Post-streptococcal reactive arthritis: A review
Sarker HN, Das BP

Abstract
Post-streptococcal reactive arthritis (PSRA) is a poorly understood clinical syndrome in which oligo or polyarthritis occurs following a group A streptococcal pharyngitis. There is lack of universally accepted guideline for diagnosis and management of these patients. But with the resurgence of acute rheumatic fever (ARF) and PSRA over the past decade, it has become increasingly important to understand the definition, presentation and treatment options for these two diseases. This review article presents the clinical profile of PSRA and compare it with ARF so that both can be differentiated from each other, provides an approach to diagnosis and management, including the controversies regarding the management.

Introduction
Acute Rheumatic fever (ARF) is a common and serious public health problem in developing countries and remain a great challenge for both developed and developing countries. The original Jones criteria for diagnosis of ARF, first introduced in 1944, have been modified four times and updated revised criteria have been published in 1992. Arthritis that follows Group A β Hemolytic Streptococcus (GABHS) infection in patients whose illness otherwise does not meet the Jones criteria for diagnosis of ARF, were first described by Crea and Mortimer in 1959 who described eighteen patients with non-suppurative arthritis and a history of scarlet fever. Eighty-nine percent (16/18) of these patients did not had carditis or any other major manifestations of Jones criteria for ARF. No aditional reports were published until 1982 when Goldsmith and Long described twelve patients with the same arthritis and they were the first authors who designated this syndrome as Post streptococcal Reactive Arthritis (PSRA). Barash and her group were able to analyze a large number of pediatric patients with ARF and PSRA and identify four criteria that could aid in discriminating between these two entities.

Methodology
This literature review on PSRA is based on articles obtained by internet search. The key words utilized in the strategy include post-streptococcal reactive arthritis, rheumatic heart disease, prophylactic treatment and group A streptococcus. The majority of the articles utilized included case reports and review articles on the topic of ARF and PSRA.

Definition and presentation
PSRA is a clinical syndrome which lacks clear diagnostic criteria and treatment recommendations. The term PSRA refers to a reactive arthritis characterized by a pharyngeal streptococcal infection, a symptom free interval of approximately ten days followed by aseptic inflammation of one or more joints. The arthritis may present like acute septic arthritis with a sudden onset of fever, severe joint pain. The pain is often out of proportion to the degree of physical findings. There is no specific pattern to the joint involvement; it may be monoarticular or polyarticular, migratory, additive or chronic. The arthritis is usually non-destructive and self-limiting, but the symptoms can last for months. The response to aspirin may be less dramatic than with ARF. There may not be clinical evidence of a preceding streptococcal infection and the throat culture may be negative.

Table 1 lists the similarities and differences between PSRA and ARF.

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Table 1: Revised Modified Jones Criteria

<table>
<thead>
<tr>
<th></th>
<th>ARF</th>
<th>PSRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epitrochelysis</td>
<td>5.15</td>
<td>3.15</td>
</tr>
<tr>
<td>Age</td>
<td>1:3</td>
<td>1:1</td>
</tr>
<tr>
<td>Sex ratio (male:female)</td>
<td>0.30%</td>
<td>0</td>
</tr>
<tr>
<td>Chorea</td>
<td>0.13%</td>
<td>0</td>
</tr>
<tr>
<td>Streptococci</td>
<td>rare cases reported</td>
<td>0.0%</td>
</tr>
<tr>
<td>Arthritis</td>
<td>+1</td>
<td>-</td>
</tr>
<tr>
<td>Premenstrual</td>
<td>+1</td>
<td>+</td>
</tr>
<tr>
<td>Sore joints</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>Small joints</td>
<td>↓</td>
<td>+++</td>
</tr>
<tr>
<td>Salicylate response</td>
<td>++</td>
<td>inconsistent</td>
</tr>
<tr>
<td>Erosion</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Preceding streptococci infection</td>
<td>Requirement for diagnosis</td>
<td>-</td>
</tr>
<tr>
<td>Approximate interval between infection</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>and disease in days</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PSRA refers to patients with a Group A Beta hemolytic streptococcal (GABHS) infection who do not fulfill the modified Jones criteria for the diagnosis of ARF. In other words, PSRA refers to reactive arthritis without cardiac or central nervous system involvement occurring after a streptococcal infection. Nonetheless, there have been several reports of pediatric patients who have subsequently developed carditis.

**Etiology**

Reactive arthritis refers to acute, non purulent arthritis complicating an infection occurring elsewhere in the body. In the recent years the term reactive arthritis, has been used primarily to refer to spondyloarthitis following enteric or urogenital infections and occurring predominately in individual with the HLA B 27. The term implies that there is infection in other site of body and arthritis occurs due to immunologic cross reactivity and no organism is detected from joint aspiration. The exact etiology for PSRA remains unclear. To date, there has been no association between PSRA and HLA-B27 in pediatric patients.

**Differential diagnosis**

**ARF**
- Juvenile rheumatoid arthritis (JRA)
- Spondyloarthropathies
- Viral arthritis
- Septic arthritis
- Reactive arthritis

**Investigations**

1. Complete blood count with ESR and CRP.
2. A throat culture for GABHS, although this may be negative at the time of presentation.
3. Blood cultures to rule out sepsis.
4. Chlamydial swabs (if patient is sexually active) to rule out chlamydia as a cause of reactive arthritis.
5. Stool culture.
6. Synovial fluid culture, cell count and differential.
7. ASO titre, anti-DNase B.
8. An electrocardiogram.

Blood work usually indicates an increased white blood cell (WBC) count with elevated levels of ESR and CRP. The synovial fluid WBC count can be as high as >100 x 10⁹/L (often in the "Inflammatory Range", normal value = 5.0-15 x 10⁹/L) and the synovial and blood cultures are usually negative.

**Treatment and complications**

Once diagnosis of PSRA is made, antimicrobial therapy should be given to eradicate the GABHS. The long term development of rheumatic heart disease following PSRA has not been established. So, decision regarding long term antibiotic prophylaxis is still controversial. As overt or silent mitral valvular insufficiency may accompany PSRA and patients with PSRA experience recurrences, some researchers recommend that all individuals with PSRA be treated with long term penicillin antibiotic prophylaxis (as recommended for patients with ARF). Others feel that prophylaxis may be considered on a short term basis but discontinued if there is no evidence of carditis or chorea after further evaluation. Arthritis is treated symptomatically by NSAIDS.

**Conclusion**

It is still unclear whether PSRA represents an early or mild form of ARF or whether it is an entirely separate disease entity. Initial reports in the 1980’s suggested that PSRA is a distinct entity from ARF. The long term
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risk of RHD following PSRA has not been determined, although there have been several case reports of pediatric patients who have developed carditis with subsequent recurrences of PSRA.\textsuperscript{13,15,22} We are still unsure how often these patients will develop later cardiac manifestations. Long-term studies are needed to delineate the current epidemiology of streptococcus related diseases, to establish the relationship between PSRA and RHD and to determine the long-term risk of carditis in patients with PSRA.\textsuperscript{23} Finally, researchers need to assess the efficacy and appropriate duration of antibiotic prophylaxis of individuals with PSRA.\textsuperscript{19}

References

Review Article
