

## Rheumatic Fever Arthritis

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### Mini Review

Volume 3 Issue 1

**Received Date:** October 18, 2018

**Published Date:** January 18, 2019

**DOI:** 10.23880/jobd-16000169

### Mini Review

On the occasion of the World Arthritis Awareness Month from 12<sup>th</sup>-27<sup>th</sup> October 2018, it is an honor for me to share my experience regarding rheumatic fever arthritis. Rheumatic fever (RF) is a multisystem disease which post-streptococcal sequelae of pharyngitis. It is an autoimmune reaction to the M-proteins in the cell wall of few strains of the organism. It may attack the connective tissue of various systems of the body. The joints get involved first in the form of arthritis, occurring within the first 3 months of the streptococcal infection known as the incubation period. Involvement of heart in the form of carditis takes around 6 months, resulting in permanent damage to the valves of the heart. This is followed within 6 to 9 months by involvement of sub-cutaneous tissues of the skin causing Erythema marginatum or sub-cutaneous nodules. The involvement of brain in the form of choreiform movements is last to manifest and takes years after streptococcal pharyngitis.

Patients present with one or more symptoms at a time. There are five major criteria first published in 1944 by T. Duckett Jones, MD, which along with some minor criteria, are used in the diagnosis of rheumatic fever. These have been periodically revised by the American Heart Association in collaboration with other groups. The major criteria include carditis, polyarthritis, chorea, erythema marginatum, and subcutaneous nodules. The minor criteria can include fever, arthralgia, and history of rheumatic fever or rheumatic heart disease, ESR, CRP, leukocytosis, and prolonged PR interval. According to revised Jones criteria, the diagnosis of rheumatic fever can be made when two of the major criteria, or one major criterion plus two minor criteria, are present along with evidence of streptococcal infection.

During the incubation period, an antigen-antibody reaction begins and peaks. Rheumatic fever has the ability to reoccur and the chances of damage to the heart valves

increases. Rheumatic fever arthritis most commonly involves the large joints which include knee, ankle, elbows, and wrists followed by small joints in succession.

Rheumatic fever commonly affects the age group between 6 years to 16 years, but no age group is safe, as there have been reports of sufferers at the extremes of age ranging from 2 years to above 90 years. This is a disease of underdeveloped countries where malnutrition is prevalent and children are more susceptible due to immature immune systems; especially in overcrowded living with an average of 6 people sharing one or two rooms. Nowadays, due to better diagnostic and preventative strategies, we are not experiencing severe forms of disease where many joints are involved in an individual patient.

The typical feature of rheumatic fever arthritis is extremely painful, red, hot and swollen joints which severely limit range of motion. The severity of the pain is such that the patient is miserable even if slight movements are made around them. A diagnostic point of rheumatic fever arthritis is the self-improving, yet migratory nature of pain. The pain in one involved joint begins to resolve just as another joint begins to experience the same symptoms within a week's time. Without medication, the arthritis of rheumatic fever is self-limiting and improves gradually without any residual sequelae. In some cases, it may manifest as arthralgia which is a minor manifestation, where multiple small joints become painful, but not red, hot, or swollen to the point that range of motion is restricted. Arthralgia is sometimes associated with arthritis, but in this case, it is not counted as a minor manifestation.

With the advancement of diagnostic medicine and increasing public awareness, most patients are seen earlier in the disease process and the textbook picture of

polyarthritis is not a common presentation. This is the reason why the Jones criteria, which is popularly used for diagnosis of arthritis of rheumatic fever (ARF) has now added mono-articular arthritis in the modified version of diagnostic criteria.

For diagnosis, acute phase reactants, raised ESR, ASOT, and CRP levels are considered the best tests. In order to treat arthritis/arthritis of ARF, Aspirin is still considered the drug of choice and it significantly improves the symptoms. It is given in the dose of 75 to 100 mg/kg/day in 3-4 divided doses. ESR is checked weekly and is the best marker of improvement of symptoms. If the treatment is stopped before ESR returns to normal, clinical rebound is possible. The Aspirin dose is tapered once the ESR levels begin to return to normal, with gradual tapering by 1-2 tablets each week. The total duration may continue from 6-12 weeks. With Aspirin therapy, antacids are recommended and the patient has to be informed to take Aspirin after meals. As discussed earlier, the arthritis/arthritis of ARF is self-limiting, regardless of Aspirin therapy or not, but sometimes the pain can be treated with steroids (prednisolone) 2 mg/kg/day in 4 divided doses which is then tapered similar to the Aspirin as discussed above, all while following ESR levels.

Regarding prevention of recurrence of ARF, over the decades, expanding the knowledge base of cause and the recurring nature of the disease in some individuals, the permanent damage to the heart's valves that can occur, has led scientists to find methods of preventing rheumatic fever by treating the streptococcal sore throat with a 10 day antibiotic course. Today, we are fortunate to have depot Penicillin, in the form of Penicillin G, Benzathine whose bactericidal level is maintained in the blood of the individual for more than 15 days and later may be bacteriostatic up to 30 days after injection. Thus, one injection can be given intramuscularly every 3-4 weeks for at least 5 years from the onset of ARF to prevent recurrence.

With each recurrence, the symptoms of the disease are more severe as recurrences occur more frequently. This means, that we must focus on preventing recurrences more religiously and, if carditis is amongst the manifestations of RF, prevention needs to be continued for the entirety of the patient's life- as recurrences can result in increasingly severe damage to the heart valves. In patients with a known allergy to Penicillin, a bactericidal antibiotic has to be given in a proper dose for at least 5 years.

