# Rheumatic Fever

Presented by:


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# Definition

Rheumatic Fever (RF)
is an immunologically mediated inflammatory disorder which caused by group A streptococcal pharyngeal infection.

The illness is so named because of its similarity in presentation to rheumatism

# *Risk Factors*

## Age

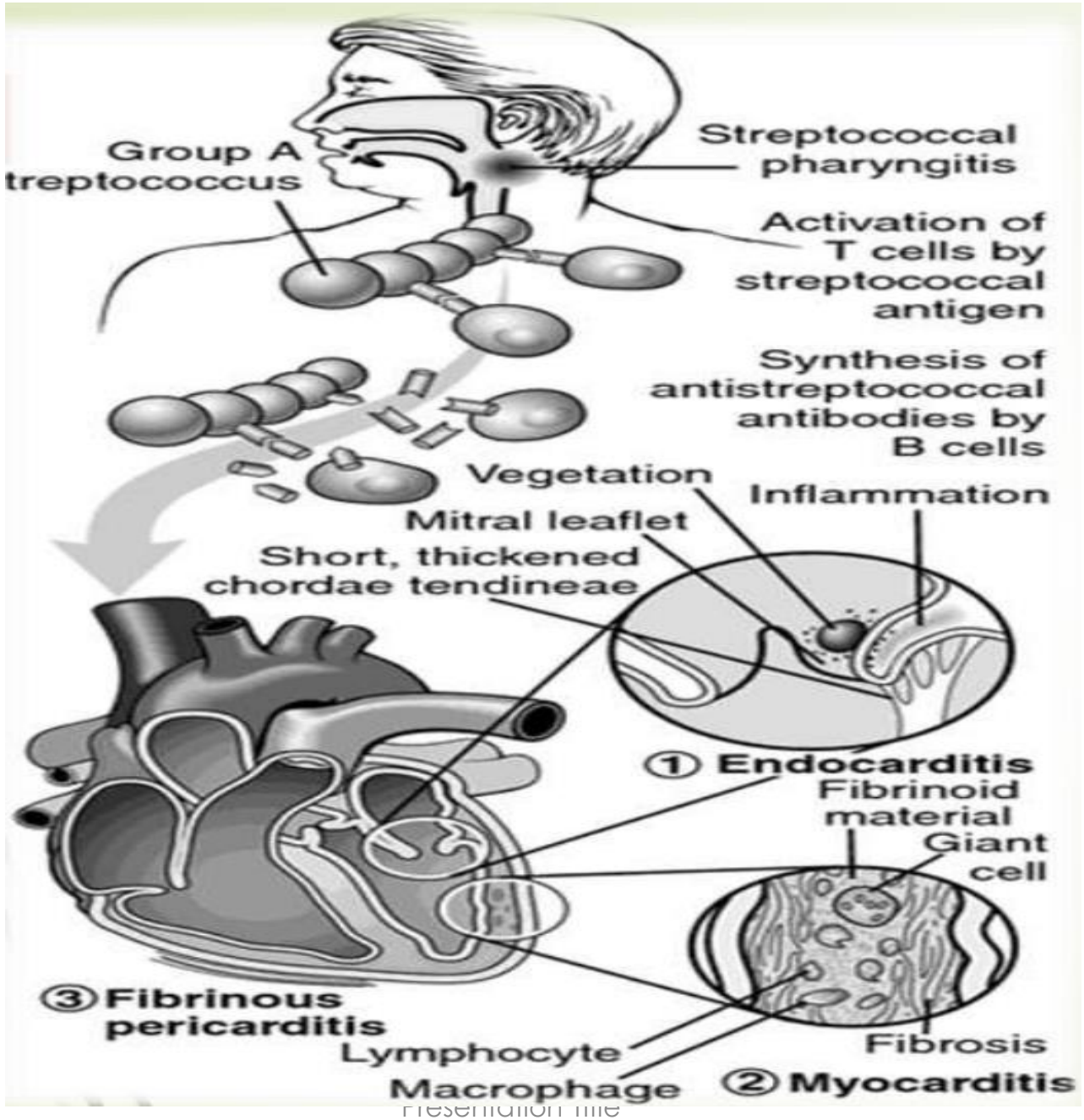
- Young adult and children
- No gender predilection.

## Environmental

- over crowding, poor sanitation, poverty, poor housing

# *Pathophysiology*

- Most common etiological bacteria leading to strep throat is Specifically, Streptococci pyogenes (pus-forming)
- It is triggered by an immune-mediated delayed response to infection with specific strains of group A streptococci that possess antigens **(M protein)** which cross-react with cardiac myosin and sarcolemmal membrane protein.
- Antibodies produced against the streptococcal antigens mediate inflammation in the endocardium, myocardium and pericardium, as well as the joints and skin


Group A
treptococcus
Streptococcal
pharyngitis
Activation of
T cells by
streptococcal
antigen
Synthesis of
antistreptococcal
antibodies by
B cells
Vegetation
Mitral leaflet
Short, thickened
chordae tendineae
Inflammation
① Endocarditis
Fibrinoid
material
Giant
cell
③ Fibrinous
pericarditis
Lymphocyte
Macrophage
Fibrosis
② Myocarditis

# *Clinical Features*

- The infection often precedes the presentation of rheumatic fever by 2 to 4 weeks.

- Acute rheumatic fever is diagnosed using the **revised Jones criteria**, which consist of clinical and laboratory findings.

# *Clinical features*

- **Carditis** may involve the endocardium, myocardium and pericardium to varying degrees and manifest as breathlessness (heart failure or pericardial effusion), palpitations or chest pain (pericarditis) and Other features include tachycardia, cardiac enlargement, new murmurs of mitral regurgitation or aortic regurgitation, or a soft diastolic murmur due to mitral valvulitis (Carey Coombs murmur)

# *Clinical features*

- **Arthritis** is the most common major manifestation, occurs in approximately 75% of patients and is characterised by acute, painful, asymmetric and migratory inflammation of the large joints (knees, ankles, elbows, wrists).

- **Erythema marginatum** appears as red macules which fade in the centre but remain red at the edges and occur mainly on the trunk and proximal extremities but not the face

# *Clinical features*

- **Subcutaneous nodules** are small, firm, painless and best felt over extensor surfaces of bone or tendons. They usually appear >3 wks after the onset of other manifestations
- **Sydenham's chorea** (St Vitus dance) is a late (>3 mths) neurological manifestation characterised by emotional lability and involuntary choreiform movements of the hands, feet or face; spontaneous recovery usually occurs within a few months.
- **fever**, **anorexia, lethargy** and **joint pain**

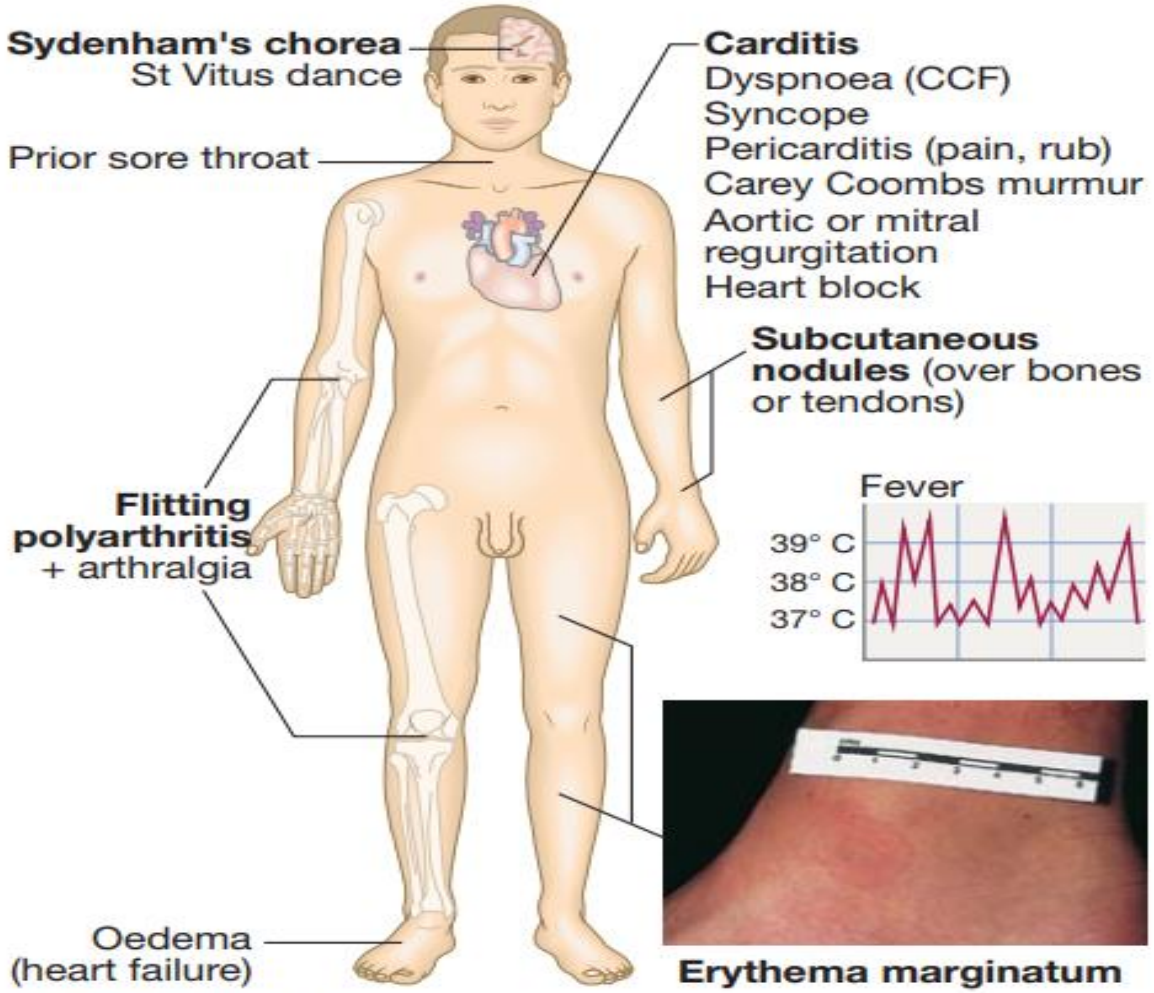
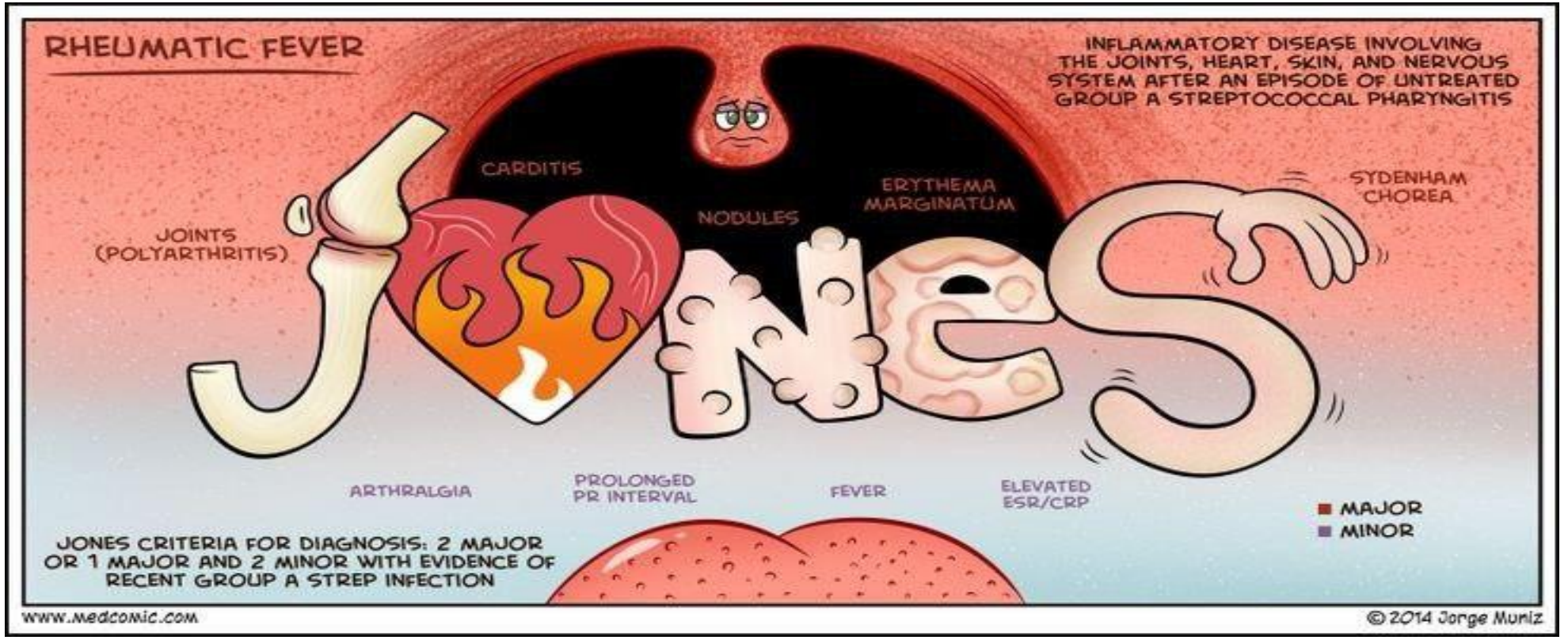



**Fig. 16.80 Clinical features of rheumatic fever.** Bold labels indicate Jones major criteria. (CCF = congestive cardiac failure) *Inset (Erythema marginatum) From Savin JA, Hunter JAA, Hepburn NC. Skin signs in clinical medicine. London: Mosby–Wolfe, Elsevier; 1997.*

# *Diagnosis*

- JONES criteria



## Diagnosis depends on:

- **two or more major manifestations, or**
- **one major and two or more minor manifestations**

**PLUS**

supporting evidence of preceding streptococcal infection

**16.75 Jones criteria for the diagnosis of rheumatic fever**

**Major manifestations**

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

**Minor manifestations**

- Fever
- Arthralgia
- Raised erythrocyte sedimentation rate or C-reactive protein
- Previous rheumatic fever
- Leucocytosis
- 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.

# *Investigation*

## 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

# *Managment*

- The aims of management are to limit cardiac damage and relieve symptoms.

- **Bed rest** is important, as it reduce joint pain and reduces cardiac workload. The duration should be guided by symptoms. Patients can then return to normal physical activity but strenuous exercise should be avoided in those who have had carditis

# *Managment*

- **Penicillin:** is given to eliminate any residual streptococcal infection . If the patient is penicillin-allergic, **erythromycin** or a **cephalosporin** can be used.
- **NSAIDs (high-dose ASPIRIN):** usually relieves the symptoms of arthritis rapidly and a response within 24 hours helps confirm the diagnosis.
- **Glucocorticoids (prednisolone) :** These produce more rapid symptomatic relief than aspirin , and are indicated in cases with carditis or severe arthritis.


Resources:

- ✓ Davidson's Essentials of Medicine
- ✓ Davidson's principle and practice of Medicine
- ✓ Step up to Medicine