ACUTE RHEUMATIC FEVER

RHEUMATIC HEART DISEASE

Done by : Rahma fayez sharaf
Adeem Alsharawneh

ACUTE RHEUMATIC FEVER

- A consequence of pharyngeal infection with group A B-hemolytic streptococci which cause sore throat and scarlet fever .
- An autoimmune inflammatory process that develops as a sequel of streptococcal pharyngitis
- Most common in children: 5-15 years
- It usually takes about 1 to 5 weeks to develop if not treated properly
- Mainly in developing countries

RHEUMATIC HEART DISEASE

- ➢ The most significant complication of ARF is rheumatic heart disease
- Rheumatic fever is thought to be caused by a response of the body's defense system not a direct effect of bacteria , the immune system response to infection which formed anti bodies against M protein (arises from bacteria) cross react with self antigen (often myosin) – molecular mimic – this causes an autoimmune reaction against native tissues in the heart
- Immune mediated (type II hypersensitivity)

RHEUMATIC HEART DISEASE

- Exacerbated by incorrect T cell activation
- Rheumatic valves display increased expression of VCAM-1 (vascular cell adhesion protein) which leads to more lymphocyte entry >> more inflammation

CLINICAL FEATURES

Major criteria : J❤NES

- Joint

-(carditis)

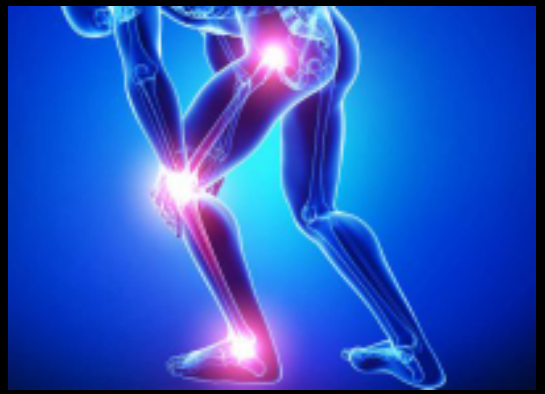
-Nodular in skin

-Erythema marginatum

-Sydenham chorea

JOINT

- Large joint
- Migratory polyarthritis (sever pain and swelling)
- 75% of patients
- Improves with analgesics



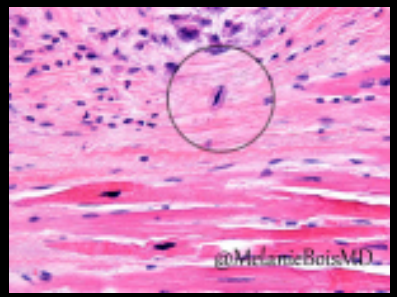
CARDITIS

Pancarditis

pericarditis	myocarditis	Endocarditis
* Chest pain	* Aschoff nodule	* Vegetation and scar formation in valve

CARDITIS ❤️

- Aschoff nodule : granuloma macrophage with giant cell
- Anitschkow cell (enlarged macrophage with ovoid, wavy, rod like nucleus)
- Most common valve affected (rheu**mat**ic) M > A > T > P
- Early lesion mitral valve regurgitation
- Late lesion mitral valve stenosis
- Arrhythmia most common cause of death
- **40-60% of patients**



NODULAR IN SKIN & ERYTHEMA MARGINATUM

❖ Nodular in skin

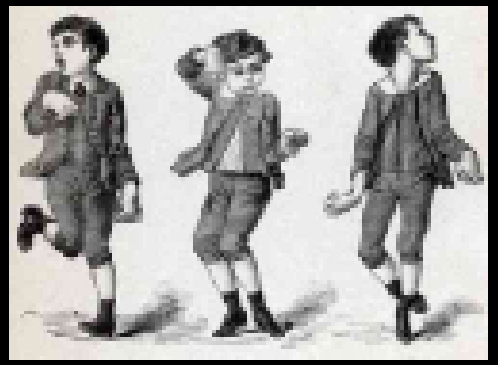
- Small (.5-2 cm)
- Extensor surface of bone and tendons
- 10% of patients
- Weeks
- Rare

❖ Erythema marginatum
(evanescent rash with ring margin)

- Concentrated on the trunk , NOT face
- 10% of patients
- Rare & Early

SYDENHAM CHOREA

- Rapid Irregular Aimless involuntary movements of the arms , legs, trunk, or facial muscles
- 10% Of patients
- Autoimmune to basal ganglia (minor)
- 8 months to appears



MINOR CRITERIA

1. Fever of 38.2–38.9 °C

2. Arthralgia: Joint pain without swelling

LABORATORY:

1. elevated acute phase reactants (ESR,CRP)

2.prolonged PR interval AV block, (Cannot be included if carditis is present as a major symptom).

3.Leukocytosis.

4.Previous episode of rheumatic fever or inactive heart disease.

5 increase in anti-streptolysin O (ASO) titers

– If the patient has arthritis, then polyarthralgia cannot be considered as minor criterion.

– If the patient has carditis the prolonged P-R interval cannot be considered as minor criteria

Rheumatic Fever: Criteria

knowmedge

Mnemonic: "JONES CAFE PAL"

Major Criteria

J	Joint Involvement
O	**O** looks like a heart = myocarditis
N	Nodules, subcutaneous
E	Erythema marginatum
S	Sydenham chorea

Minor Criteria

C	CRP Increased
A	Arthralgia
F	Fever
E	Elevated ESR
P	Prolonged PR Interval
A	Anamnesis of Rheumatism
L	Leukocytosis

Diagnosis

Throat cultures growing GABHS OR Elevated anti-streptolysin O titers

+

2 Major criteria

OR

1 Major criterion and 2 Minor criteria

MANAGEMENT

1. Bed rest :

- It lessens joint pain and reduces cardiac workload .
- The duration should be guided by symptoms, along with temperature, leucocyte count and ESR, and should be continued until these have settled.
- Patient can then return to normal physical activity but strenuous exercise should avoided in those who have had carditis .

2. Treatment of cardiac failure :

- If heart failure in these cases does not respond to medical treatment, valve replacement may be necessary and it often associated with a dramatic decline in rheumatic activity .
- Occasionally, AV block may occur but is seldom progressive and usually resolve spontaneously .
- Rarely, pacemaker insertion may be required .

3. Antibiotic :

- A single dose of benzathine benzylpenicillin (1.2 million U IM) or oral phenoxymethylpenicillin (250 mg 4 times daily for 10 days) should be given to eliminate any residual streptococcal infection .
- If the patient is penicillin-allergic, erythromycin or a cephalosporin can be used .
- For secondary prophylaxis : benzathine benzylpenicillin (1.2 million U IM) or oral phenoxymethylpenicillin (250 mg twice daily) , sulfadiazine or erythromycin may be used if the patient is allergic to penicillin .
- Further attacks are unusual after the age of 21 , when antibiotic treatment can usually be stopped .

- The duration of prophylaxis should be extended if an attack has occurred in the last 5 years, or if the patient lives in an area of high prevalence and has occupation (such as teaching) with a high risk of exposure to streptococcal infection .
- In those with residual heart disease, prophylaxis should continue until 10 years after the last episode or 40 years of age, whichever is later .

3. Aspirin :

- This usually relieves the symptoms of arthritis rapidly and a response within 24 hours helps confirm the diagnosis .
- A reasonable starting dose is 60 mg/kg body weight/day, divided into six doses .
- An adult, 100mg/kg per day may be needed up to the limits of tolerance or a maximum of 8 g per day .
- Aspirin should be continued until the ESR has fallen and then gradullay tailed off .
- Mild toxicity includes nausea, tinnitus and deafness

  vomiting, tachypnoea and acidosis are more serious .

4. Glucocorticoids :

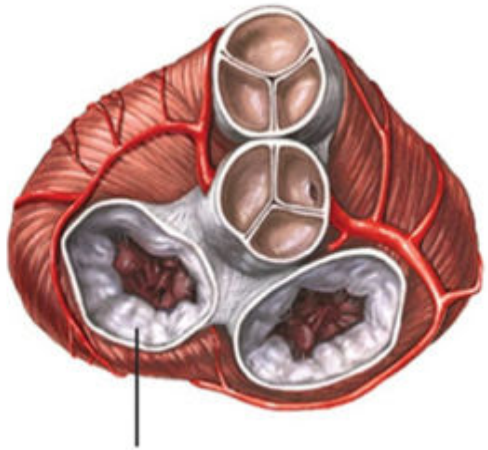
- These produce more rapid symptomatic relief than aspirin and are indicated in case with carditis or sever arthritis .
- There is no evidence that long term steroids are beneficial .
- Prednisolone (1-2 mg/kg per day in divided doses)should be contiued until the ESR is normal and then tailed off .

CHRONIC RHEUMATIC HEART DISEASE

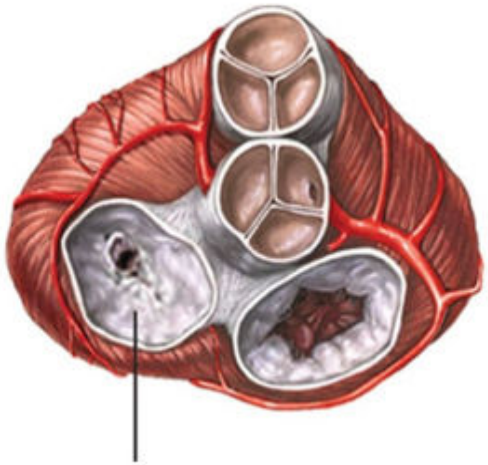
- Develops in at least half of those affected by rheumatic fever with carditis .
- Two third of cases occur in women .
- Some episode of rheumatic fever pass unrecognized and it is possible to elicit a history of rheumatic fever or chorea in only about half of all patient with chronic rheumatic heart disease .
- The mitral valve is affected in more than 90% of cases, the aortic valve is the next most frequently involved, followed by the tricuspid and then the pulmonary valve .
- Isolated mitral stenosis accounts for about 25% of all cases, and an additional 40% have mixed mitral stenosis and regurgitation .

PATHOGENESIS

- The main pathological process is progressive fibrosis .
- The heart valve are predominantly affected but involvement of the pericardium and myocardium also occurs and may contribute to heart failure and conduction disorders .
- Fusion of the mitral valve commissures and shortening of the chordae tendineae may lead to mitral stenosis with or without regurgitation .
- Similar changes in the aortic and tricuspid valves produce distortion and rigidity of the cusps, leading to stenosis and regurgitation .
- Once a valve has been damaged, the altered haemodynamic stresses perpetuate and extend the damage, even in the absence of a continuing rheumatic process.



Heart with Normal Mitral Valve



Narrowing down of Mitral Valve

Rheumatic Mitral Valve

(With Stenosis)

THANK YOU