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A literary review of acute rheumatic fever & it's homoeopathy

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Abstract
Acute, recurring inflammatory disease that affects primarily children (aged 5–15 years) and occurs 1–5 weeks following group A streptococcal infection [1]. Microscopically characterized by Aschoff Cells, diagnosis is confirmed by Jones Criteria & CRP.

Keywords: Aschoff cells, Jones criteria, Jaccod's arthritis, Sydenham's chorea, C-reactive protein

1. Introduction
Acute rheumatic fever (RF) is an inflammatory complication that can occur after a group B virus infection. One or more of the following symptoms indicate a beta hemolytic streptococcal infection: Arthritis, carditis, chorea, erythema marginatum, and subcutaneous nodules [2].

2. Pathogenesis
1. Antistreptococcal antibodies from the host react to cardiac antigens [1].
2. Autoimmune reaction triggered by a microbe [1].

Following exudative streptococcal pharyngitis, rheumatic fever occurs after about 2 weeks. The exact pathogenetic pathway by which streptococcus leads to rheumatic inflammation is not known. Various mechanisms proposed are:
1. Direct toxic action by streptococcus, or its "L form" lacking the cell wall
2. Allergic reaction to the organism or its product
3. Autoimmune reaction: There is similarity between the carbohydrate of the streptococcus and some proteins of heart valves causing the immune reaction. This is the most accepted theory.

3. Pathology: Rheumatic fever can involve any or all the layers of the heart (pancarditis). Involvement of the valvular endocardium may lead to tiny vegetation on the valves and destruction and fibrosis of valve substance with fusion of cusps of commissures leading to stenosis. There is myocarditis and fibrinous pericarditis (bread-and-butter appearance). Both are self-limiting causing no permanent sequelae [2].

4. Microbiology: The hallmark of carditis is the "Aschoff" body which is a granulomatous lesion of the endocardium with fibrinoid necrosis. This area is s urrounded by cardiac histiocytes called Aschoff cells or Anitschoff cells. Mccullaris patch in chronic RF [2, 3].

5. Jones Criteria
Rheumatic fever is a multisystem condition that develops after a spell of sore throat (streptococcal) and is characterised by fever, anorexia, joint aches, and lethargy. Arthritis is the most prevalent symptom, affecting 75% of patients; additional symptoms include skin rashes, carditis, and neurological abnormalities [4].

5.1 Major Criteria

5.1.1 Carditis

Within the first two weeks of rheumatic fever, pancarditis develops in 50–60% of patients.

The presence of a pericardial rub indicates pericarditis, tachycardia indicates myocarditis, soft S1 indicates the existence of S3 and CCF indicates endocarditis, and Carey-Coombs' murmur indicates endocarditis (mitral diastolic murmur) [1].

5.1.2 Arthritis (60-75%)

In 60–75 percent of patients, a fleeting and transient kind of polyarthritis involving big joints with minimal residual deformity occurs early in rheumatic fever [1].

5.1.3 Jaccod's arthritis: The sole remaining deformity seen in rheumatic polyarthritis is ulnar deviation of the 4th and 5th fingers with bending at the metacarpophalangeal joints [1].

5.1.4 Subcutaneous Nodules

In 3–5% of patients, non-tender nodules appear over bony prominences such as the elbows, shin, occiput, and spine 3–6 weeks following the onset of rheumatic fever. Carditis is almost always seen in patients with subcutaneous nodules [1].

5.1.5 Erythema Marginatum (< 5% and evanescent)

In about 5% of patients, macular lesions with an erythematous rim and central clearing in a bathing suit distribution appear early in rheumatic fever [1].

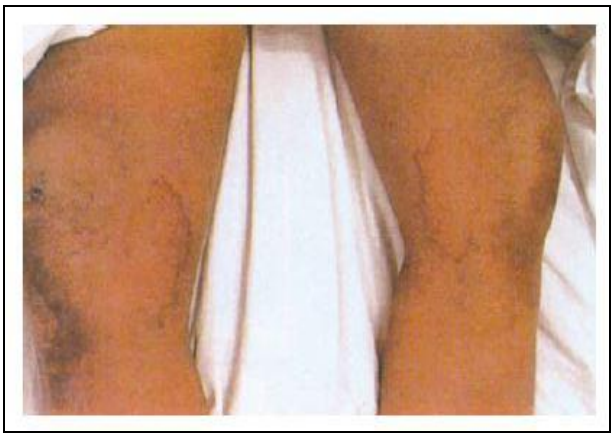

Fig 1: Erythema Marginatum [4]

5.1.6 Chorea (Sydenham's Chorea) (2-30%)

Females are more likely to experience a neurological disease with rapid, uncontrollable, and purposeless non-repetitive movements that last 2-6 weeks and are a late manifestation of rheumatic fever

Major manifestations

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

Minor manifestations

- Fever
- Arthralgia
- Previous rheumatic fever
- Raised ESR or CRP
- Leucocytosis
- First-degree AV block

Notes

- Diagnosis depends on two or more major manifestations, or one major and two or more minor manifestations PLUS supporting evidence of preceding streptococcal infection: recent scarlet fever, raised antistreptolysin O (ASO) or other streptococcal antibody titre, positive throat culture
- Evidence of recent streptococcal infection is particularly important if there is only one major manifestation

Fig 2: Jones Criteria for Diagnosis of Rheumatic Fever [7]

5.2 Minor Criteria [1]

5.2.1 Clinical

1. Fever
2. Arthralgia
3. Previous history of rheumatic fever or rheumatic heart disease.

6. Clinical significance [3, 4]

Past history of sore throat, joint pains (fleeting character), fever, and skin rash must be asked in a patient suspected of rheumatic heart disease. Look for the following signs of rheumatic fever:

- Fever, sore throat, lymphadenopathy
- Any swelling of the big joint(s)
- Erythema marginatum, which is characterised by red macules with a pale centre (appear as red rings). They can be found on the trunk as well as the extremities

(Fig.1) They may not be evident in those with dark complexions.
- Nodules under the skin. Palpate the extensor surface of the forearms and legs for tiny painless nodules over the bony prominences and tendons. These nodules are much smaller than rheumatoid arthritis nodules.
- Uncontrollable motions (chorea). Look for broad flunging dancing irregular extremity movements. These are quasi-purposive and normally recover, however rheumatic carditis may accompany or follow.
- Arthralgia is a painful condition that affects the joints. A frequent manifestation is migrating polyarthritis involving one or two major joints at a time. True and generally known is the saying that acute rheumatic fever "licks the joint and bites the heart."

6.1 Signs

a. Tongue appears like a "bag of worms" due to continuous movements
b. "Spoon-dish" hands due to hyperextension of MCP joints and flexion at wrist
c. "Milkmaid" grip causing irregular repetitive squeezing on shaking hands.

7. Laboratory Investigations [1]

1. Reactants of the acute phase (leucocytosis, elevated ESR, C-reactive protein)
2. ECG with a lengthy PR interval (> 0.2 sec).

7.1 WHO Criteria [1]

Except for prior history of rheumatic fever/rheumatic heart disease and C-reactive protein, Jones major and minor criteria are met.

7.2 Essential Criteria [1, 5]

Evidence for recent streptococcal infection as evidenced by:

1. Increase in ASO titre
   a. > 333 Todd units (in children)
   b. > 250 Todd units (in adults).
2. Streptococcal infection confirmed by throat culture.
3. A recent scarlet fever history.

In the presence of essential criteria, two major (or) one major and two minor criteria are necessary to diagnose Acute Rheumatic Fever.

Only about half of all patients with Rheumatic Heart Disease have a positive Rheumatic Fever history.

Evidence of a systemic illness (non-specific)
• Leucocytosis, raised ESR, raised CRP
Evidence of preceding streptococcal infection (specific)
• Throat swab culture: group A β-haemolytic streptococci (also from family members and contacts) • ASO titres: rising titres, or levels of >200 U (adults) or >300 U (children)
Evidence of carditis
• CXR: cardiomegaly; pulmonary congestion • ECG: first- and rarely second-degree heart block; features of pericarditis; T-wave inversion; reduction in QRS voltages • Echocardiography: cardiac dilatation; valve abnormalities

Fig 3: Investigations in Rheumatic Fever [6]

8. Treatment [5]

a. Tab aspirin 75–100 mg/kg/day, divided into 4–5 doses, until the illness activity declines (ESR becomes normal).
b. If symptoms of RF and/or carditis continue despite appropriate aspirin therapy,
c. Steroids at a dose of 1–2 mg/kg/day.
d. Inj. benzathine penicillin 1.2 million units IM every 3–4 weeks as a continuous prophylactic against recurrent RF. Tab. sulfadiazine 1 gm daily or tab. erythromycin 250 mg twice daily may be given to people allergic to penicillin. Prophylaxis must be continued until the patient reaches the age of 25 or until 5 years have passed since the last attack, whichever comes first.

8.1 Duration of treatment [5]**:**

Rheumatic fever with no carditis—5 years or until the age of 18 years (whichever is longer).

Rheumatic fever with carditis without valvular lesion—10 years or until the age of 25 years (whichever is longer).

Rheumatic fever with carditis with valvular lesions— life long.

9. Homoeopathic Treatment [8]

9.1 Aconite: Fear, anxiety, and mental and physical agony. The most common symptom of Aconite is physical and mental restlessness, as well as fear. It is required in the case of an acute, sudden, and violent invasion accompanied by a fever. Doesn't want to be touched in any way. A sudden and significant loss of strength. Exposure to dry, chilly weather, draughts of cold air, and checked sweating, as well as problems from extremely hot weather, produce complaints and tension. The cold stage is the most noticeable. Arms are swollen, bruised, heavy, and numb. Pain radiating down the left arm. Hands that are hot and feet that are frigid. Rheumatic joint inflammation; worse at night; red, shiny swelling; extremely sensitive. The hip and thigh joints, especially after lying down, feel lame. Knees unsteady; disposition of foot to turn. Ligaments in all joints are weak and lax. Painless cracking of all joints. Sensation as if drops

of water trickled down the thigh.
Every ailment, no matter how minor, is accompanied by great fear, anxiety, and stress. Fears and apprehensions. Fears death, but feels he will die soon; foresees the day. He is afraid of the future, of a crowd, and of crossing the street. Tossing and turning with agitation. Imagination is acute, and clairvoyance is present. He can't stand the pain; it drives him insane.

9.2 Arsenic: The temperature of an arsenic sufferer is usually very high with periodicity. Septic Fever with Intermittent Fever Paroxysms that aren't complete and cause a lot of tiredness. There is a lot of restlessness. Its general symptoms are frequently enough to lead to its application's success. The most common symptoms are debility, tiredness, and restlessness, which are exacerbated at night. After even the slightest exertion. Pains burning. Thirst that will not be quenched. Heat relieves burning. Fruits can be harmful, especially those that are more watery.
There was a lot of misery and unrest. Continually shifts its location. Fears of death and being abandoned. Fearful, with a cold perspiration. Suicidal. Smell and sight hallucinations. Despair propels him from one location to the next. He is stingy, spiteful, and self-centered, and he lacks confidence. Sensitivity has risen in general. Sensitive to chaos and confusion.

9.3 Belladonna: A high feverish condition with little to no toxaemia. With a fever, there is no thirst. Shooting aches running up and down the limbs. Swollen, red, shining joints with red streaks radiating Walking with a stumbling gait. Rheumatic aches that shift. Legs jerk with Spasms. Involuntary limping is a condition that occurs when a person is unable to walk Extremely cold extremities. Belladonna is always connected with heated, red skin, flushed cheeks, glaring eyes, throbbing carotids, agitated mental state, hyperaesthesia of all senses, delirium, restless sleep, convulsive movements, dry mouth and throat with aversion to water, and acute neuralgic pains. Heat, redness, throbbing, and burning are all symptoms.

9.4 Bryonia: External coldness, dry cough, and stitches cause a chill. Heat generated from within. After a brief period of activity, a sour sweat develops. Perspiration is easy and plentiful. Rheumatoid and typhoid fever are both characterised by gastro-hepatic problems. Knees are stiff and sore. Swelling of the feet that is hot. Joints are red, swollen, heated, and inflamed, with stitching and tearing; they get worse with the least amount of movement. When you apply pressure to any of the spots, it hurts. Left arm and leg are constantly moving. All serous membranes and the viscera they contain are affected. Every muscle in my body is aching. The pain here is stitching and tearing in nature; it becomes worse with movement and gets better with rest. These distinctive stitching pains, which are substantially intensified by any action, can be detected anywhere, but mainly in the chest, and are accompanied by increased pressure. All of the mucous membranes are dry. Bryonia affects the constitution of a robust, firm fibre and dark complexion, as well as having tendency to irritation and leanness. It prefers to manifest its action on the right side, in the evening, and in the open air, in mild weather following chilly days. Complaints usually take time to manifest.

9.5 Eupatorium Perf: Chill between 7 and 9 a.m., accompanied by thirst and severe stiffness and bone ache. Backache is excruciating. Aching in the bones of the extremities, as well as soreness in the flesh. Arms and wrists are aching. The left great toe is swollen. Swelling of the dropsy. Generalized and severe bone pain. Soreness. Periodicity is clearly marked.

9.6 Ferrum Phos: Every day at 1 p.m., chill. First stage of all catarrhal and inflammatory fevers. Neck stiffness. Articular rheumatism is a type of rheumatism that affects the joints. Rheumatic shoulder pain that extends to the chest and wrist. Prostration is visible, and the face is more dynamic than Gels.

9.7 Gelsemium: Up and down the back, there's a chill. Stages of heat and sweat, which are long and exhausting. Dumb-ague, with a lot of muscle pain and a lot of prostration. A chill runs up the spine, without making thirsty; it's wave-like, reaching from the sacrum to the occiput. Loss of muscle control power. All limbs tremble excessively and are weak. Prostration in general. Dizziness, tiredness, dullness, and trembling are some of the symptoms. Slow heart rate, tiredness, and mental indifference Weakness in the muscles. Relaxation and prostration in its purest form. Muscle incoordination is a problem. The heat of the sun causes general depression. Sensitive to a fall in the barometer; cold and moisture cause problems. Circulation is sluggish. Desire for solitude and silence. Dullness, languor, and apathy. Emotional excitement, fear, and other negative emotions cause physical problems. Fear, excitement, and horror have negative consequences.

9.8 Kalmia: Deltoid rheumatism is one of the most common types of rheumatism and in Kalmia right side is affected. From the hips to the knees and foot, there are aches and pains. Pains that impact a considerable portion of a limb or numerous joints passes quickly. Weakness, numbness, pricking, and a cold sensation in the limbs. T here are pains along the ulnar nerve & the index finger. Joints are swollen, red, and heated. Left arm tingling and numbness Pains come and go quickly. Neuralgia is a discomfort that radiates downwards and is accompanied by numbness. Fever that lasts for a long time and is accompanied with tympanites. Almost every group of symptoms is accompanied with paralytic sensations, aches, and soreness in the limbs.

9.9 Rhus Tox: Swelling of the joints that is hot and painful. Tendon and ligament tearing pains. Rheumatic symptoms in the nape of the neck, loins, and extremities spread over a large surface; improved motion. Soreness in the bones' condyles. The limbs are stiff and paralysed. The cold, pure air is intolerable; it irritates the skin. Tenderness around the knee. Power loss in the forearm and fingers, as well as a crawling sensation in the tips of the fingers. Tingling sensations in the feet. Rhus has a strong effect on fibrous tissue, such as joints, tendons, sheaths, and aponeurosis, causing discomfort and stiffness. Complications that occur after surgery. It hurts to be torn apart. Motion "limbers up" the Rhus patient, and hence a change of posture makes him feel better for a while. Strains, over lifting, and getting wet while sweating can all cause problems. Rheumatism throughout the winter months. Mentally, the patient is

listless, depressed, and contemplating suicide. Extreme restlessness accompanied by a constant change of position. Delirium accompanied by apprehension of being poisoned. The sensorium becomes hazy.

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