



SNS COLLEGE OF ALLIED HEALTH SCIENCES
SNS Kalvi Nagar, Coimbatore - 35
Affiliated to Dr MGR Medical University, Chennai



DEPARTMENT: ALLIED HEALTH SCIENCES
COURSE NAME: Pathology

Topic: Rheumatic Heart Disease



CASE SCENARIO



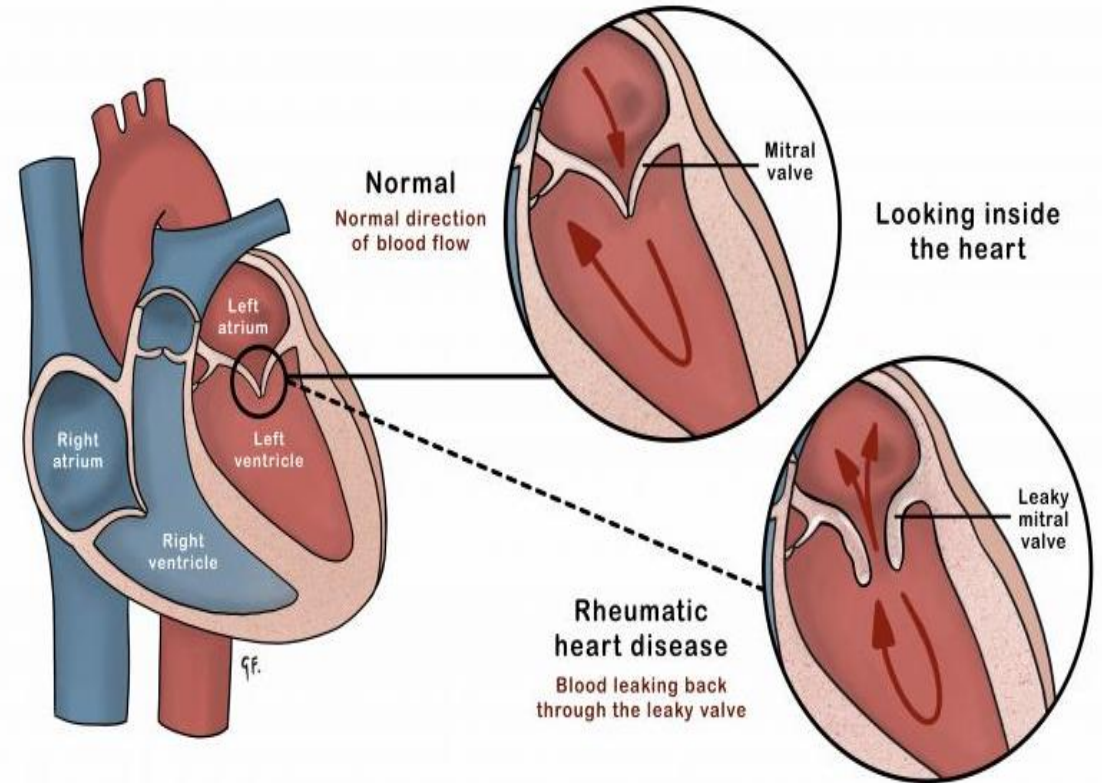
- A 41 year old woman presented to the emergency department complaining of acute onset of nausea and abdominal pain as well as palpitation and 2months of productive cough,SOB and patient had a history of rheumatic fever. Now how will you diagnose and treat this patient?

Introduction

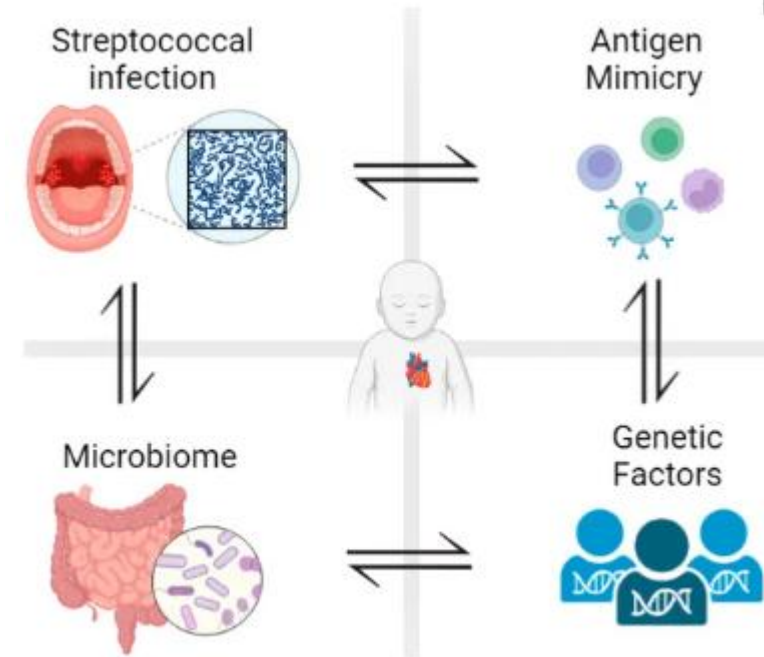
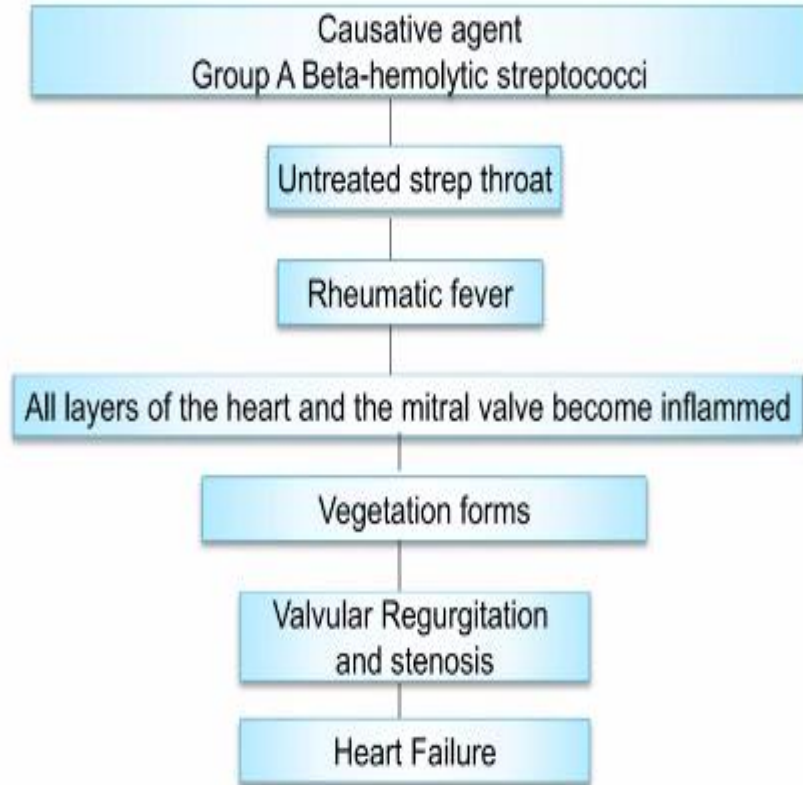
Rheumatic heart disease is a **condition in which the heart valves have been permanently damaged by rheumatic fever**. Rheumatic fever is an inflammatory disease that can affect many connective tissues, especially in the heart.

Etiology:

Group A-Beta hemolytic streptococcus & Rheumatic fever, an inflammatory disease that can affect many connective tissues, especially in the heart, joints, skin, or brain. The heart valves can be inflamed



Pathophysiology





RISK FACTORS



- RISK FACTORS
- Poor socio-economic status: People who are poor and belongs to low socio-economic conditions are prone to get Rheumatic heart disease.
- Over-crowding: People who are living in a slum or damp area are more prone to get Rheumatic heart disease
- Age: It appears most commonly in children between the age of 5 to 15 years.
- Climate and season: It occurs more in the rainy season and in the cold climate. Upper respiratory tract infection: Rheumatic fever is an outcome of upper respiratory tract infection with group A beta-hemolytic streptococcus.
- Previous history of Rheumatic fever: The client with previous history of Rheumatic fever are at high risk to develop Rheumatic heart disease.
- Genetic predisposition: Rheumatic heart disease shows familial tendency.

CLINICAL MANIFESTATION

Major manifestations

- Carditis
- Polyarthrititis
- Chorea
- Erythema marginatum
- Subcutaneous nodules
- Arthritis
- Pericarditis
- Subcutaneous nodules

Minor manifestations

: Fever associated with weakness, malaise, weight loss and anorexia

Arthralgia

Erythema marginatum



Subcutaneous nodules





Diagnosis



- Lab investigations:
- Positive throat culture for Group A beta hemolytic streptococci
- Elevated acute phase reactants:
 - a) Erythrocyte sedimentation rate
 - b) C-reactive protein
 - c) Leukocytosis
- Prolonged P-R interval
- The modified **Jones criteria** (revised in 1992) provide guidelines for the diagnosis of rheumatic fever

Jones criteria- 2 major C/F or 1 major and 1 minor C/F

- **IMAGING STUDIES**

Chest roentgenography : Cardiomegaly, pulmonary congestion, and other findings consistent with heart failure may be seen on chest radiography.

Doppler-echocardiogram In acute rheumatic heart disease, Doppler- echocardiography identifies and quantitates valve insufficiency and ventricular dysfunction.

In chronic rheumatic heart disease, echocardiography may be used to track the progression of valve stenosis and may help determine the time for surgical intervention.

HEART CATHETERIZATION • In acute rheumatic heart disease, this procedure is not indicated.

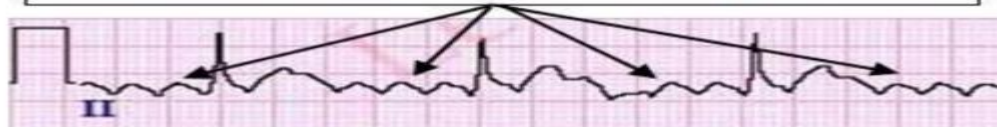
With chronic disease, heart catheterization has been performed to evaluate mitral and aortic valve disease and to balloon stenotic mitral valves.

ECG-showed

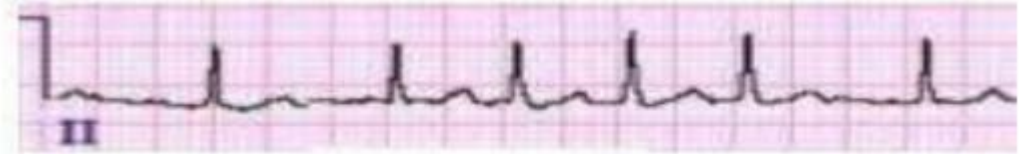
Sinus Tachycardia



Atrial Flutter – Sawtooth pattern



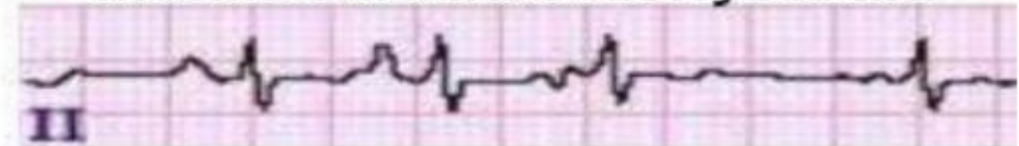
Atrial fibrillation



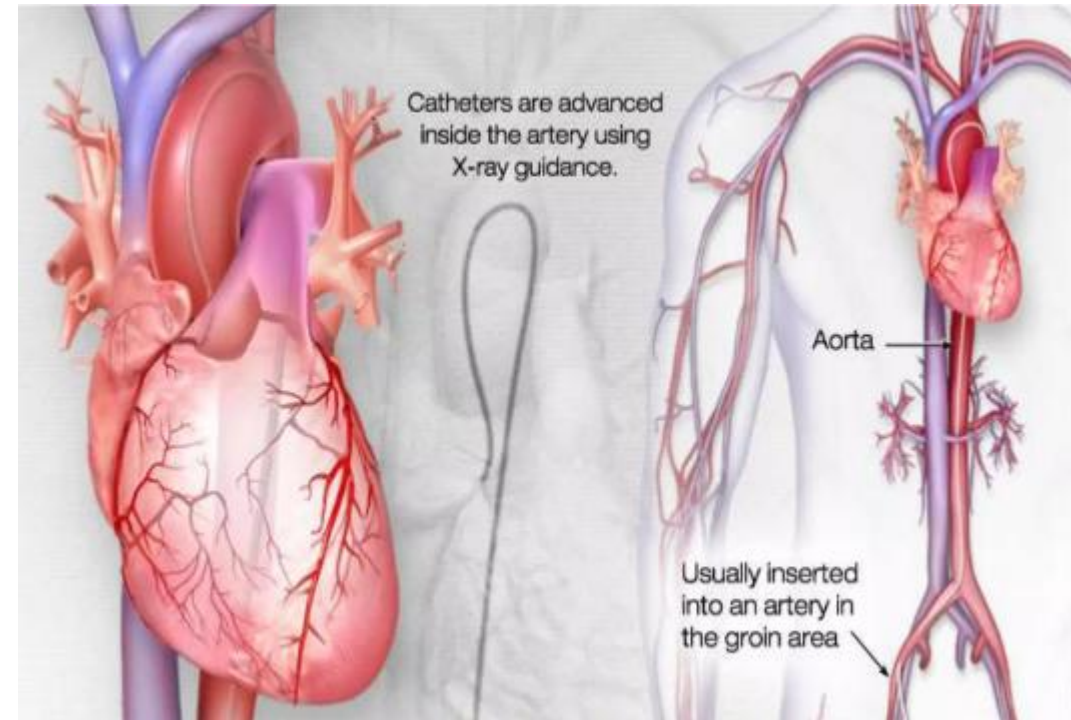
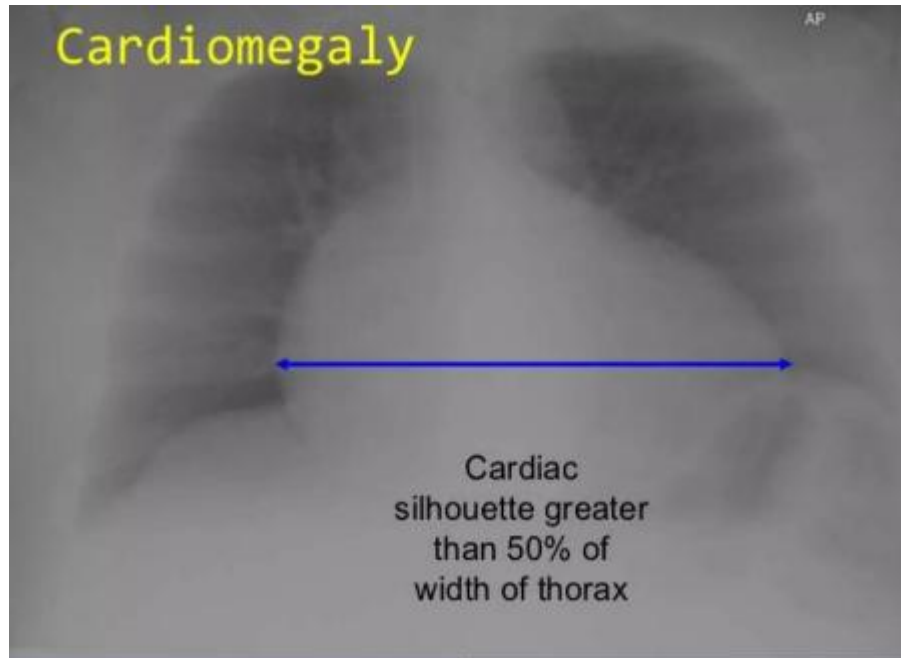
Atrial flutter



Multifocal atrial tachycardia



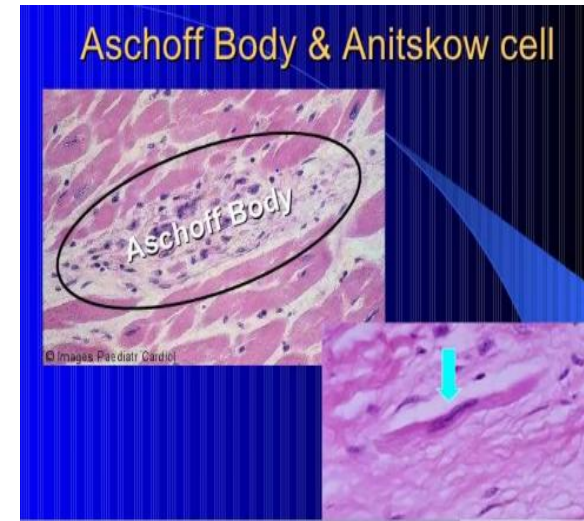
Imaging studies showed



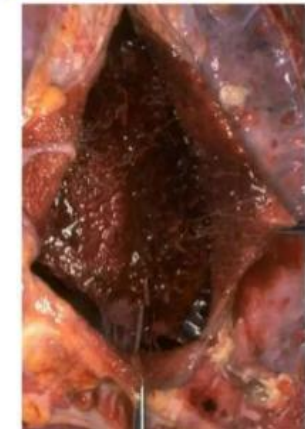
Aschoff bodies

HISTOLOGIC FINDINGS

- Pathologic examination of the insufficient valves may reveal verrucous lesions at the line of closure.
- Aschoff bodies (perivascular foci of eosinophilic collagen surrounded by lymphocytes, plasma cells, and macrophages) are found in the pericardium, perivascular regions of the myocardium, and endocardium.
- Anitschkow cells are plump macrophages within Aschoff bodies. In the pericardium, fibrinous and serofibrinous exudates may produce an appearance of "bread and butter" pericarditis.



Fibrinous pericarditis
"Bread and butter" pericarditis





MEDICAL MANAGEMENT



MEDICAL MANAGEMENT

- 1. Eradicate infection
- • Preventive and prophylactic therapy is indicated after rheumatic fever and acute rheumatic heart disease to prevent further damage to valves. Primary prophylaxis (initial course of antibiotics administered to eradicate the streptococcal infection) also serves as the first course of secondary prophylaxis (prevention of recurrent rheumatic fever and rheumatic heart disease).
- • An injection of 0.6-1.2 million units of benzathine penicillin G intramuscularly every 4 weeks is the recommended regimen for secondary prophylaxis for most US patients.
- Administer the same dosage every 3 weeks in areas where rheumatic fever is endemic, in patients with residual carditis, and in high-risk patients.
- Continue antibiotic prophylaxis indefinitely for patients at high risk (eg, health care workers, teachers, daycare workers) for recurrent GABHS infection.
- Patients with rheumatic fever with carditis and valve disease should receive antibiotics for at least 10 years or until age 40 years.
- Alternate drugs recommended by the American Heart Association for these patients include PO clindamycin (20 mg/kg in children, 600 mg in adults) and PO azithromycin or clarithromycin (15 mg/kg in children, 500 mg in adults).



Cont....



- **2. Maximize cardiac output** • Corticosteroids are used to treat carditis, especially if heart failure is evident. • If heart failure develops, treatment, including ACE inhibitors, beta blockers and diuretics, is effective.
- **3. Promote comfort** • Client with arthritic manifestations obtain relief with salicylates. Bed rest is usually prescribed to reduce cardiac effort until evidence of inflammation has subsided.



Surgical management



- When heart failure persists or worsens after aggressive medical therapy for acute rheumatic heart disease, surgery to decrease valve insufficiency may be life-saving. Forty percent of patients with acute rheumatic heart disease subsequently develop mitral stenosis as adults. **Commissurotomy** can be done to widen the valve.



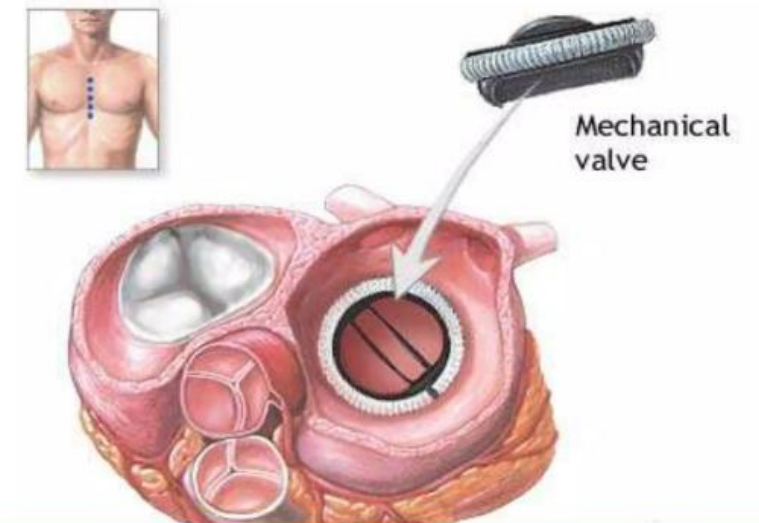
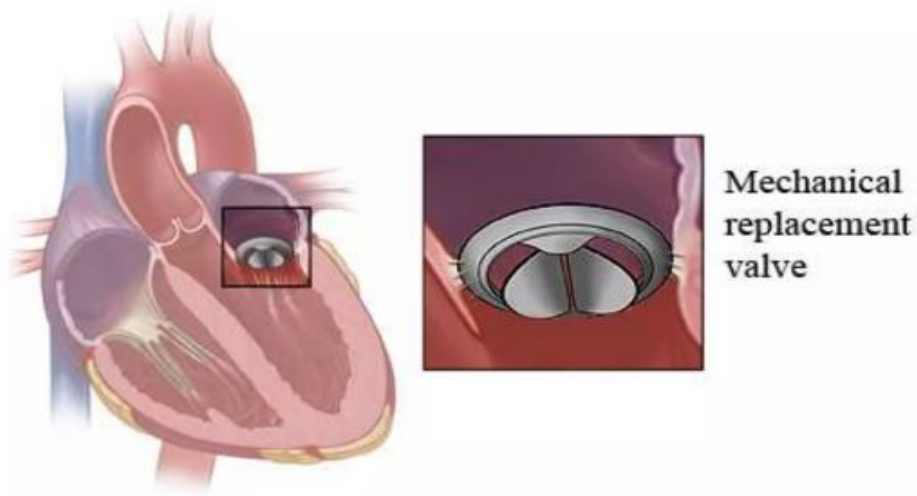
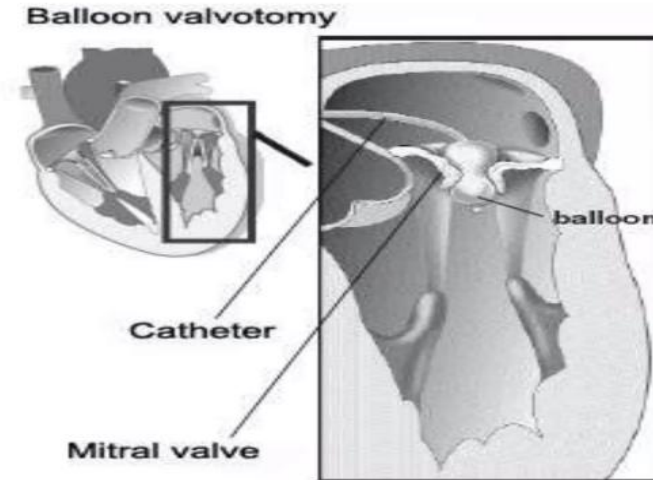
**Heart valve prior to
commissurotomy**



**Repaired heart valve
post-commissurotomy**

valvulotomy

- In patients with critical stenosis, mitral valvulotomy, percutaneous balloon valvuloplasty, or mitral valve replacement may be indicated. • Due to high rates of recurrent symptoms after annuloplasty or other repair procedures, valve replacement appears to be the preferred surgical option





THANK YOU



References:

- Text book of pathology author Nithin chawla
- https://youtu.be/7UwRu1kXM1I?si=F1qGArRl_5NhaGLM
- https://youtu.be/v9DBpfGws_4?si=xbWuHh2oLIkUGv5S