

ORTIC VALVE INVOLVEMENT IN RHEUMATIC HEART DISEASE

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Rheumatic heart disease is a common cause of cardiovascular morbidity and mortality in Pakistan especially in its underdeveloped regions like Bahawalpur and its surrounding areas. Rheumatic heart disease (RHD) involves both the mitral and aortic valves with mitral being the predominant. We in our hospital are receiving many patients of rheumatic heart disease presenting with aortic valve involvement. So this observational study was carried out in Bahawal Victoria Hospital Bahawalpur to see the frequency of aortic valve involvement in patients of rheumatic heart disease, and their modes of presentation. Fifty (50) patients admitted to various units of Bahawal Victoria Hospital, Bahawalpur with RHD were collected. The patients who fulfilled the inclusion criteria were included in the study. We noted the relative age and sex distribution and the frequency of involvement of various valves specially the aortic valve. We also noticed the modes of presentation of these patients. Twelve out of 50 patients had aortic valve involvement out of which only 1 had pure aortic valve and other 11 had also mitral valve involvement. Majority of patients of aortic valve disease presented in NYHA class II & III. Most of the patients with aortic valve disease were 20-40 years of age while the M: F ratio was 1:1. As a conclusion aortic valve is the second most common valve involved in patient with RHD. It is usually involved with the mitral valve and is rarely involved alone. Most of the patients with aortic valve involvement presented with advanced disability as regards the functional status.

Rheumatic heart disease (RHD) is one of the leading causes of cardiovascular morbidity and mortality in Pakistan. Recent data from Pakistan has confirmed no decline in prevalence of RHD over the past three decades. Lack of effective preventive measures at national level is the main underlying factor for rising trends in the incidence of rheumatic fever (RF) / RHD in Pakistan. In the current scenario, there is no structured prophylactic program in the health care system¹.

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MATERIALS AND METHODS

Selection Criteria

Fifty (50) patients admitted to various units of B.V. Hospital, Bahawalpur fulfilling the inclusion criteria and those who were not fulfilling the exclusion criteria i.e. they do not have any of the diseases of the exclusion criteria but are having evidence of valvular heart disease were supposed to have the RHD, were included in the study.

Inclusion Criteria:

- Patients having reliable record providing evidence of RHD.
- Patients presenting with criteria suggestive of Rheumatic Fever. (The criteria include five major criteria i.e. Carditis, Arthritis, Chorea, erythema marginatum and Subcutaneous nodules; and five minor criteria i.e. fever, arthralgia, Raised ESR, prolonged PR interval and raised C - reactive protein. Any patient having two major or one major with three minor criteria plus evidence of streptococcal infection in the form of positive throat culture or positive ASO titer will be diagnosed as having rheumatic fever).

Exclusion Criteria

Patients with following diseases will be excluded from the study.

- Congenital anomalies.
- Ankylosing spondylitis.
- Syphilitic aortitis.
- Connective tissue disorders leading to valvular heart disease.
- Cardiomyopathy.
- Ischemic heart disease.
- Hypertensive heart disease.

Methodology for data collection

Fifty patients regardless of age, sex and race fulfilling the above mentioned selection criteria admitted to various units of B. V. Hospital, Bahawalpur were included in the study after taking their consent. A detailed history was taken and thorough clinical examination and necessary investigations i.e. ECG, Chest X-Ray and Echocardiography with Color Doppler, were carried out in every patient and recorded in specially designed Proforma. The number of patients having involvement of aortic valve among patients of RHD was noticed and it was also further observed that whether these patients were having the aortic valve involvement alone or they had some other valves involved. The patients having proven aortic valve involvement were then further studied for age and sex distribution, various modes of presentation, NYHA class at presentation and findings on investigations.

RESULTS

1. Frequency of aortic valve involvement:

Twelve (24%) of 50 patients of RHD had aortic valve involvement. Out of these only one had alone aortic valve involvement and 11 have mixed aortic and mitral valve disease (table 1).

2. Age & Sex Distribution

Most of the patients were in their third and fourth decades of life. However we encountered patients below 10 and beyond 40 with RHD. However no patient with aortic valve involvement was found in less than 10 years age group. In a total of 12 patients of aortic valve disease 4 were between 20-30 years, 4 between 30-40 years while 3 were over 40 years and 1 between 10-20 years (table 2).

Table 1: Number of patients with aortic valve disease in 50 RHD cases.

Valve affected	No. of cases	%age
Pure aortic involvement	1	2%
• Pure AR	1	
• Pure AS	0	
Aortic with mitral Involvement	11	22%
Total patients with aortic involvement	12	24%

3. Clinical Presentation

Most of the patients with aortic valve involvement presented with the complaints of increasing breathlessness on minimal to moderate exertion. We assessed their overall functional status and

divided them according to the New York Heart Association (NYHA) classes. We observed that most of the patient presented in NYHA class II and III, 4 patients in each class, while 2 patients were in class I and 2 in class IV (table 3).

Table 2: Age wise distribution of patients with aortic valve disease.

Age group (years)	No. of Patients	Valve affected
10 or less	None	
10 - 20	1	Mitral and aortic
20 - 30	4	Mitral and aortic
30 - 40	4	3 Mitral and aortic 1 Pure aortic
Over 40	3	Mitral and aortic

Out of total patients of RHD we observed that females were affected more often than males, but in those with aortic valve involvement no particular predilection for females was found i.e. out of 12 patients of aortic valve disease 6 were males and 6 were females so M:F ration was 1:1.

Table 3: NYHA classes in patients of aortic valve disease.

NYHA Class	No. of Patients	%age
Class I	2	17%
Class II	4	33%
Class III	4	33%
Class IV	2	17%

The other complaints with which the patients of aortic valve disease presented were chest pain in 17% (2 patients), palpitations in 50% (6 patients) and syncopal attacks in 8% (1 patient).

4. Investigational findings

On ECG most of the patients fulfilled the diagnostic criteria of left ventricular hypertrophy (LVH) but some of them also had biventricular hypertrophy owing to concomitant mitral valve disease. Some patients had arrhythmias. To summarize:

- Patients with LVH were 10 (84%).
- Patients with biventricular hypertrophy were 8 (67%).
- Patients with arrhythmias were 4 (33%); all having atrial fibrillation (AF) and all had combined mitral and aortic valve disease.

On chest X-ray 9 patients had increased cardiothoracic ratio i.e. more than 0.5. On echocar-

diography and color doppler all patients had significant changes in the form of thickening of valve leaflets and significant regurgitation across the valves. Most of them also had changes in the mitral valves due to their concomitant involvement. Increased left ventricular size was seen in 10 out of 12 patients. Left ventricular ejection fraction was reduced to <50% in 2 patients of aortic valve disease.

DISCUSSION

We conducted this study in an underdeveloped city of Bahawalpur. Rheumatic fever is quite rampant in this part of country. Our main aim was to find out patients with aortic valve disease due to rheumatic fever and to see their different modes of presentation. Among causes of cardiovascular morbidity and mortality rheumatic fever and RHD can be regarded as a leading cause in Pakistan especially in the countryside. All the factors responsible for the disease are present in Pakistan. These include poverty, lack of good health care provision facilities, lack of compliance with medication, improper follow up, illiteracy etc.

In this study we selected 50 patient of rheumatic heart disease irrespective of their age and sex fulfilling the inclusion as well as exclusion criteria. More than half i.e. 26 (54%) patients had either been diagnosed as rheumatic fever (RF) or give definite history of RF in remote past. Others were attributed to having RF when we could not find another cause attributable to aortic valve disease, as not finding a definite history of RF does not exclude the sub clinical streptococcal pharyngitis² and in according to some studies only 26% of patients give history of RF³.

Another question was the time elapsed between the onset of RF and development of valvular heart disease. It showed great variation in patients presented within a period ranging from just a few years to more than two decades. Almost all of these patients (90%) belonged to low socioeconomic group.

Aortic valve is the second most commonly involved valve in patients of RHD. In our study we found that 12 patients (24%) had aortic valve disease. However only 1 patient (2%) had pure aortic lesion i.e. aortic regurgitation while others had mixed mitral and aortic valve disease. No case of isolated aortic stenosis was seen^{4,5}.

As patients with aortic valve disease can present with palpitations, chest pain, breathlessness, syncopal attacks and even with frank heart failure and infective endocarditis. In our study the most common presentation was breathlessness and according to NYHA classification most of the patients were in class II or III (4 in each class) i.e. 33% in each class while 2 patients (17%) each in class I and IV. So most of the patients presented with moderate to severe heart failure. As regard the palpitations 6 patients (50%) had the complaint at the time of presentation though all of them experienced this symptom before coming to us. Four patients (33%) presented with chest pain and 2 of them showed reversible ischaemic changes.

As regard the investigations almost all the patients had left ventricular hypertrophy with increased cardiac size on ECG and chest X-Ray. While the echocardiography revealed the thickening of aortic valve with significant regurgitation.

It was **concluded** that RHD is common in our country and patients usually present with their valves already affected. Despite modern advancement in diagnosis and effective treatment of RF it continues to affect numerous people in our region. There is urgent need to improve the health provision facilities and create awareness in masses regarding the gravity of the problem. Aortic valve involvement raises even more concern as it is usually affected along with mitral valve and when it presents with complication it is already too late for the poor victims to get the required treatment owing to his / her low socioeconomic status.

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