultation there may be a loud first heart sound, an opening snap and a low- pitched mid-diastolic murmur.

16.77 Clinical features of mitral stenosis

Clinical feature	Cause
Symptoms	
Breathlessness	Pulmonary congestion, low cardiac output
Fatigue	Low cardiac output
Oedema, ascites	Right heart failure
Palpitation	Atrial fibrillation
Haemoptysis	Pulmonary congestion, pulmonary embolism
Cough	Pulmonary congestion
Chest pain	Pulmonary hypertension
Thromboembolism	Atrial stasis and atrial fibrillation

COMPLICATIONS

- Atrial fibrillation.
- • PHTN and right heart failure.
- • Recurrent chest infections.
- . Hemoptysis.
- • Dysphagia.
- . Infective endocarditis (rare).

INVESTIGATIONS

16.78 Investigations in mitral stenosis

ECG	
• Right ventricular hypertrophy: tall R waves in V_1—V_3	• P mitrale or atrial fibrillation
Chest X-ray	
• Enlarged left atrium and appendage	• Signs of pulmonary venous congestion
Echo	
• Thickened immobile cusps • Reduced valve area • Enlarged left atrium	• Reduced rate of diastolic filling of left ventricle
Doppler	
• Pressure gradient across mitral valve • Pulmonary artery pressure	• Left ventricular function
Cardiac catheterisation	
• Coronary artery disease • Pulmonary artery pressure	• Mitral stenosis and regurgitation


> 40ms
P mitrale

MANAGEMENT

- Diuretics for pulmonary congestion , with anticoagulants and rate limiting agents in presence of AF.
- For persistent symptoms of pulmonary hypertension-> percutaneous balloon mitral valvotomy.
- Valve replacement for severe reflux or severly calcified valves.

THANK YOU!!