

# **CVS MODULE – 1**

## **RHEUMATIC HEART DISEASE**

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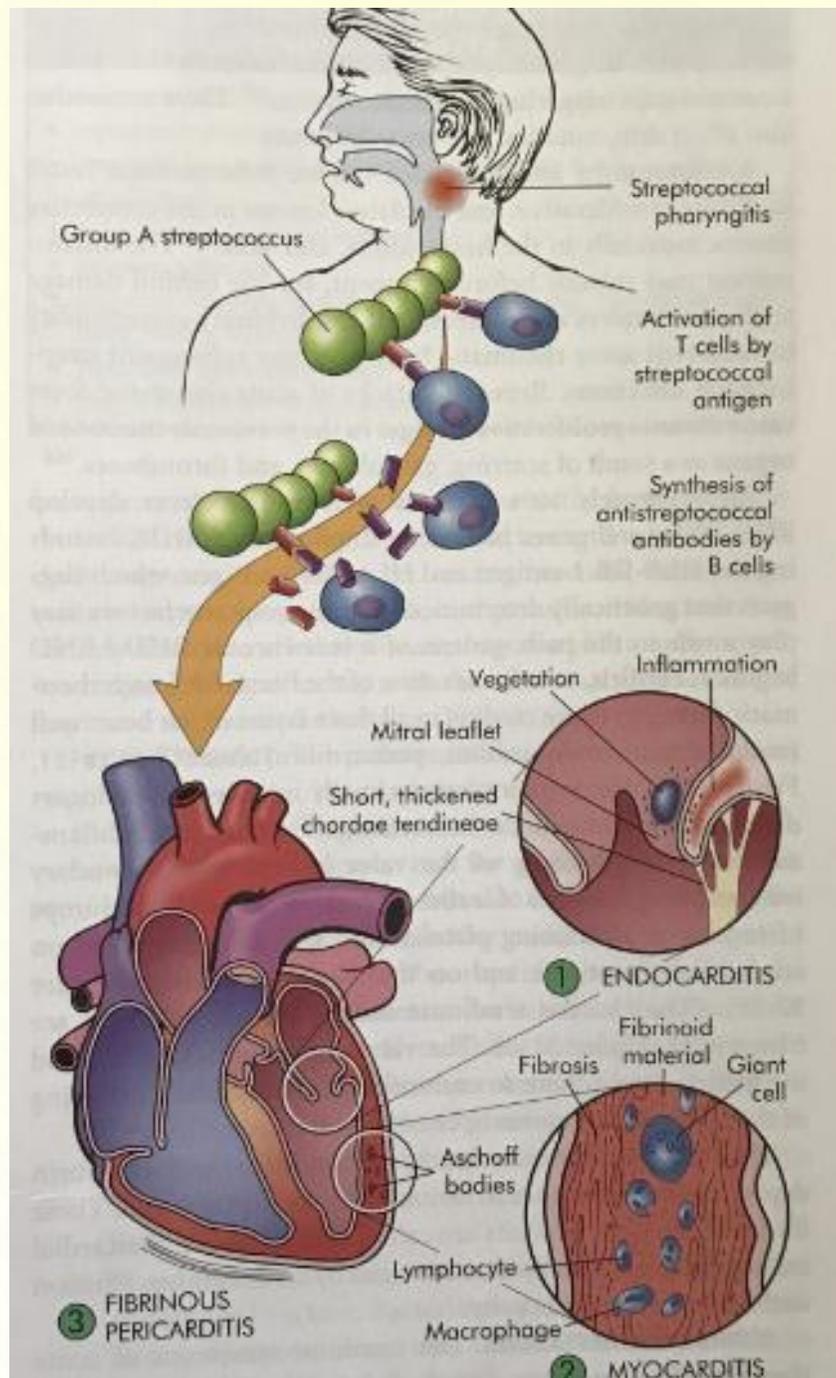
# RHEUMATIC HEART DISEASE

- Rheumatic heart disease is the cardiac manifestation of rheumatic fever.
- Rheumatic fever is an acute, immunologically mediated, multisystem inflammatory disease that occurs after group A  $\beta$ -hemolytic streptococcal infections (usually pharyngitis, but also occasionally infections at other sites, such as skin).
- valvular inflammation and scarring produce the most important clinical features, rheumatic heart disease is essentially the only cause of acquired mitral stenosis.

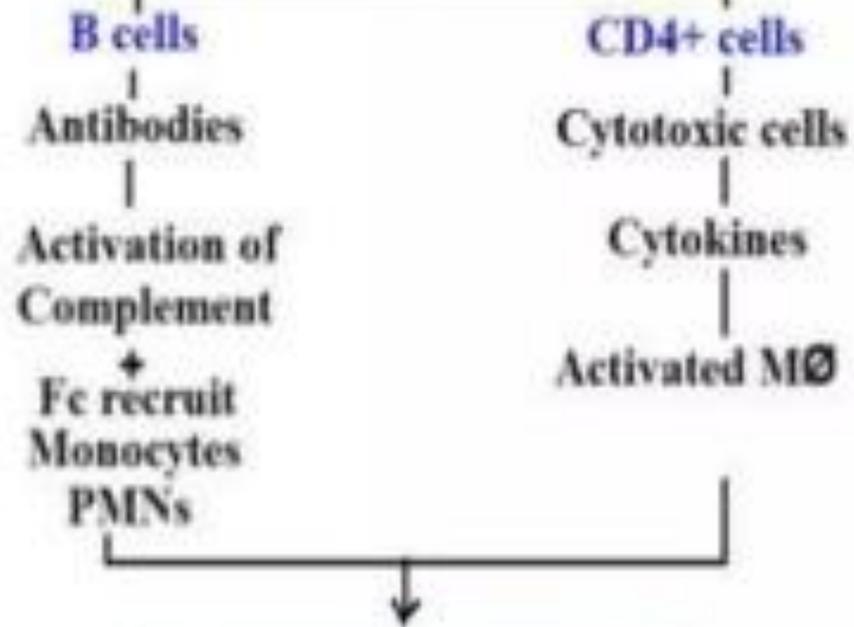
# PATHOGENESIS

- The pathogenic mechanism involves autoantibodies and T cells directed against group A streptococcal cell wall components that cross-react with heart or brain.
- Predisposing factors include genetic and environmental factors such as poverty and overcrowding.

# Pathogenesis



**Sterptococal antigen  
M Protein**

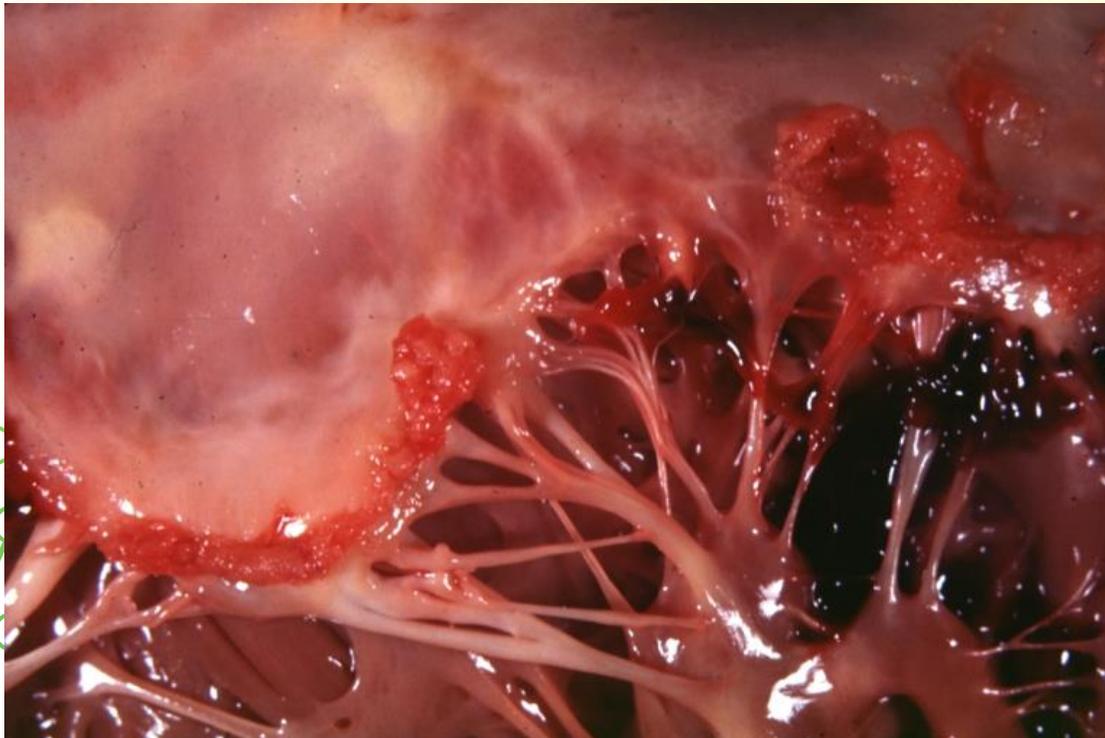


**Damage to heart tissue**

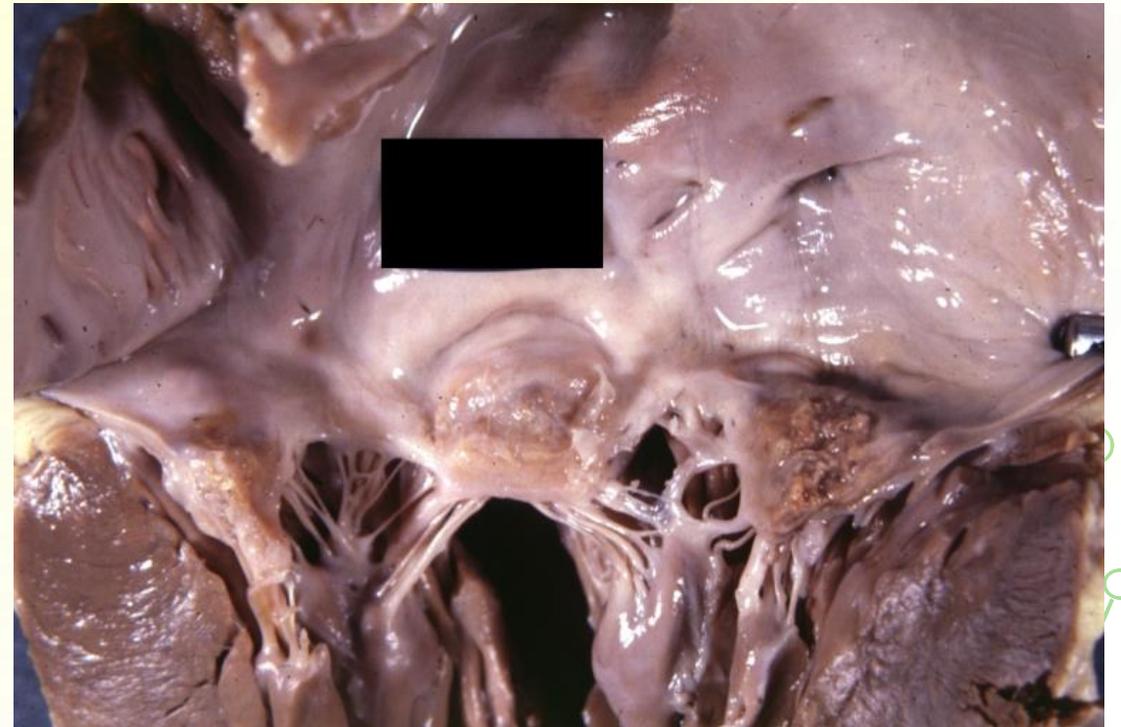
NOTE: M protein and cardiac protein has got structural similarities

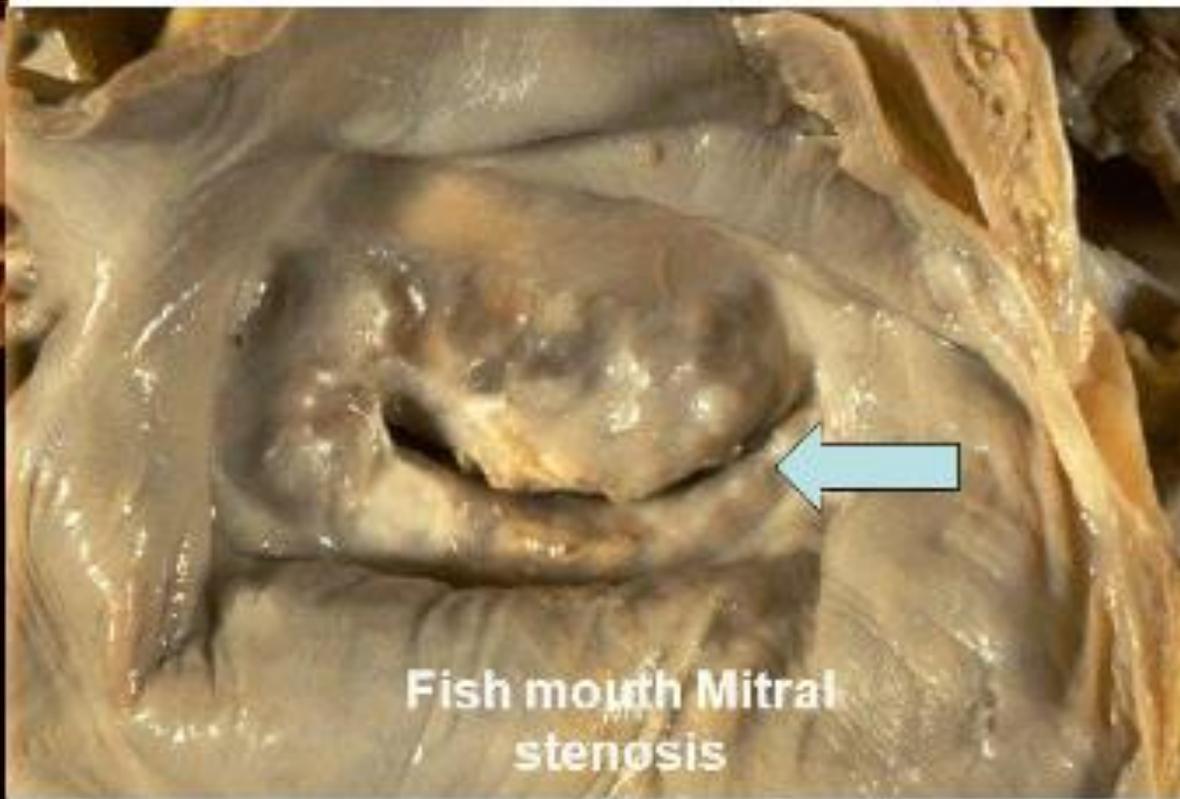
# GROSSING

MITRAL VALVULITIS



MITRAL SCARRING



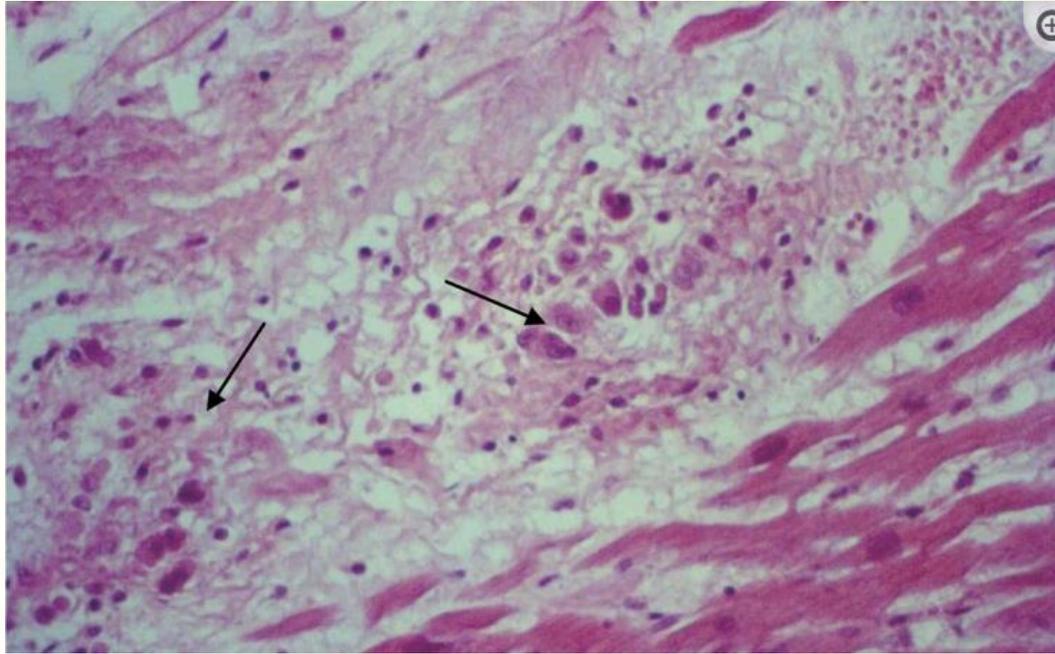


The pericardium may exhibit a fibrinous exudate, which generally resolves without sequelae.

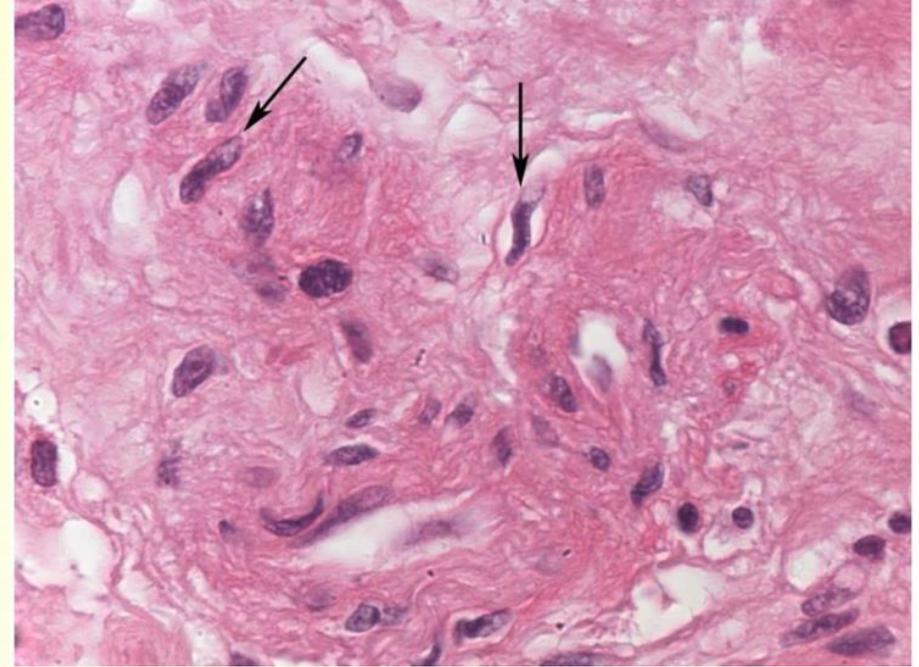


# HISTOLOGY

- Acute rheumatic valvulitis manifests with :
  - ✓ active inflammation characterized by lymphocytic infiltration, Aschoff bodies, and Anitschkow cells (have abundant cytoplasm and nuclei with chromatin that is centrally condensed ).
- Chronic rheumatic valvulitis is associated with:
  - ✓ neovascularization, valvular fibrosis and/or dystrophic calcification.
- During acute rheumatic fever, Aschoff bodies can be found in any of the three layers of the heart—pericardium, myocardium, or endocardium (including valves).



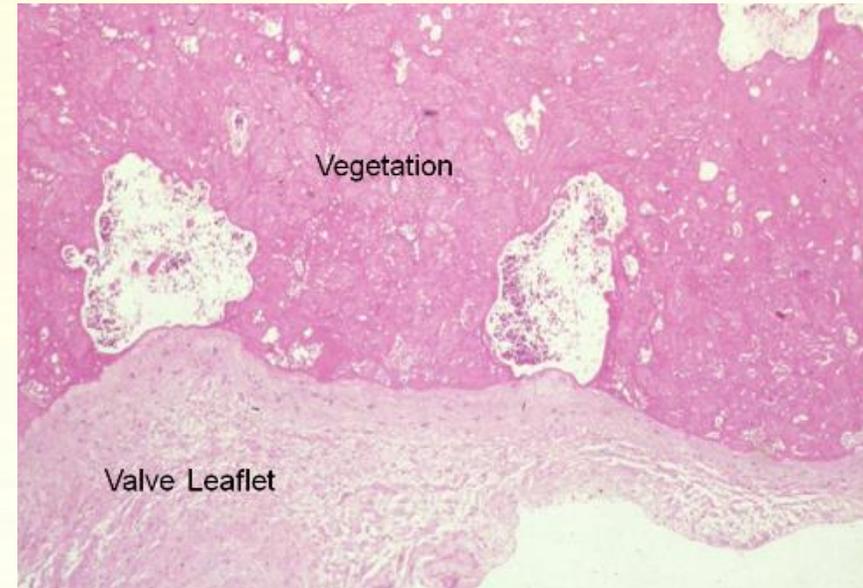
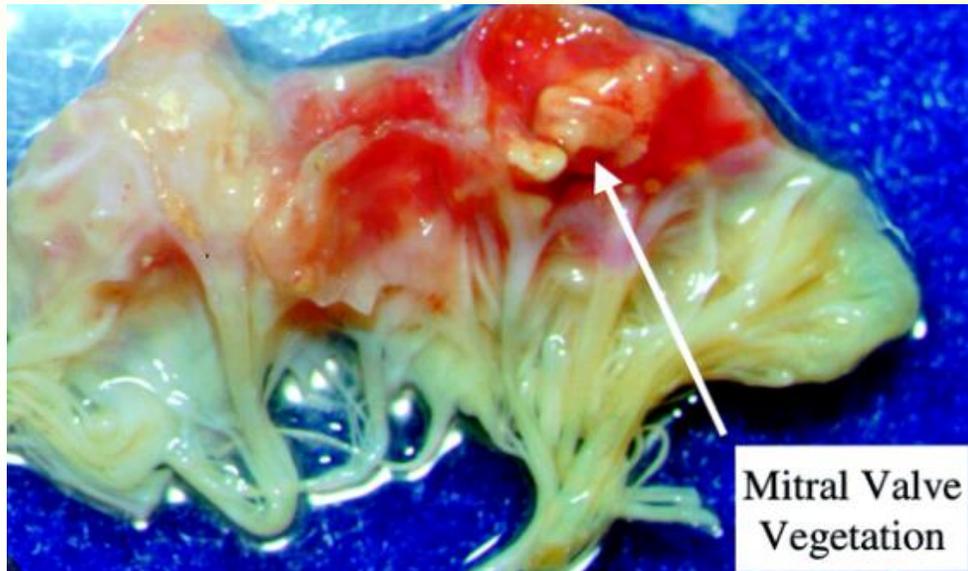
**Aschoff nodules**



**Anitschkow cells.**

## HISTOLOGY CONT.:

- Valve involvement results in fibrinoid necrosis and fibrin deposition along the lines of closure forming 1- to 2-mm vegetations—verrucae—that cause little disturbance in cardiac function.



# CLINICAL FEATURES

- Acute rheumatic fever occurs most often in children; the principal clinical manifestation is carditis.
- However, about 20% of first attacks occur in adults, with arthritis being the predominant feature.
- Symptoms in all age groups typically begin 2 to 3 weeks after streptococcal infection.
- The clinical signs of carditis include pericardial friction rubs and arrhythmias; myocarditis may be sufficiently severe to cause cardiac dilation and resultant functional mitral insufficiency and CHF.

# RHEUMATIC FEVER

## DUCKETT-JONES DIAGNOSTIC CRITERIA

### MAJOR CRITERIA

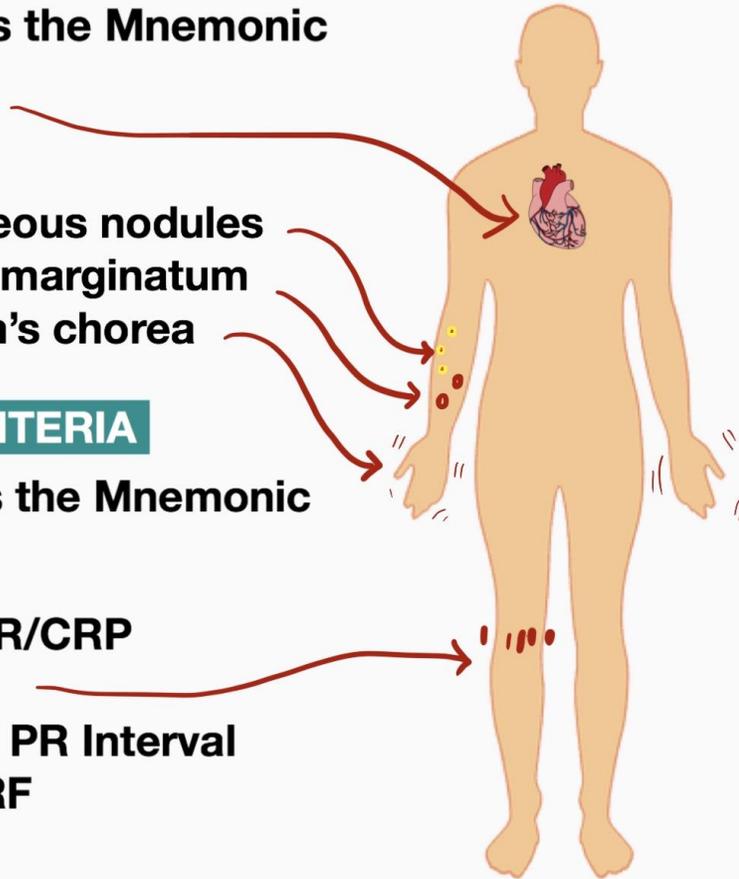
“CASES” is the Mnemonic

- 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

Erythema Marginatum



## LAB

- ESR, CRP.
- Elevated serum titers of antibodies against one or more streptococcal antigens (e.g., streptolysin O or DNAase) .
- Cultures are negative for streptococci at the time of symptom onset



# TREATMENT

- Treatment strategies for acute rheumatic fever (ARF) can be divided into the following:
  - ✓ Management of the acute attack
  - ✓ Management of the current infection
  - ✓ Prevention of further infection and attacks