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General Medicine

A STUDY OF PREVALENCE AND CLINICAL PROFILE OF VALVULAR HEART DISEASES IN TERTIARY CARE CENTER

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KEYWORDS :

INTRODUCTION:

Diseases of the heart valves constitute a significant cause of cardiovascular morbidity and mortality worldwide with rheumatic heart disease being the dominant form of valvular heart disease in developing nations.[1]Rheumatic heart disease accounts for 12-65% of hospital admissions related to cardiovascular disease and 2-10% of hospital discharges in some developing countries. In economically deprived areas[2], tropical and subtropical climates (particularly on the Indian subcontinent), Central America and the Middle East, the rheumatic valvular disease progresses more rapidly than in more-developed nations and frequently causes severe symptoms in patients below 20 years of age. The speeded natural history may be due to repeated infections with more virulent strains of rheumatogenic streptococci.[3]

Approximately 15 million to 20 million people live with rheumatic heart disease worldwide, an estimated prevalence characterized by 300,000 new cases and 233,000 case fatalities per year, with the highest mortality rates reported from Southeast Asia (7.6 per 100,000).[4][5] The prevalence of valvular heart disease increases with age for both men and women.[3] Bicuspid aortic valve disease affects as many as 0.5—1.4% of the general population.

Valvular heart disease is a source of significant morbidity and mortality rates, and the global burden of valvular heart disease expected to progress, hence this research study has been taken up to get insights about prevalence patterns and clinical profile of the disease, which influence the management plan. In this study, we studied the etiological risk factors and echocardiographic diagnosis of valvular heart diseases.

AIMS AND OBJECTIVES: 1.

To study the prevalence and clinical profile of valvular heart disease in patients attending a Government General Hospital, Kurnool, a tertiary care center. 2. To study the etiological risk factors in patients with valvular heart disease. 3. To diagnose and assess the valvular heart disease by two-dimensional echocardiography.

METHODOLOGY:

A hospital-based cross-sectional descriptive study at the medicine department of Kurnool Medical College, Kurnool, a tertiary care health center located in Andhra Pradesh, South India. The study was carried out from 2017 to 2019, for two years. One hundred (100) patients attending OPD participated in the study. Approved from the institutional ethics committee. All patients with organic valvular heart disease who were above 13 years of age were included in the study. All patients with functional valvular heart disease and trivial or insignificant regurgitation were also excluded to avoid erroneous estimates that can be produced by these large numbers of insignificant lesions.

Data collection and procedure

A structured self-administrative questionnaire was developed with the aid of available evidence by the researchers for data collection to meet the demands of this research fully. The purpose of the study was explained to the participants and written, and verbal consent was obtained. This questionnaire includes the following components - age of patients, sex, valve involved, cause, type of valve lesions, clinical features, complications, clinical history, chest x-ray, ECG findings, 2D echocardiography. After taking consents both oral and written, Patients were examined carefully for cardiac valvular lesions and signs. Patients underwent different investigations such as blood complete picture, ESR, ASO titer and other important routine counts. M mode and 2D echocardiography and Doppler techniques were used. Views taken were parasternal long axis and short axis, apical four-chamber view and sub coastal four-chamber views.

Statistical analysis

Each completed questionnaire was coded on pre-arranged coding by the principal investigator to minimize errors. Data were checked for completeness and correctness. Data were analyzed using excel, windows 2007 and using SPSS V22. Descriptive statistics were applied.

OBSERVATIONS AND RESULTS

Table 1: Age Incidence Of Acquired Valvular Heart Diseases (n=100)

Sl. No	AGE	No. of cases
1	Nov-20	4
2	21-30	26
3	31-40	32
4	41-50	14
5	51-60	14
6	Above 60	10

Table 2: Sex Incidence Of Acquired Valvular Heart Disease

Sl. No	SEX	No of cases/percentage
1	Male	58
2	Female	42

Table 3: Etiology Of Acquired Valvular Heart Diseases (n=100)

S .NO	Etiology	No. of cases/ %
1	Rheumatic	65
2	Ischemic	15
3	Atherosclerotic	11
4	Mitral valve prolapse	4
5	Hypertensive	4
6	Connective tissue disorder	1

Table 4: Incidence Of Different Valvular Lesions In Acquired Valvular Heart Disease (n=100)

Sl .No	Type of valvular lesion	No. Of Cases/ Percentage
1	Mitral regurgitation	27
2	Mitral Stenosis	17
3	MS+MR	12
4	Aortic Stenosis	4
5	Aortic Regurgitation	8
6	AS+AR	14
7	Multi valvular lesion	18

Table 5: Symptomatology Of Acquired Valvular Heart Disease (n=100)

SL .NO	Symptoms	No of cases/percentage
1	Dyspnea	82
2	Palpitations	64
3	Chest Pain	50
4	Bilateral Pedal Edema	26
5	Cough	24
6	fatigability	13
7	Fever	11
8	Syncope	6
9	hemoptysis	2

Table 6: Chest X-ray Findings In Valvular Heart Diseases

Sl. No	Chest X-ray finding	No. of cases
1	Cardiomegaly	52
2	Pulmonary congestion	40
3	Left atrial enlargement	28
4	Pleural effusion	4
5	Aortic calcification	2

Table 7: Ecg Findings In Various Valvular Heart Diseases

Sl. No	ECG findings	No. of Cases
1	Atrial Fibrillations	22
2	Left atrial enlargement	38
3	Left ventricular hypertrophy	36
4	Right ventricular hypertrophy	44
5	ST depression – T wave inversion	48

Table 8: Percentage Of Incidence Of Complications In Acquired Valvular Heart Diseases

Sl .No	Complications	No. of Cases/ Percentage
1	Congestive heart failure	40
2	Atrial fibrillation	22
3	Respiratory tract infection	9
4	Infective endocarditis	5
5	Hemiplegia	4
6	Hemoptysis	2
7	Ortner's syndrome	1

DISCUSSION

Etiology**:** In our study, about 65 cases were observed to be rheumatic in origin and 15 cases were ischemic in origin and 11 were of atherosclerotic in origin, indicating the rheumatic heart disease to be the most prevalent cause for acquired valvular heart disease. The result was comparable to the study conducted by Periwal K L et al.

Out of 100 cases studied, mitral valve involvement was noted in 56 cases (56%) indicating that the most common valve to be involved is the mitral valve. Out of this, 17% of cases had mitral stenosis, 27% of cases had mitral regurgitation, and 12% of cases are with MS+MR. Multi valvular lesions constituted 18% of cases and aortic valve involvement occurred in 26% cases. This result was comparable to the study done by Vaishali Bhalavi B. S. Yadav et al., Manjunath C.N. et al. and Ramchandra Kafle, Vijay Madhab Alurkar et al., which showed mitral valve as most common valve involved.

Among acquired valvular heart diseases, isolated mitral regurgitation (27%) is most common. Among rheumatic valvular heart disease, isolated Mitral Stenosis (26.1%) is most common. Our results are coinciding with the study done by Abhishek Rastogi, Yatendra Singh et al., which showed Mitral Stenosis as the most common valvular lesion among rheumatic valvular heart disease.

Shu C, Chen S, Qin T, Fu Z, et al., in their study the most commonly involved valvular heart disease was Aortic Regurgitation, followed by Tricuspid Regurgitation, Mitral Regurgitation and Multiple Valve diseases, whereas in our study the most common valvular heart disease is Mitral Regurgitation. Because in the above study the study group was older than 60yrs of the age group who likely to have a higher rate of CAD

Age: In our study, the peak age incidence of acquired valvular heart disease was in the age group of 31-40 years which includes rheumatic, ischemic, atherosclerotic and others.

Sex: In our study, the male to female ratio is 1.38: 1, indicating higher incidence among the males (58%) than females (42%) due to additional ischemic heart disease cases that occurred among males in acquired valvular heart disease. This observation was comparable to the study done by Joseph et al., which also showed high male preponderance.

The lower coverage of female patients may be because, in most socio-economically backward regions of the country, hospitals or health care facilities are less frequently availed by females, principally due to comparative ignorance in their part, reluctance among their family members to make any expenditure on their health.

Clinical features: In our study, breathlessness is the most common complaint among patients with acquired valvular heart disease seen in 82% of cases. The next most common complaint was palpitations present in 64% of cases. The other frequent complaints were chest pain (50%), bilateral pedal edema (26%), cough with expectoration (24%). Easy fatigability was in 13 patients; most of them have mitral regurgitation. 11% of the patients had a fever. Syncopal attacks present in 6% of patients, all of them had aortic valve involvement. Two patients have hemoptysis and both of them have underlying mitral stenosis.

Our study coincides with the study done by Abhishek Rastogi et al., which showed breathlessness in 72% cases, palpitations in 63% cases, fatigue in 48% cases, chest pain in 30% cases and edema in 18% cases. In the study done by Siddharth Vinod Lakhani et al., the frequency of symptoms is breathlessness in 88%, palpitations in 79.2%, chest pain in 56%, syncope attacks in 35.7%.

Chest X-ray: On chest, X-ray cardiomegaly was in 52 patients, pulmonary congestion in 40 patients, straightening of left heart border in 28 cases, pleural effusion in 4 cases and two patients had aortic calcification.

ECG: In our study, 22% of patients had AF. Mitral valve was involved in all cases of rheumatic heart disease with AF left atrial enlargement was in 38 patients. Left ventricular hypertrophy was more in patients with AR. Right ventricular hypertrophy was more common in patients with isolated MS. ST depressions and T wave inversions were seen in valvular diseases associated with coronary heart disease and aortic valvular disease. Our study coincides with the study done by Siddharth et al.

Echocardiogram: On Echocardiography out of 17 cases of isolated MS, five were of severe degree, 7 cases were of moderate degree and 5 cases were mild MS cases. Cases with MR were 27. Cases with MS and MR were 12, cases with Aortic stenosis were 4, cases with AR were 8, cases with AS and AR were 14. Multivalvular heart disease was of 18 cases. Dilated left atrium and left ventricle are in patients with MR. Concentric hypertrophy of left ventricle was in patients with AS. LV size is increased in patients with chronic AR. Our results were comparable to the study done by Siddharth Vinod Lakhani et al.

In the study done by Ramchandra Kafle, Vijay Madhab Alurkar et al. cases were analysed on echocardiography 26.21% cases show isolated MR, 6.82% of cases show isolated MS.

Complications: Congestive heart failure is the most common complication noted in our study in 40 patients. Siddharth Vinod Lakhani et al. observed 28% of cases with Congestive Heart Failure (CHF), AF in 26.8% of cases, infective endocarditis in 6.8% of cases and stroke in 2% of cases. Abhishek Rostagi, Yatendra Singh et al. observed 38% of cases with congestive heart failure (CHF), atrial fibrillation in 12% of cases, infective endocarditis in 2% of cases and cardio-embolic stroke in 1% cases.

The higher occurrence of complications in our study may be because this study included only those patients who were above 13 years of age and not the younger patients, and overall complications were expected to be high in this particular age group due to temporal delay in the development of complication in RHD patients.

LIMITATIONS

1. Our study was confined to a single tertiary care center; therefore, results may differ if some more centers were included within the same district.
2. In our study, etiology of lesions is strictly based on morphological and clinical criteria. Surgical and pathological based studies can detect even early morphological features as the lesions take time to develop to be seen by echocardiography.

CONCLUSIONS AND SUMMARY

- The most common cause of acquired valvular heart disease is rheumatic heart disease.
- The most common age of presentation of acquired valvular heart disease was 31-40 years.
- Acquired valvular heart disease is more common in males. Females were more affected with rheumatic valvular heart disease than males.
- Mitral valve involvement is the most common valve involvement in patients with acquired valvular heart disease.
- Mitral regurgitation is the most common valvular lesion in acquired valvular heart disease.
- Breathlessness is the most common complaint.
- Congestive heart failure is the most common complication.
- The analysis of our present study gives us an insight into the various types of presentation of acquired valvular heart disease and to increase awareness besides early detection of valvular heart diseases clinically. It also helps in the planning of early treatment of valvular heart diseases.

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