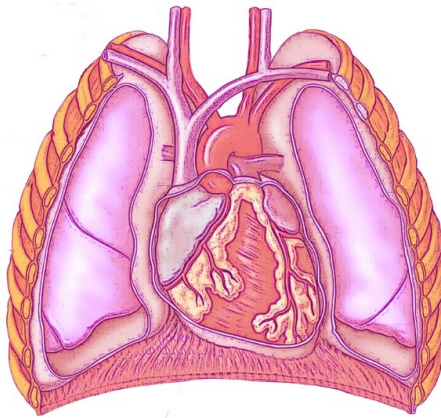




Internal Medicine



Topic : Rheumatic Fever Notes
Done by : Johainah Taha

Rheumatic Heart Disease (RHD)

Acute Rheumatic Fever (ARF):

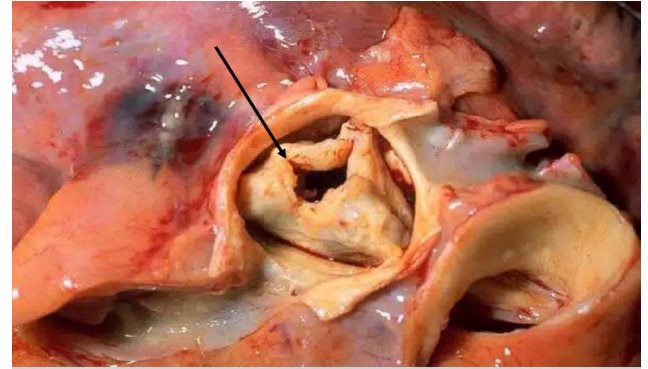
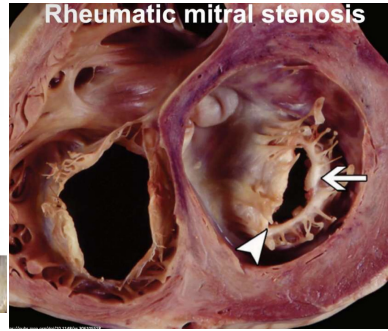
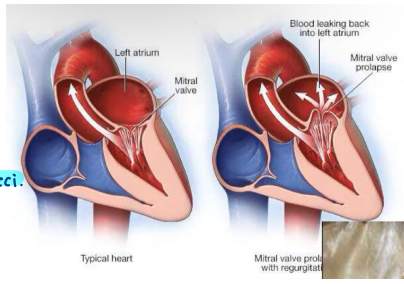
- Primarily affects children and young adults aged 5–15 years.
- Occurs 2–3 weeks after group A streptococcal pharyngitis.
- * immune-mediated delayed response to infection with specific strains of group A streptococci.

Pathogenesis

Step	Mechanism
1. Infection	Group A streptococcal infection initiates an immune response. <i>diagnose</i>
2. Molecular Mimicry	Streptococcal antigens cross-react with cardiac myosin and sarcolemmal proteins.
3. Autoimmune Attack	The immune system attacks the endocardium, myocardium, pericardium, joints, and skin.
4. Histological Features	- Fibrinoid degeneration in collagen connective tissue. - Aschoff nodules (pathognomonic): Multinucleated giant cells, macrophages, and T lymphocytes, appearing in subacute or chronic phases.

Clinical Features

System Involved	Manifestations
General	Fever, anorexia, lethargy, joint pain
Musculoskeletal	Arthritis (75% of cases)
Dermatological	Rashes, subcutaneous nodules
Cardiac	Carditis (pancarditis)
Neurological	Sydenham's chorea



Aortic stenosis, secondary to rheumatic heart disease. The aorta has been removed to show thickened, fused aortic valve leaflets and opened coronary arteries from above.



*There may be no history of sore throat.

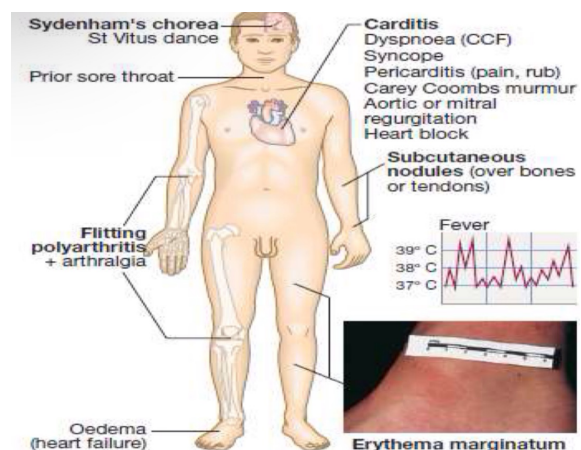


Fig. 16.80 Clinical features of rheumatic fever. Bold labels indicate Jones major criteria. (CCF = congestive cardiac failure) Inset (Erythema marginatum) From Savin JA, Hunter JAA, Heppburn NC. Skin signs in

Diagnosis – Revised Jones Criteria

• Diagnosis requires either:

- Two major criteria, or
- One major + two minor criteria,

With evidence of preceding streptococcal infection.

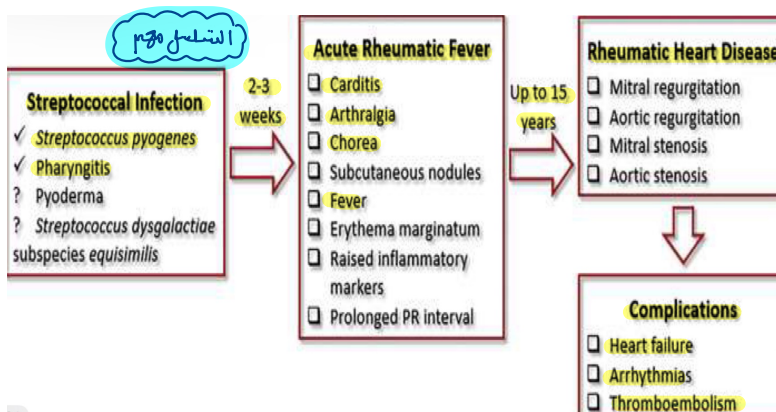
• Exceptions:

- Isolated chorea or pancarditis can lead to presumptive diagnosis without documented infection.
- In patients with prior ARF or RHD, diagnosis can be based on multiple minor criteria + streptococcal infection.

16.75 Jones criteria for the diagnosis of rheumatic fever	
Major manifestations	
• Carditis → edema, HT, arrhythmia...	• Erythema marginatum
• Polyarthritides	• Subcutaneous nodules
• Chorea	
Minor manifestations	
• Fever	• Previous rheumatic fever
• Arthralgia = Arthralgia	• Leucocytosis
• Raised erythrocyte sedimentation rate or C-reactive protein	• First-degree atrioventricular block
Plus	
• Supporting evidence of preceding streptococcal infection: recent scarlet fever, raised antistreptolysin O or other streptococcal antibody titre, positive throat culture*	
*Evidence of recent streptococcal infection is particularly important if there is only one major manifestation.	

Jones Criteria

Major Criteria	Minor Criteria
Carditis	Fever
Arthritis (Migratory polyarthritides)	Arthralgia
Sydenham's chorea	Elevated ESR/CRP
Erythema marginatum	Prolonged PR interval (ECG)
Subcutaneous nodules	Previous rheumatic fever or RHD

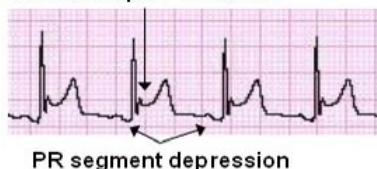


1 Carditis

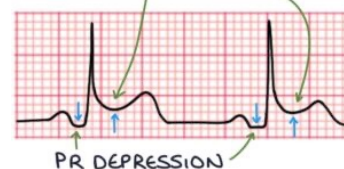
- **Pancarditis:** Affects endocardium, myocardium, and pericardium.
- Incidence: 90% in children (<3 years), 30% in adolescents.

Feature	Details
Symptoms	Breathlessness (heart failure/pericardial effusion), palpitations, chest pain
Auscultation	- Mitral regurgitation: Soft systolic murmur (most common) - Carey Coombs murmur: Mid-diastolic murmur due to valvulitis - Aortic regurgitation: 50% of cases
Other Signs	Tachycardia, cardiac enlargement, pericardial friction rub
ECG Findings	ST/T wave changes, AV block (may cause syncope) → conduction defect

Concave-up ST elevation



SADDLE-SHAPED ST-ELEVATION



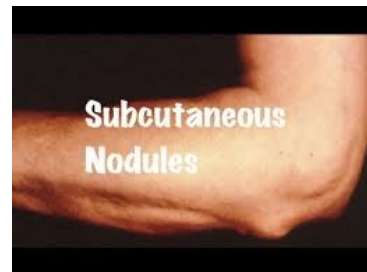
2 Arthritis

- Most common major manifestation.
- Occurs early when streptococcal antibody titers are high.
- **Migratory, asymmetric, large-joint inflammation** (knees, ankles, elbows, wrists).
- Red, swollen, tender joints, lasting 1 day to 4 weeks.

3 Skin Lesions

مظاهر تفرقة

Type	Description
Erythema marginatum (<5%)	Red macules with central clearing , primarily on trunk & proximal extremities , sparing the face.
Subcutaneous nodules (5–7%)	- Small (0.5–2 cm), firm, painless . - Found over extensor surfaces of bones/tendons . - Appear >3 weeks after onset , confirming diagnosis.



4 Sydenham's Chorea

- Late neurological manifestation (≥ 3 months post-ARF).
- Emotional lability $\rightarrow$ Choreiform movements (hands, feet, face).
↳ the first feature.
- Explosive, halting speech.
- More common in females (1/3 of cases).
- Self-limiting (resolves in months).
- 25% develop chronic rheumatic valve disease.

Investigations

Test	Findings
ESR & CRP	Elevated (used for disease monitoring)
Throat culture	Positive in 10–25% (infection often resolved at presentation)
ASO titer <i>↳ Anti-streptolysin O antibodies</i>	Elevated in most cases (except in chorea & some adult cases)
Echocardiography	Shows mitral regurgitation , mitral annular dilation , aortic regurgitation , pericardial effusion

16.76 Investigations in acute rheumatic fever	
Evidence of a systemic illness	
• Leucocytosis, raised erythrocyte sedimentation rate and C-reactive protein	
Evidence of preceding streptococcal infection	
• Throat swab culture: group A β -haemolytic streptococci (also from family members and contacts)	
• Antistreptolysin O antibodies (ASO titres): rising titres, or levels of > 200 U (adults) or > 300 U (children)	
Evidence of carditis	
• Chest X-ray: cardiomegaly; pulmonary congestion	
• ECG: first- and, rarely, second-degree atrioventricular block; features of pericarditis; T-wave inversion; reduction in QRS voltages	
• Echocardiography: cardiac dilatation and valve abnormalities	

Prophylaxis

- Long-term penicillin prophylaxis prevents recurrence but not infective endocarditis.
- Duration of prophylaxis:

Condition	Prophylaxis Duration
No carditis	Until age 21 (or minimum 5 years)
With carditis (no valve disease)	Minimum 10 years
With residual heart disease	Until 40 years or 10 years post-last episode (whichever is later)

Management

Management	Details
Bed Rest	Essential during acute illness.
Cardiac Failure Treatment	Diuretics, ACE inhibitors, digoxin if indicated.
Antibiotics	- Benzathine benzylpenicillin (1.2 million U IM, single dose) or - Phenoxymethylpenicillin (250 mg 4x/day for 10 days). - Penicillin allergy: Erythromycin or cephalosporins.
Anti-inflammatory Therapy	- Aspirin : First-line for arthritis. - Glucocorticoids : Indicated for carditis or severe arthritis . - Prednisolone (1–2 mg/kg/day), tapered after ESR normalization.

Goals:

- Limit cardiac damage.
- Relieve symptoms.

* further attack on rheumatic fever after age of 21 is unusual $\rightarrow$ so antibiotic treatment can be stopped.

← قبل إعطاء prophylaxis يولد المرض.
بشرط انه خلال 5 سنوات مارجع حاد
معه أي attack.

لأنه لو صار معه attack على عمر 19 بأجل توقف الدواء على عمر 24.

Glucocorticoids:-

↳ produce more rapid symptomatic relief than Aspirin.

المعدل

Chronic Rheumatic Heart Disease :

- Occurs in $\geq 50\%$ of ARF cases with carditis.
- Progressive valvular fibrosis leads to stenosis and/or regurgitation.
- 2/3 of cases occur in women.

Valve Involvement	Prevalence
Mitral valve	>90% (most affected)
Aortic valve	Second most common
Tricuspid valve	Less common
Pulmonary valve	Rare

Common Valvular Lesions

Lesion	Prevalence
Isolated mitral stenosis	25%
Mixed mitral stenosis & regurgitation	40%

A child has a history of spiking **fevers**, which have been as high as 40°C (104°F).

She has **spindle-shaped swelling of finger joints** and complains of upper **sternal pain**. The most likely diagnosis is

- Rheumatic fever
- Juvenile rheumatoid arthritis
- Toxic synovitis
- Septic arthritis
- Osteoarthritis



1. What can prevent rheumatic fever?

- Childhood vaccinations
- Developed immunity
- Treating strep throat
- Avoiding ill people

2. What is rheumatic fever?

- Strep throat infection
- Inflammatory disease
- Rheumatic infection
- Rheumatoid arthritis

3. Which is NOT a symptom of rheumatic fever?

- Painless rash, joint pain
- Fever, fatigue
- Joint pain, Sydenham chorea
- Swollen tonsils

1. Which of the following are symptoms of rheumatic heart disease?

- Chest pain, swelling, and shortness of breath
- Coughing, rash, and sweating
- Muscle cramps, weakness, and sore throat
- Joint swelling, generalized pain, and abdominal pain

2. The two cardiac antigens that the body's autoimmune response attacks are myosin and ____ endothelium.

- Vascular
- Vestibular
- Valvular
- Vesicle

3. Name three diagnostic tests used to diagnose rheumatoid heart disease.

- Cardiac MRI, bronchoscopy, and abdominal x-ray
- Throat culture, EKG, and cardiac catheterization
- Percutaneous coronary intervention, head CT, and thoracentesis
- Chest x-ray, echocardiogram, and blood tests

RHEUMATIC FEVER DUCKETT-JONES DIAGNOSTIC CRITERIA

MAJOR CRITERIA

"CASES" is the Mnemonic

- C**arditis
- A**rthritis
- S**ubcutaneous nodules
- E**rythema marginatum
- S**ydenham's chorea

MINOR CRITERIA

"FRAPP" is the Mnemonic

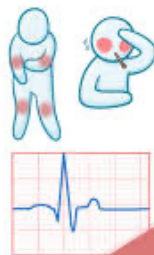
- F**ever
- R**aised ESR/CRP
- A**rthralgia
- P**rolonged PR Interval
- P**revious RF

There must be evidence of streptococcal infection plus:

2 major or 1 major + 2 minor

DIAGNOSIS CRITERIA for RHEUMATIC FEVER

- J**OINT INVOLVEMENT (MYOCARDITIS)
- N**ODULES, SUBCUTANEOUS
- E**RYTHEMA MARGINATUM
- S**YDENHAM CHOREA
- C**RP INCREASED
- A**RTHRALGIA
- F**EVER
- E**LEVATED ESR
- P**ROLONGED PR INTERVAL
- A**NAMNESIS of RHEUMATISM
- L**EUKOCYTOSIS



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