

Reviewed Article

Rheumatic Fever

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ABSTRACT

Rheumatic fever is a type of inflammatory disease condition which can affect the different organs of the body such as heart, body joints, nervous system and subcutaneous tissue. The causative organism for Rheumatic fever is Group A- beta hemolytic streptococci. The worldwide incidence of Rheumatic fever is 19 cases per 100,000 populations. The clinical manifestations of Rheumatic fever is divided into two broad categories according to Jones criteria i.e., major criteria and minor criteria. The clinical features under major criteria are arthritis (inflammation in joints which can be monoarthritis or polyarthritis), carditis(inflammation in all the layers of heart), Sydenham’s chorea(involuntary body movements especially in face and limbs), erythema marginatum (pink color lesions having dark boundary and faded at its center), subcutaneous nodules(nodules formed from the deposition of collagen fibres). The clinical features under minor criteria are arthralgia (pain in the joints of body), hyper-pyrexia (high grade fever), high ESR (Erythrocyte sedimentation rate) value found in CBC report, high C - reactive protein (which represents infection and inflammation in body), prolonged PR interval found in ECG report. The diagnosis of Rheumatic fever is based on Jones criteria. For diagnosing the Rheumatic fever there should be the presence of 2 major criteria or either the presence of 1 major criterion and 2 minor criteria along with the presence of positive test for Group A- beta hemolytic streptococci. There are two main goals for the treatment of Rheumatic fever i.e., eradication of Group- A beta hemolytic streptococci and treatment of clinical manifestations associated with rheumatic fever.

Keywords: Rheumatic fever, Group A- beta hemolytic streptococci, Jones criteria,

1 Introduction

Rheumatic fever is a type of inflammatory disease condition which can affect the body of a person in different ways by affecting the different organs of our body such as heart, body joints, nervous system and subcutaneous tissues[1,2].In developing countries , the rheumatic fever is a common autoimmune disorder. The main causative organism for rheumatic fever is Group A beta hemolytic streptococci bacteria [3]. After getting infection by group A- beta hemolytic streptococci bacteria in our body the first symptoms of this disease appear within 2-3 weeks [4]. In 1944, Dr. T Duckett Jones proposed the five vital clinical manifestations for rheumatic fever i.e., carditis, arthritis, Sydenham’s chorea, erythema marginatum and subcutaneous nodules. The diagnosis for rheumatic fever is also based on Jones criteria. The main goal for treatment of rheumatic fever is eradication of group -A beta hemolytic streptococci and treatment of clinical manifestations associated with Rheumatic fever [5].

2 Incidence

The worldwide incidence of Rheumatic fever is 19 cases per 100,000 populations while its prevalence

In United States ranges from 2-14 cases per 100,000 populations. Rheumatic fever follows the progression of Rheumatic heart disease which becomes a major cause for morbidity and mortality especially among the entire developing countries in the world [6].

3 Clinical Manifestations

The clinical manifestations for Rheumatic fever is proposed by Dr. Jones and he divides it into two broad groups i.e., major criteria and minor criteria.

Major Criteria	
Population at lower risk	Population at high risk
Cordites(May be clinical/sub-clinical)	Cordites (May be clinical/sub-clinical)
Poly arthritis (multiple joints inflammation)	Poly arthritis/Mono arthritis
Sydenham’s chorea (involuntary body movements especially in face and limbs)	Poly arthralgia (Multiple joint pain)
Erythema marginatum (pink colour lesions having dark boundary and faded at its centre)	Sydenham’s chorea
Subcutaneous nodules (nodules formed from the deposition of collagen)	Erythema marginatum (pink colour lesions having dark boundary

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fibres).	and faded at its centre)
	Subcutaneous nodules (nodules formed from the deposition of collagen fibres

Minor Criteria	
Population at lower risk	Population at high risk
Hyperthermia (more than 38.5 degree Celsius)	Hyperthermia (more than 38.5 degree Celsius)
Poly arthralgia	Mono arthralgia
Prolonged PR interval (no presence of cordites as a major criteria)	Prolonged PR interval (no presence of cordites as a major criteria)
ESR value is more than 60mm/hr	ESR value is more than 30mm/hr

The major criteria of clinical manifestations for Rheumatic fever are:

- Arthritis
- Carditis
- Sydenham’s chorea
- Erythema marginatum
- Subcutaneous nodules [7]

a) Arthritis

The most common manifestation for Rheumatic fever is arthritis and it represents about 60-80% of the patient population suffering from rheumatic fever [8, 9]. Arthritis refers to the inflammation of joints. The joints which are most frequently affected in arthritis are knee joint, ankle joint, elbow joint and wrist joint. The arthritis associated with Rheumatic fever is very painful and it is migratory in nature. Probably in 2-3 weeks, this symptom gets resolved spontaneously [10].

b) Carditis

Among all the patients suffering from rheumatic fever, about 50% of them presents with carditis [11]. The term carditis refers to the inflammation of heart layers. Along with the inflammation, the valvular involvement is also present. The most common valves which are involved in carditis are mitral valve (bicuspid valve) and aortic valve. On pathological examination, the valve surface appears thickened and presents with vegetation all over it [12].

c) Sydenham’s Chorea

It refers to the involuntary body movements especially in face and limbs. It also represents muscle weakness in the body, disturbances in speech and gait. Children also show some of the psychological dysfunctions such as increased

liability to emotions, hyperactive behaviour and some sort of irritability [13, 14, and 15].

d) Subcutaneous nodules

Among all the cases of Rheumatic fever, this feature represents only about 1-20% in all of them [16]. The appearance of subcutaneous nodules is usually associated with severe carditis. These nodules are firm deposition of collagen fiber. They are movable and painless measuring about 0.5-2cm. They are mainly present over the extensor surfaces of joints especially at knees, wrist and elbows [17, 18].

e) Erythema marginatum

It presents in only 6% of the patients suffering from rheumatic fever [18]. These are the pinkish macular and papular lesions with dark color boundary and faded at center. They are usually seen on the trunk, abdomen and the proximal extremities. These lesions are never appeared on the face [18].

The minor criterion for Rheumatic fever is:

- Arthralgia
- Hyper-pyrexia
- High ESR value
- High c-reactive protein
- Prolonged PR interval in ECG [19]

4 Diagnostic Criteria

- The diagnosis of Rheumatic fever is formulated according to Jones criteria.
- For the diagnosis of first episode of disease, there should be the presence of any 2 major criteria or either the presence of 1 major or 2 minor criterion along with the positive test for Group- A beta hemolytic streptococci.
- For the diagnosis of subsequent episodes of disease, there should be the presence of two major criteria or one major and two minor criteria as per Jones criteria in an individual or either the presence of three minor criteria alone itself as per Jones criteria in an individual^[19].

5 Treatment

For the treatment of Rheumatic fever, two main goals are formulated:

- Elimination of the bacteria i.e., Group - A beta hemolytic streptococci by administration of antibiotics.
- Treatment of the clinical manifestations associated with Rheumatic fever[3,20]

a) Elimination of Group - A beta hemolytic streptococci

There are some drugs of choice for the elimination of Group A beta hemolytic streptococci such as Penicillin V (Phen-oxy methyl penicillin),

Penicillin G (Benzyl penicillin), and Amoxicillin, Cephalosporin (Cefadroxiol or cefalexin) [3, 20].

b) Treatment of clinical manifestations associated with Rheumatic fever

Arthritis: The drug of choice for the treatment of arthritis with or without carditis is Non – steroidal anti inflammatory drugs such as ibuprofen, ketoprofen, acetyl-salicylic acid (aspirin) [21].

Carditis: For the treatment of mild carditis in rheumatic fever, the drug of choice is aspirin which is required to be administered at a dose of 100mg per kg per day. It must be continued for at least 2-3 weeks. For treating moderate to severe carditis, oral prednisolone must be administered at a dose of 2mg/kg/day [22].

Chorea: For treatment of chorea, the drug of choice is sedatives such as diazepam or phenobarbitone but if the patient's condition is not showing any improvement the haloperidol or valproic acid should be administered [22].

6 Prevention Of Rheumatic Fever

a) Primordial Prevention

- ✓ It refers to the prevention from development of risk factors in the community so that all the individuals of a certain population can be prevented from the attack of disease.
- ✓ The basic requirement for the primordial prevention of Rheumatic fever are:
- ✓ Improvement in socio-economic status of the people.
- ✓ Avoid overcrowding.
- ✓ Improvement in nutritional status.
- ✓ Immediate availability of medical care.
- ✓ Health education regarding risk factors of rheumatic fever.

b) Primary Prevention

- ✓ It involves the administration of Penicillin to eradicate Group - A beta hemolytic streptococci bacteria.
- ✓ The basic requirement for the primary prevention of Rheumatic fever are:
- ✓ Developing awareness among the people regarding the dangers of Rheumatic fever.
- ✓ Identification of the causative organism for sore throat.
- ✓ Administration of Penicillin to treat the infection [23].

7 Secondary Prevention

It involves the identification of cases suffering from Rheumatic fever. After identification,

bezathine penicillin should be administered to the patient depending on age, body size and muscle mass [24].

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