RHEUMATIC FEVER IN CHILDREN

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ABSTRACT

Acute rheumatic fever (ARF) is an autoimmune inflammatory process that develops as a sequel of streptococcal infection. Persons who have experienced an episode of ARF are predisposed to recurrence following subsequent (rheumatogenic) group A streptococcal infections. The most significant complication of ARF is rheumatic heart disease, which usually occurs after repeated bouts of acute illness. Rheumatic fever mainly affects children ages 6 -15, and occurs approximately 20 days after strep throat or scarlet fever. Several major and minor criteria have been developed to help standardize rheumatic fever diagnosis. Anti-inflammatory medications such as aspirin or corticosteroids reduce inflammation to help manage acute rheumatic fever.

KEYWORDS: Carditis, Subcutaneous Nodules, Sydenham's Chorea, Erythema Marginatum, Arthralgia

INTRODUCTION

Advances in medical and nursing science have empirically suggested different modes of intervention for taking care of children with rheumatic fever. Still nurses face challenges in caring rheumatic fever childrens in ICU. It remains a devastating problem in developing countries like India.

Rheumatic fever causes chronic progressive damage to the heart and its valves. It is an inflammatory disease that occurs following a Streptococcus pyogenes infection, such as streptococcal pharyngitis or scarlet fever.

INCIDENCE

Acute rheumatic fever commonly appears in children between the ages of 6 and 15, with only 20% of first-time attacks occurring in adults. The majority of cases of rheumatic fever affect children aged 5–15. Adults make up 20% of cases. The condition affects both sexes equally, though girls and women tend to have more severe symptoms.

CAUSES

Acute rheumatic fever is a result of an exaggerated immune response to group a beta hemolytic streptococci. Believed to be caused by antibody cross-reactivity that can involve the heart, joints, skin, and brain, the illness typically develops two to three weeks after a streptococcal infection.

CLINICAL MANIFESTATION AND DIAGNOSIS

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: elevated or rising antistreptolysin O titre or DNAase.
MAJOR CRITERIA

Fever

Rheumatic fever generally emerges between two and four weeks following a strep throat infection and is caused by a delayed reaction of the autoimmune system. It develops in children as a complication of strep throat that is not adequately treated and is most prevalent in children ages five to 15. Rheumatic fever affects the brain, skin, joints and cardiovascular system. Symptoms of rheumatic fever include joint inflammation, inflammation of the heart, bumps under the skin, development of a rash and altered movement.

Joint Pain

One of the major criteria used in diagnosing rheumatic fever is polyarthritis, or the inflammation of multiple joints. The most common joints affected are the wrists, ankles, elbows and knees, although it is possible to have pain or tenderness in the hips, hands, feet and shoulders. Joint pain may move from one joint to another over the course of several days.
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Carditis

Inflammation of the heart, or carditis, is another symptom of rheumatic fever. Symptoms include heart murmur, shortness of breath, rapid heartbeat, fluttering heartbeat and chest pain. If left untreated, rheumatic fever may result in permanent damage to the heart.

SUBCUTANEOUS NODULES

Children with rheumatic fever often develop subcutaneous nodules near bony areas close to large joints. These small bumps are located underneath the child's skin and do not cause pain. Approximately two percent of children with rheumatic fever develop nodules, usually in conjunction with other symptoms.

Figure 4

Rash

Erythema marginatum, a pink or red rash with irregular shaping or strange edges, is another symptom of rheumatic fever. The rash may be somewhat raised and commonly develops on the child's legs or arms or on the trunk of the child's body.

SYDENHAM'S CHOREA

Sydenham's Chorea occurs in approximately ten percent of children infected with rheumatic fever. The condition is characterized by jerky, uncontrolled movement of the body, emotional outbursts, tongue darting, grimaces, diminished fine motor skills and an irregular grip. It is caused by rheumatic fever's affect on the neuromuscular system, which results in altered movement and often a change in handwriting skills. This commonly affects the face, feet and hands, although it may also affect the legs and arms. Chorea may be accompanied by behavioral outbursts such as crying or laughing at inappropriate times.

MINOR CRITERIA

- Fever of 38.2–38.9 °C (101–102 °F)
- Arthralgia: Joint pain without swelling (Cannot be included if polyarthritis is present as a major symptom)
- Raised erythrocyte sedimentation rate or C reactive protein
- Leukocytosis
- ECG showing features of heart block, such as a prolonged PR interval
- First Degree AV-Block
• Previous episode of rheumatic fever or inactive heart disease

OTHER SIGNS AND SYMPTOMS

• Abdominal pain
• Nose bleeds
• Preceding streptococcal infection: recent scarlet fever, raised antistreptolysin or other streptococcal antibody titre, or positive throat culture.

DIAGNOSIS

It’s very important to treat rheumatic fever, because it can cause permanent damage to the heart, especially the valves. Diagnosing the condition usually involves a physical examination signs of tender or swollen joints, the tell-tale rash, and abnormal heart rhythm. Typically, a blood test for strep throat is also done.

TREATMENT

• The first step in treating rheumatic fever is to eradicate the bacteria which initially caused the immunologic response. This is usually accomplished with the use of penicillin. For penicillin-allergic patients, there are other options such as erythromycin (E-Mycin, Eryc, Ery-Tab, PCE, Pediazole, Ilosone) or azithromycin (Zithromax, Zmax). The joint pains are treated with aspirin or aspirin-related medications. It may be necessary to use very high doses to decrease the symptoms.

• Carditis is treated by high-dose steroids but other cardiac medications may be needed to control the inflammation of the heart. This is a serious condition and is most often initially managed in an acute-care setting such as a hospital.

• The most difficult and unpredictable symptom to treat is the chorea (involuntary movements). It often responds to antipsychotic medications such as haloperidol (Haldol) but may continue for a protracted period. For patients who develop Sydenham's chorea, it can be the most difficult of the symptoms, since it involves involuntary movements and can interfere with daily activities. These individuals must remain on chronic long-term antibiotics to prevent recurrence of the strep infection, which has been known to cause recurrence of the chorea.

COMPLICATIONS OF RHEUMATIC FEVER

Most significant of the complications are cardiac in nature. Patients with rheumatic fever who develop carditis may develop long-lasting heart dysfunction. Often the mitral valve or the aortic valve is affected, and if patients are not responsive to medications, surgical valve replacement may become necessary. Atrial fibrillation (irregular fast heart rate) and heart failure can occur. Sydenham’s chorea can be the most difficult complication to treat, and the individuals with this complication may get recurrence of the disease.

PREVENTION

Primary prevention of acute rheumatic fever is accomplished by proper identification and adequate antibiotic treatment of group A β-hemolytic streptococcal (GAS) tonsilopharyngitis. Diagnosis of GAS pharyngitis is best
accomplished by combining clinical judgment with diagnostic test results, the criterion standard of which is the throat culture. Penicillin (either oral penicillin V or injectable benzathine penicillin) is the treatment of choice, because it is cost-effective, has a narrow spectrum of activity, and has long-standing proven efficacy, and GAS resistant to penicillin have not been documented. For penicillin-allergic individuals, acceptable alternatives include a narrow-spectrum oral cephalosporin, oral clindamycin, or various oral macrolides or azalides. The individual who has had an attack of rheumatic fever is at very high risk of developing recurrences after subsequent GAS pharyngitis and needs continuous antimicrobial prophylaxis to prevent such recurrences (secondary prevention). The recommended duration of prophylaxis depends on the number of previous attacks, the time elapsed since the last attack, the risk of exposure to GAS infections, the age of the patient, and the presence or absence of cardiac involvement. Penicillin is again the agent of choice for secondary prophylaxis, but sulfadiazine or a macrolide or azalide are acceptable alternatives in penicillin-allergic individuals.

NURSING IMPLICATION

- Nursing care targeted over the sick child with rheumatic fever mainly on the four following domains
- Encouraging the parents and children to be on effective drug compliance
- Facilitating speedy recovery from illness by prompt administration of medications.
- Providing emotional support to parents and children for effective coping.
- Suggesting visits to child guidance and social support groups available in the community for learning disabilities.
- Preventing the spread of infection by disrupting the mode of transmission of illness primarily by antibiotic Prophylaxis.
- Screening school age children in the corresponding community
- Encouraging home care to provide adequate rest and sleep.
- Educating the mothers about the intake of balanced diet to the children
- Restricting the vigorous activity in terms of School and at home.
- Reinforce about regular follow up to the concerns physicians.

REFERENCES


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