ORIGINAL ARTICLE

FREQUENCY OF RHEUMATIC HEART DISEASE IN PATIENTS UNDERGOING ECHOCARDIOGRAPHY IN DISTRICT DERA ISMAIL KHAN

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ABSTRACT

Background: Rheumatic heart disease (RHD) continues to be a major public health problem in developing countries like Pakistan. There is no data regarding the prevalence of RHD in our part of country. So we conducted this study to determine the frequency of RHD in patients undergoing echocardiography in District Dera Ismail Khan.

Material & Methods: This descriptive cross-sectional study was conducted between September 2011 and March 2013. A total of 1215 patients who were sent for echocardiography for evaluation of dyspnea, palpitation, Shortness of breath, murmur on auscultation and arrhythmia on ECG were included in the study. Frequency of RHD in the study population was noted.

Results: A total of 1215 patients between five to 60 years of age were included in the study. All patients underwent echocardiography as per AHA /ACCA Guidelines. There were 753 (62%) males and 462 (38%) females in the study population, with (1.6 to 1) male to female ratio. Mean age of the study population was 38±11yrs. Frequency of RHD was 5.68%. There were 46(66.6%) females and 23(33.3%) males having RHD, mean age of the patients having RHD was 34.33±14 years. Mitral valve was the most common valve involved.

Conclusion: Frequency of rheumatic heart disease was high in our study population. It was more common in young female patients. Mitral was the most common valve involved.

KEY WORDS: Rheumatic Heart disease; Mitral Stenosis; Mitral Regurgitation; Aortic Stenosis; Aortic regurgitation; Echocardiography.

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INTRODUCTION

Rheumatic heart disease (RHD), not a common cause of valvular heart disease in the developed countries, is still a major cause of valvular heart disease in under developed countries.[1] Rheumatic fever is a delayed sequel to throat infection caused by a group A streptococcus. About 30% of affected children develop carditis, which after many years, especially in the patients having recurrent rheumatic fever leads to progressive and permanent valvular damage, called as RHD.[2] RHD is now mostly a disease of developing countries and reason of this high incidence in developing nations can be attributed to poor living conditions resulting in reduction group A streptococci transmission.[3]

In Pakistan RHD is one of the leading causes of premature death and disability.[4] The frequency of RHD in Pakistan was reported to be around 22/1000 in inner Lahore and 5.7/1000 in rural Pakistan in recent studies.[5,6] This is in concordance with the previously available data putting Pakistan among the high risk countries for RHD.[7,8]

Echocardiography, 2D and color Doppler, is the gold standard for accurately diagnosing and quantifying the type and severity of valvular involvement in RHD.[9] Echocardiography is more sensitive than auscultation alone for the identifying pathological valve disease.[10] In a study conducted on school children in Cambodia and Mozambique, they assessed that whether echocardiography can improve RHD case detection as compared to clinical examination only. In it case detection rate by echocardiography was approximately 10 times higher than that achieved by clinical examination only.[11] Early diagnosis, with

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determining the severity of valvular lesion help in timely intervention of the patients.

There is no data regarding the frequency of RHD in this part of the country so we conducted this study to see the frequency of RHD patients so that if frequency came to be high, measures can be taken for its primary and secondary prevention.

MATERIAL AND METHODS

This prospective descriptive study was conducted between September 2011 and March 2013 in District Dera Ismail Khan. A total of 1215 patients who were sent for echocardiography for evaluation of dyspnea, palpitation, shortness of breath (SOB), murmur on auscultation and arrhythmia on ECG were included in the study. Echocardiography was performed in accordance to American College of Cardiology/ American Heart Association guidelines. All included patients underwent 2D, M-mode, color Doppler, continuous wave and pulse wave Doppler echocardiography using standard echocardiographic views. After echocardiography diagnosis of each patient was recorded. In patients who were diagnosed with RHD, the valve involved, whether the lesion was stenotic or regurgitant was recorded. Demographic variables including age, gender, chief complaints were recorded.

Data was analyzed using SPSS 15. Continuous variables like age were expressed as mean ±SD, while categorical variables were expressed as frequency and percentages.

RESULTS

A total of 1215 patients between five to 60 years of age were included in the study. All patients under went echocardiography as per standard protocol.

Demographic variables of the study population are shown in Table 1. Mean age of the study population was 38±11 years. There were 753 (62%) males and 462 (38%) females with a 1.6 to 1 male to female ratio.

Out of 1215 patients, 649 patients had normal echocardiography, 201 patients were diagnosed to be having cardiomyopathy, 60 patients had pericardial effusion, 211 patients were diagnosed with congenital heart disease, 18 patients were diagnosed with mitral valve prolapse, 4 patients had suspected pulmonary embolism while 3 patients had atrial myxoma. (Fig. 1)

There were 69 patients diagnosed with having RHD. Frequency of RHD in the study population was 5.68%. (Fig. 2)

Among the patients having RHD, there were 46 (66.6%) females and 23 (33.3%) males, mean age of the patients having RHD was 34.33±14 years. (Fig. 3)

Table 1: Demographic variables of patients undergoing echocardiography.

Variable	N (%)
Age years± SD	38±11
Male	753 (62%)
Female	462 (38%)
Presenting complaints	
Palpitations	700 (54%)
Dyspnea	623 (63%)
Shortness of breath	589 (45%)
Arrhythmia on ECG	300 (23%)
Murmur on auscultation	417 (32%)

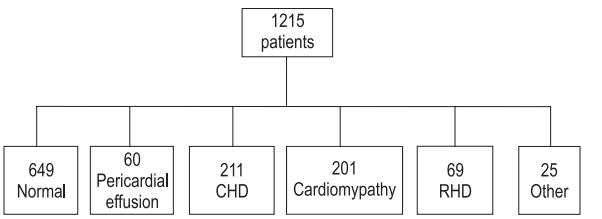

Figure 1: Outcome of patients undergoing echocardiography.

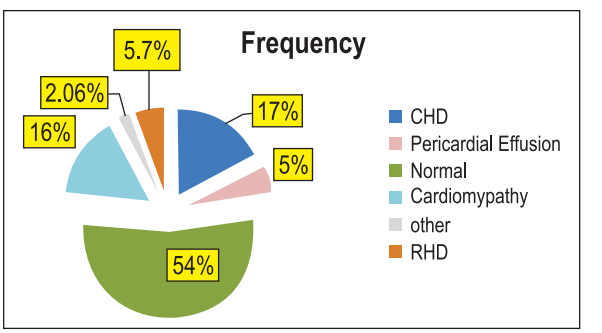

Figure 2: Frequency of RHD in the study population.

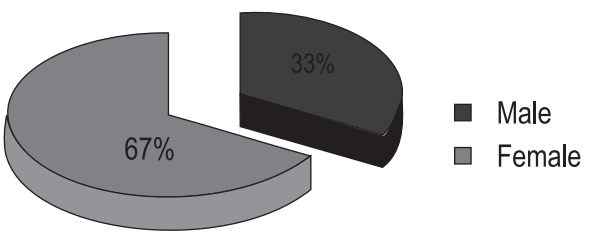

Figure 3: Frequency of males and females in patients having RHD.

3)

Mitral valve was involved in all the 69 patients while aortic valve was involved in 23 (33.3%) patients, out of which 17 (73.9%) were females and 6 (26.1%) were males. Mitral stenosis was present in 62 (89.9%) patients, while mitral regurgitation was present in 39 (56.6%) patients. Mixed mitral valve disease was present in 33 (47.8%) of patients. Aortic stenosis was

present in 11 (15.9%) patients, aortic regurgitation was present in 23 (33.3%) patients, while mixed aortic valve disease was present in 4 (5.8%) patients. Both mitral valve and aortic valve were involved in 27 (39%) patients. Tricuspid stenosis was diagnosed in 8 (11.6%) patients.

DISCUSSION

Rheumatic heart disease is still a major health problem in under developed countries. It is one of the major causes of cardiovascular disease related admissions and is an important indication for cardiac surgery in under developed countries like Pakistan.[9]

The important step in primary prevention of RHD is reducing the exposure to group A streptococci, which can be carried out by improvements in housing, hygiene, sanitation and easy access to the health care facilities to the people of under developed countries. Episodes of acute rheumatic fever can be prevented by prompt treatment of group A streptococcal throat infections with antibiotics, a strategy known as primary prophylaxis.[12]

In our study the mean age of the patients having RHD was 34.33±14 years. Mean age of the study population was 22±6 years in a study conducted by Faheem et al[13] which was younger than population in our study. In a study by Aurakzai et al[9], mean age of the study population was 42±19 years, which is slightly higher than our study population.

Frequency of RHD was 5.7% in our study population. It was on the higher side as compared to other studies. In a study by Marijon et al[11] the frequency was found to be 2.2% which is lower than in our study. While the frequency was 11/1000 in a study by Chen et al[14]. While in a study by Rizvi et al[6] the prevalence of RHD was 7-12/1000. In a review by Seckeler et al[15] the prevalence of RHD in Pakistan was reported to be >10/1000.

The reason for this low prevalence in other studies as compared to ours was that most of these studies were community based screening studies. Most of these studies used clinical examination as the basis of diagnosing RHD, while in our study echocardiography was used to diagnose RHD. Even in study by Seckeler et al, in schools in Cambodia and Mozambique, when echocardiography was used as compared to clinical examination alone, their case detection rate increased from 2.3% to 30% with echocardiography, which was approximately 10-times higher to that achieved by clinical examination only.[11]

There were more females (66.6%) having RHD as compared to males (33.3%). It is in concordance with other studies, where females were in predominance in having RHD. There was female predominance in a study conducted by Faheem et al.[13] However in a study by Aurakzai et al[9], there was male predominance which is in contrary to our study which has female predominance.

Mitral valve was the most common valve involved in our study followed by aortic valve. Mitral Valve was also the predominant valve in a study by Aurakzai et al[9] and Faheem M et al[13]. However in study by Faheem et al there were more mixed valvular lesions as compared to our study.

The high frequency and severity of RHD in our part of the country is a great cause of concern and it calls for prophylactic measures to be taken on urgent basis and in an effective way to prevent the occurrence of disease and improve life of the patients suffering from the disease.

Recurrences of rheumatic fever are higher in patients with RHD and each episode of acute rheumatic fever leads to further damage to the valves. Effective secondary prevention is required to prevent these recurrent attacks, which is dependent on accurate case detection for the appropriate use of prophylactic antibiotics and regular medical follow-up.[16]

There is long chain of causes relating both to patient as well as doctors who contribute to this late diagnosis. Poverty, illiteracy, lack of awareness, and poor health facilities are all hindrance in early diagnosis and treatment.

Echocardiography is a key component in early detection of RHD. Echocardiography should be advised as a routine screening tool for investigating a suspected case of RHD. It is also used for follow up and help in identifying severe valvular lesions for which timely intervention can be carried out.

CONCLUSION

Frequency of rheumatic heart disease was high in our study population. It was more common in young patients especially in females. Mitral was the most common valve involved.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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None declared.