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Spectrum of Clinical Presentation of Rheumatic Fever and Rheumatic Heart Disease Patients.

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ABSTRACT

Background: In developing countries like India, rheumatic fever (RF) is one of the important problems. RF can lead to rheumatic heart disease (RHD), which can be easily prevented by proper care. The present study was done to evaluate risk factors, clinical profile and an Echocardiogram (ECHO) data of RF/RHD patients. **Methods:** Total 70 patients were studied for complete blood count, electrocardiography, erythrocyte sedimentation rate, C- reactive protein, echocardiography, throat culture and anti-streptolysin O (ASLO) titre. **Results:** Mean age of the study population was 10.96±2.39 years. Study of clinical features showed that valvular involvement was present in 50 (71.42%) patients, which was most common, followed by congestive cardiac failure (CCF) [25 (35.7%)]. Raised erythrocyte sedimentation rate (ESR) and C - reactive protein was also recorded in the present study. **Conclusion:** The present study had identified different risk factors like valvular involvement, fever, sore throat infection and CCF as the component needed to be screened in patients with RF for early diagnosis and prompt treatment.

Keywords: rheumatic fever, rheumatic heart disease, electrocardiography.

INTRODUCTION

Rheumatic fever (RF) is a result of an autoimmune reaction occurs due to the infection of group A Streptococcus in upper respiratory tract.[1] Studies have shown that the organism usually attack school going children. The most common clinical damage occurs due to group A Streptococcus is cardiac valvular damage and can result in to RHD. RHD is one of the most common problems which can cause cardiovascular death.[2]

World Health Organization (WHO) has published guidelines for its prevention as it is reported as a preventable disease.[1]

The present study was done to evaluate the risk factors and different clinical and ECHO parameters for the early diagnosis of the disease.

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MATERIALS AND METHODS

The present cross sectional study was done on 70 children aged between 5-15 years fulfilling revised Jones criteria in the Department of Medicine of BRD Medical College and Nehru Chikitsalya Gorakhpur from January 2014 to November 2015.

A written Informed consent from all patients and Institutional Ethics Committee approval was obtained before starting the study.

WHO criterion for the diagnosis of rheumatic fever and rheumatic heart disease (based on the revised Jones criteria) was used in present study, which made two groups, major manifestation (carditis, polyarthritis, erythema marginatum, subcutaneous nodule and chorea) and minor manifestation [clinical (fever, arthralgia), laboratory (elevated ESR, CRP or leukocyte count), ECG (prolonged PR interval)] and supporting evidence of a preceding streptococcal infection within the last 45 days and elevated or rising antistreptolysin-o or other streptococcal antibody A positive throat culture.

Criteria for diagnosis include any one of the following (two major or one major and two minor manifestations plus evidence of a preceding group A streptococcal infection or two minor manifestations plus evidence of a preceding group A streptococcal infection or other major manifestation or evidence group A streptococcal infection or do not require any other criteria for diagnosis of RHD)

Children <5 years, or >15 years of age, children already suffering from acquired heart disease from any cause proven to be other than RHD and children suffering from cardiomyopathies were excluded from the present study.

All the patients were subjected to investigations such as complete blood count, electrocardiography, erythrocyte sedimentation rate, C- reactive protein, echocardiograph, throat culture and ASLO. Rapid streptococcal antigen test and chest X-ray was performed wherever required.

Data was compiled and analysed using IBM SPSS ver. 20.0. Categorical data was compared using percentages and paired T test was used wherever required. P values less than 0.05 was considered significant.

RESULTS

Out of 70 patients, 42 (60%) were boys and 28 (40%) were girls with a mean age of 10.96±2.39 years (11.64±2.17 years of male and 10.09±2.47

years of female). Most of the patients belong to the age group [35 (50%)] of 10-12 years. The mean age of the present study population was 10.96±2.39 years.

Study of clinical features of RF/RHD among cases showed that valvular involvement was present in 50 (71.42%) patients, which was most common, CCF [25 (35.7%)] was the second most common features followed by fever in 18 (25.7%), myocarditis in 13 (18.5%), sore throat in 11 (15.7%), polyarthritis in 7 (10%), history of recurrent fever in 7 (10%) and pericarditis in 3 (4.2%) patients. None of the patients had chorea, subcutaneous nodules and erythema marginatum.

Laboratory findings in the present study found mean haemoglobin, TLC, neutrophils, lymphocytes, monocytes, eosinophils and ESR was 10.85±1.70, 9618±3837, 60.52±11.51, 33.84±11.68, 3.16±2.29, 3.00±3.23 and 39.96±26.49 respectively.

Other parameters like C-reactive proteins (CRP), raised anti-streptolysin O (ASLO), throat swab and ECG (PR prolong) was present in 42 (60%), 30 (42.8%), 20 (28.51%) and 10 (14.2%) respectively.

Chest X-ray findings revealed that the features of cardiomegaly, pericardial effusion, PAH and straightening of the border were seen in 30 (42.8%), 10 (14.2%), 20 (28.5%) and 14 (20%) patients respectively.

Table 1: Comparison between clinical findings and ECHO for the diagnosis of valvular lesion among RF/RHD patients.

Valvular lesion	Clinically	ECG
Pure MR	28(40)	10(14.2)
Pure MS	21(30)	15(21.4)
MR with MS	14(20)	20(28)
Pure AR	1(1.42)	1(1.42)
TS/TR	2(2.8)	6(8.5)
MVI	4(5.5)	18(25)
Total	70	70

Data is expressed as no of patients (%). MVI; multivalvular involvement, ECG; echocardiographically, MR; mitral regurgitation, MS; mitral stenosis, AR; aortic regurgitation, TS; tricuspid stenosis, TR. tricuspid regurgitation

DISCUSSION

RHD is a chronic disease, which can be prevented without much difficulty, this is only possible by understanding the clinical manifestations of RF, which can lead to proper diagnosis and complete treatment-using antibiotics as per regimen.

A study done by Ozer S et al reported a mean age on admission of 11.2 years, which was almost similar to the age reported by the present study.[3] Present observation regarding mean age of study population supports the fact that children are at the highest risk for developing RF. The possible reason for this may be because, group A Streptococcal usually affect younger school going children as school are often overcrowded which may lead to infection of Streptococcal.[4]

The most common clinical features in the present study were of valvular involvement (71.42%) followed by CCF in 35.7% patients, fever was present in 25.7% and it was the third most common cause, sore throat was present in 15.7% cases. Other features like polyarthritis (10%), history of recurrent fever (10%) and pericarditis (4.2%) were least common features in the present study. None of the patients had chorea, subcutaneous nodules and erythema marginatum. It is suggested that children with sore throat at school and at home should be immediately referred to the health care centre for further confirmation. Antibiotics used for the treatment of sore throat may sometimes be resistance.[5] A study done by Arora R et al reported fever as a most common feature in RF followed by polyarthralgia as the which were different from present study findings.[6]

Chorea, subcutaneous nodules and erythema marginatum were reported by Joseph N, et al in 13.7%, 7.8% and 5.9% cases, respectively, but contrary to that none of the patients reported all three features in the present study.[7]

Chockalingam A et al and other studies reported pericarditis in 37.5% and 41.2%, respectively which is very high as reported by the present study. In initial phase carditis is reported to have a mortality of about 70% and condition can progress to chronic RHD.[8,9] Also the condition can recur in many of the patients, use of antibiotics should be continued for longer duration in RF patients.[7]

In the present study, chest X-ray showed features of cardiomegaly, pericardial effusion, PAH and straightening of the border in 42.8%, 4.2%, 28.5% and 20% of patients respectively.

The most common valvular lesion found clinically was pure MR in 40% patients followed by pure MS in 30% patients. MR combined with MS, pure AR, TS/TR and MVI was found in 20%, 1.42%, 2.8% and 5.5% respectively. In the present study valvular lesions were also evaluated using ECHO. The most common valvular lesions using ECHO was MR with MS in 28% patients followed by MVI in 25% patients. Other valvular lesions like pure MR, pure AR, TS/TR and pure MS was reported in 14.2, 1.42, 8.5 and 21.4% respectively. The present study had found a different percentage of valvular lesions investigated clinically and using ECHO.

Joseph N et al also reported MR combined with MS as the most common valvular lesion. Similar findings were reported by present study using ECHO evaluation.[7] The study done by Melka A et al also reported MR combined with MS as most common lesions in 25.4% patients which supports out findings.[10]

But Ravisha MS, et al reported MR to be the most common valvular lesion in RHD patients, which is similar to the findings reported by the present study clinically in 40% patients.[11]

Similar to Thakur JS, et al, in present study, elevated ESR was the most common laboratory findings. [12] In the present study, elevated ESR ((>30 mm at the end of 1st hour) was ranged from 73-100% in many studies, which was similar to the present study.[6]

In the present study, C-reactive protein was found in 60% of the RF patients. ASLO titer was present in 42.8% patients. Similar results were reported by other studies.[12, 13]

The present study had a few limitations like small study group and randomization. A large randomized clinical study is required to establish the conclusion of the present study.

CONCLUSION

The present study had identified different risk factors like valvular involvement, fever, sore throat, infection and CCF as the component need to be screen I a patients with RF for early diagnosis and prompt treatment.

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