



## CLINICAL SPECTRUM OF VALVULAR HEART DISEASE AT TERTIARY CARE CENTRE

### General Medicine

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### ABSTRACT

Nowadays valvular heart disease is a major cardiac problem all over the world. Rheumatic heart disease is one of the common cause of cardiac morbidity and mortality in India. We have tried to study incidence, demography, echocardiography and colour doppler findings of patients with valvular heart disease & its complications & long term outcome in multiple valvular lesions. A cross sectional study was conducted in a tertiary health care center. Total 124 patients were included in study. Their clinical history, electrocardiogram, chest x-ray and two dimensional echocardiography parameters were recorded and results were analysed.

### KEYWORDS

Clinical spectrum, Valvular Heart Disease, Cardiac Problems in India, 2D Echocardiography

### INTRODUCTION

Cardiac diseases are of great Socio-Economic importance, because the patients who suffer from the disease became cardiac cripples. It is of medical importance as well since the morbidity and mortality remains very high inspite of various advances in the diagnosis and treatment of the disease. Rheumatic heart disease is one of the common cause of cardiac morbidity and mortality in India. Among the valvular heart disease, rheumatic mitral valvular disease is the most commonly encountered, aortic valvular disease ranks second in the incidence, Tricuspid valve disease occurs occasionally and pulmonary valve disease rarely<sup>1</sup>. Combined mitral valve and aortic valve disease is common in rheumatic heart disease. Hospital based studies from all over the India suggest that cardiac disorders account for 25% to 60% of all the patients hospitalized for heart disease. In Indian council of medical research, national school survey revealed a prevalence, of rheumatic heart disease amongst school children of 1.8/1000 to 11/1000, with a national average of 6/1000, other epidemiological study show a prevalence rate of upto 5.1/1000 in the rural population and 1.6/1000 in urban Population. Lesions of the aortic valve like aortic stenosis and aortic regurgitation are seen in multiple conditions including rheumatic, degenerative, connective tissue diseases and infective endocarditis. Predominant cause of aortic stenosis in western countries is degenerative calcific disease in middle aged and elderly patients, though in tropical countries rheumatic aortic stenosis is still common. Aortic regurgitation also arises frequently from a degenerative process apart from rheumatic and congenital lesions<sup>2</sup>. The echocardiography and color doppler study is the most sensitive, specific and non-invasive tool and is considered to be a gold standard investigation in the evaluation of the valve lesions. The M-mode describes valve morphology, leaflet thickness, mobility and calcification. The doppler echocardiography helps in estimation of pressure gradients, direction and velocities of blood flow across the valve. Thus it gives the visual representation of dynamic flow patterns so as to assess the severity of valve lesion.

### AIMS AND OBJECTIVES

- 1) To study incidence, demography, echocardiography and colour doppler findings of patients with valvular heart disease
- 2) Incidence of complications in patients with valvular heart disease & two years outcome in multiple valvular lesions.

### MATERIALS AND METHODS

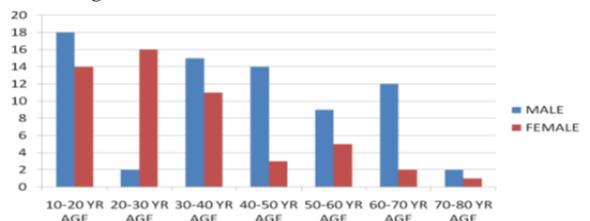
A cross sectional study was conducted in a tertiary health care center. Total 124 patients were included in study. Their clinical history, electrocardiogram, chest x-ray and two dimensional echocardiography parameters were recorded. All patients with organic valvular heart disease were included in study, excluding patients with functional valvular heart disease. Deterioration criteria includes the manifestation of chronic AF, right heart failure, thromboembolic

complications, an increasing heart size or an impairment of functional capacity.

### RESULTS

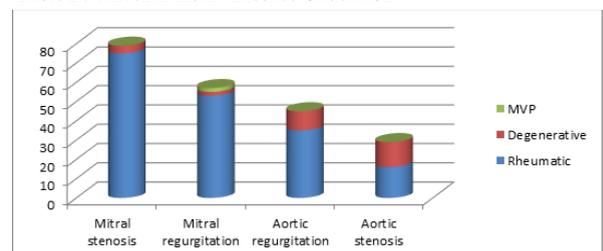
In our study, we studied total 124 patients, out of which 72(58.06%) were males and 52 (41.94%) were females, out of these 124 patients the maximum no of patients were in the age group of 10-20 years 34(25.80%), next in the age group of 30-40 years 26(20.96%) and minimum were in the age group 70 -80 years 5(4.02%). Common etiology was rheumatic origin 100(80.65%) and least common was congenital 4(3.23%). Most common valve involved was mitral valve 105(84.67%) and the least common involved was tricuspid 1(0.81%).

**Table 1 : Age and Sex wise Distribution**



Most common valve involved in rheumatic heart disease was mitral 96(100%), the next most common was aortic 37(38.55%) and least common was tricuspid 1(1.04%). Most common etiology of valvular affection was rheumatic including mitral stenosis 75(94.94%), mitral regurgitation 53(92.98%), aortic stenosis 16(55.17%) & aortic regurgitation 35(77.78%).

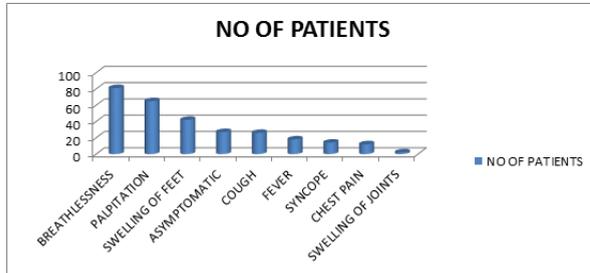
**Table 2 : Valvular Heart Disease Causation**



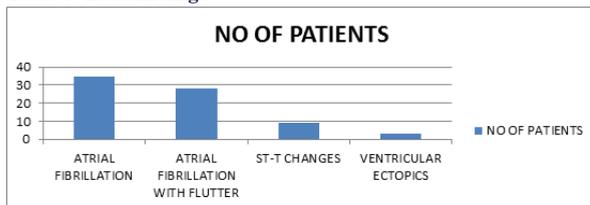
In our study out of 124 patients the most common symptom was breathlessness 81(65.32%). Second most common was palpitation 65(52.41%). The least common symptom was swelling of joints 2(2.77%). Mitral valve was the most common valve involved 67(54.03%), next Mitral and Aortic Valve combined were involved in 36(29.03%) and least involved were Mitral aortic and tricuspid

combined in 1(0.81%). The most common valvular lesion was pure mitral stenosis 29(23.8%), next common was pure mitral regurgitation 23(18.55%) and least common was pure Aortic Regurgitation found in only 1(0.8%). Most common arrhythmia found was atrial fibrillation 35(28.22%), and least common was ventricular ectopics in 3(2.42%). Most common complication was Pulmonary hypertension 69(55.65%), next common was congestive cardiac failure 42(33.87%).

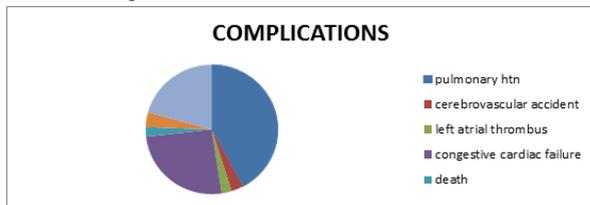
**Table 3 : Symptoms and Signs distribution**



**Table 4 : ECG findings**

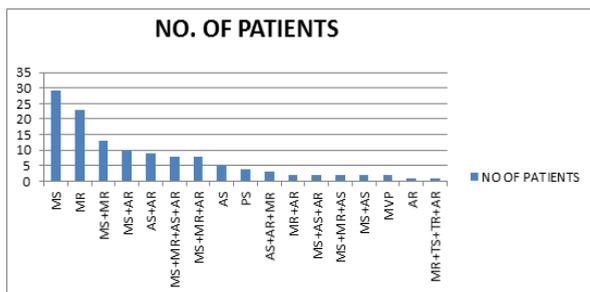


**Table 5 : Complications**



In our study out of the 79 patients with mitral stenosis, 17(21.51%) patients had mild mitral stenosis, 24(30.38%) had moderate mitral stenosis and 38(48.1%) had severe mitral stenosis. Out of 57 patients with mitral regurgitation 20(35.09%) patients had mild mitral regurgitation, 18(31.58%) had moderate mitral regurgitation and 19(33.34%) had severe mitral regurgitation. Out of the 29 patients with aortic stenosis 10(34.48%) had mild aortic stenosis, 9(31.03%) had moderate aortic stenosis and 10(34.48%) had severe aortic stenosis. Out of the total 45 patients with aortic regurgitation 11(24.45%) had mild aortic regurgitation, 22(48.89%) had moderate aortic regurgitation and 12(26.66%) had severe aortic regurgitation.

**Table 6 : Valvular Involvement**



Out of 124 patients, at the end of the study 4 patients died, 120 survived. Out of the 120 survivors, disease of 78 patients (65%of survivors) remained static, while disease of 42 (35%) patients progressed.

**DISCUSSION**

Valvular heart disease is a major cardiac disease all over world. 124 cases of valvular heart disease were studied from from the medical OPDs, medical wards and other section of the hospital whenever referred to medicine department for evaluation.

**Sex:** In our study there were 124 patients, 72 were males and 52 were females, the ratio being 1.38:1. In a study by J.N. Berry (1972) the male female ratio was 0.69:1<sup>3</sup>. In a study by Ramachandra Meenakshisundaram, et al the male: female ratio was 1.13:1<sup>1</sup>. In a study by Hamaza Arslan Aurakzai et al (2009) the male : Female ratio was 1.17:1<sup>5</sup>.

**Age:** In our study out of the 100 patients with rheumatic heart disease 70(70%) were in the age group of 10-40 years. In a study of by J.N. Berry (1972) in Chandigarh, India maximum number of patients ie 81.9% lay in the aegge group of 10-40 years<sup>7</sup>. In a study by Ramakrishna CD et al (2009) in South India 33.50% of patients were younger than 40 years<sup>6</sup>. The mean age of our male patients in the study was 40.7 years & of female patients was 31.03 years. In a study by Ramchandran Meenakshi Sundaram (2009) in Chennai the mean age of males is 23 years and that of Females is 34 years<sup>4</sup>. In our study out of the 18 patients with degenerative valve disease all were more than 50 years of age. In a study by Cabot (1926), Christian (1931), Margolis et al (1931) degenerative valve disease was more common in patients over 40 years of age as compared those less than 40 years of age<sup>5</sup>.

**Etiology:** In our study out of 124 patients the most common etiology was rheumatic origin 100(80.65%) of the patients. Most common etiology of mitral stenosis was rheumatic 75(94.94%), of mitral regurgitation was rheumatic 53(92.98%), of aortic stenosis was rheumatic 16(55.17%) & of aortic regurgitation was rheumatic 35(77.78%). In a study by Bernard Lung et al (2003) in Europe the most common etiology of mitral stenosis was rheumatic ie 85.4%. The most common etiology of mitral regurgitation was degenerative ie 61.3%, aortic stenosis was degenerative 81.9%, aortic regurgitation was degenerative 50.3%<sup>8</sup>. In a study by Oslon, LJ, et al at Mayo Clinic 99% of the time the etiology of mitral stenosis was rheumatic<sup>9</sup>.

**Clinical Features:** In our study the most common symptom was breathlessness 81(65.32%) of patients and next common symptom is palpitation in 52.41% of cases. A study by Rama Shetty<sup>10</sup> et al found breathlessness as the comonest symptom in 76% of cases and palpitation in 68.6% cases.

**Complications:** Complications are as shown in Table 5. In a study by chockalingam A, et al (2003) in Chennai pulmonary hypertension was present in 42.4% in patients aged 18 yrs and 80.8% in patients aged 17 years, 0.9% had left atrial thrombus, 0.4% had embolic cerebrovascular accidents<sup>11</sup>.

**ECG:** In our study out of 124 patients atrial fibrillation was present in 35(28.22%). In a study by Ramakrishna CD et al (2009) in South India 32% of patients had atrial fibrillation<sup>6</sup>.

**Type of valvular lesion:** In a study by Mumtaz Ali shaikh et al (2006). in Pakistan 37% had pure mitral stenosis, 35% had pure mitral regurgitation<sup>12</sup>. In a study by S.F. Rizvietal 24% had mitral stenosis, 21% had mitral regurgitation, 15% had mitral stenosis and mitral regurgitation and 31% had a combination of mitral and aortic valve disease<sup>13</sup>. Our findings were similar to these studies as discussed in results.

**Valvular Involvement:** Shown in Table 6. In a study by Essien IO et al (2008) in Nigeria isolated mitral valve involvement was seen in 65.45% isolated aortic valve involvement in 1.8% and mitral and aortic valve involvement in 33.3% of patients so it matches with our study<sup>16</sup>. In a study by Anil Bharani (2010) in Indore mitral valve was involved in 60.8%, mitral and aortic in (17.1%) aortic (2.1.1) and mitral, aortic and tricuspid in 6.7%<sup>14</sup>.

**Severity of valve lesions:** In a study by hamza Arslan Aurakrai et al (2009)<sup>5</sup> 4.9% of males and 4.9% Female had mild mitral stenosis, 0.1% of male and Females had moderate mitral stenosis and 15.5% of males and 15.1% of Females had severe mitral stenosis. 30.7% of males and 26.5% of females had mild mitral regurgitation, 17.7% of males and 19.1% of Females had moderate mitral regurgitation and 8.2% of males and 9.5% of Females had severe mitral regurgitation. 0.5% of males and 0.9% of females had mild aortic stenosis, 0.1% of males and 3% of Females had moderate aortic stenosis, 1% of males and 3% of Females had severe aortic stenosis. 6.8% of males and 15% of females have mild aortic regurgitation, 18.9% of males and 34.3% of females have moderate aortic regurgitation and 3.6% of males and 6.2% of females have severe aortic regurgitation. As described in

results, our findings are similar to this study.

**Follow up:** Out of the 124 patients 120 survived and 4 died. Out of the 120 survivors, heart disease in 78(65%) patients remained static, disease of 42(35%) patients progressed. The development of one or more of the following features during the period of the observation was taken as evidence of progression (olesen 1961)<sup>15</sup>. By deterioration criteria, 42 patients of the 120 who survived showed signs of deterioration, whereas 78 patients were remained static. Of the 124 patients 4(3.23%) died. 2 died of congestive heart failure or pulmonary edema, 2 from thromboembolic complications. 3 patients had severe mitral stenosis and 1 patient had severe aortic stenosis. Both the patients who died of thromboembolic complications had severe mitral stenosis and chronic atrial fibrillation. In this study the survival of patients was 96.78%, it may be due to 2 years duration of follow up.

## CONCLUSION

As valvular heart diseases are more common in India, it is of utmost importance to have sound knowledge about the disease. Valvular heart diseases are more common in younger age group (10-40 years) & in males compared to females (1.38:1). The most common presentation in valvular heart disease is breathlessness and palpitation. The most common etiology of valvular heart disease is rheumatic in origin. The mitral valve is the most commonly affected & pure mitral stenosis is the most common valvular lesion in rheumatic heart disease. In mitral valve lesion severe mitral stenosis is the commonest finding. In degenerative valve disease the most common valve affected is aortic. In aortic valve lesion aortic regurgitation is most common. Unless intervened at earlier stage, it may complicate most commonly to pulmonary hypertension, atrial fibrillation and congestive cardiac failure. Early recognition and medical management are of utmost importance to prevent complications and improve the heart related quality of life.

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