THE STUDY OF PREVALENCE AND CLINICAL PROFILE OF VALVULAR HEART DISEASES IN GOVERNMENT GENERAL HOSPITAL, KAKINADA

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ABSTRACT

BACKGROUND

Among the cardiovascular diseases acquired, valvular heart disease is one of the common causes of mortality and morbidity in India. An average of 40% of causes is rheumatic valvular heart diseases of all patients admitted with heart diseases. Male preponderance has been noted by most of the physicians in rheumatic heart disease in India. Acquired valvular heart diseases are mitral valve prolapse syndrome, papillary muscle dysfunction, the rupture of chordae tendineae, calcified mitral annulus, calcified aortic stenosis, aortic regurgitation due to syphilis, connective tissue disorders (Marfan's syndrome, osteogenesis imperfect and systemic lupus erythematosus), atherosclerosis, hypertension and infective endocarditis. Other less common causes are recurrent pulmonary embolism, tuberculosis, cardiac tumours, carcinoid tumours, cardiac surgery for congenital cardiac anomalies and trauma.

MATERIALS AND METHODS

It is a prospective study on adult patients with valvular abnormalities attending to the Medicine and Cardiology Units of Government General Hospital, Kakinada, between November 2014-May 2017. Total 100 in-patients were included in this study as per inclusion and exclusion criteria. Inclusion Criteria- All patients aged 13 years and above are considered 'adult' and are managed by adult medicine. There is no upper age limit. Exclusion Criteria- Patients with congenital valvular heart diseases and cor pulmonale are excluded in the study.

RESULTS

The incidence of acquired valvular heart disease is higher in the age group of 31-40 years (32%) followed by 21-30 years age group (28%). Our study also revealed relatively higher incidence of acquired valvular heart disease among the age groups of 51-60 years and above 60 years, which is due to a relatively higher incidence of mitral regurgitation due to ischaemic heart disease in this same age group.

CONCLUSION

Out of 100 cases studied mitral valve involvement was noted in 56 cases indicating the most common valve to be involved is mitral valve. Out of this, 19% cases had mitral stenosis, 25% cases had mitral regurgitation and 12% cases are with MS + MR. Multivalvular lesion constituted 18% of cases and aortic valve involvement occurred in 26% cases. We observed 10% cases of mitral stenosis and 27.2% of aortic valve involved cases.

KEYWORDS

Clinical Profile, Valvular Heart Disease.

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BACKGROUND

Among the cardiovascular diseases acquired, valvular heart disease is one of the common causes of mortality and morbidity in India. An average of 40% of causes is rheumatic valvular heart diseases of all patients admitted with heart diseases. Male preponderance has been noted by most of the physicians in rheumatic heart disease in India. Acquired valvular heart diseases are mitral valve prolapse syndrome, papillary muscle dysfunction, the rupture of chordae tendineae, calcified mitral annulus, calcified aortic stenosis, aortic regurgitation due to syphilis, connective tissue disorders (Marfan's Syndrome, osteogenesis imperfect and systemic lupus erythematosus), atherosclerosis, hypertension and infective endocarditis. Other less common causes are recurrent pulmonary embolism, tuberculosis, cardiac tumours, carcinoid tumours, cardiac surgery for congenital cardiac anomalies and trauma. The common symptoms are dyspnoea, orthopnoea, palpitations, chest pain, syncopal attacks, easy fatigability and symptoms of cardiac failure, infective endocarditis and thromboembolism.

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The percentage of patients with rheumatic fever and rheumatic heart disease accounts for one-third of the total cardiac admissions in most teaching hospitals.

An ICMR national school survey revealed a prevalence of rheumatic heart disease among school children (2/1000 to 11/1000) with national average of 6/1000.[1]

Recently, a study conducted by Jacob Jose in 2002 has shown the prevalence to be 0.68/1000 children.[2] The adult average ranges between 123 and 200/1,00,000 population.[3]

The average age of patients with rheumatic heart disease is 15 years as compared to 37 years in U.K.

	MVOA ($CM.^2$)	Mean Gradient (mmHg)	PASP (mmHg)
Mild MS	>1.5 to 2.0	<5	<30
Moderate MS	1.0 to 1.5	5 to 10	30 to 50
Sever MS	<1.0 to 20	10 to 20	>50
Critical MS	>20	>20	
MVOA- mitral valve orifice area; PASP=pulmonary artery systolic pressure			

Table 1. Assessment of Severity of Mitral Stenosis

Laboratory Examination

Electrocardiogram- ECG shows right ventricular diastolic overload - an rsr' or rsR' configuration in right precordial leads.

Radiological Findings- Both the pulmonary artery and the right ventricle are usually enlarged.

Echocardiogram- This shows right ventricular dilatation and in patients with pulmonary hypertension, right ventricular hypertrophy as well. Diastolic fluttering of tricuspid leaflets is noted.

MATERIALS AND METHODS

Type of Study- Prospective study

Source of Data- Adult patients with valvular abnormalities attending to the Medicine and Cardiology Units of Government General Hospital, Kakinada.

Study Period- November 2011-May 2013.

Sample Size- 100 in patients.

Inclusion Criteria

All patients aged 13 years and above are considered 'adult' and are managed by the adult medicine. There is no upper age limit.

Exclusion Criteria

Patients with congenital valvular heart diseases and cor pulmonale are excluded in the study.

OBSERVATION AND RESULTS

Sl. No.	Age	Number of Cases
1.	11-20	10
2.	21-30	28
3.	31-40	32
4.	41-50	12
5.	51-60	14
6.	Above 60	4

Table 2. Age Incidence of Acquired Valvular Heart Diseases

From the above table, it is observed that the incidence of acquired valvular heart disease is higher in the age group of 31-40 years (32%) followed by 21-30 years age group (28%). Our study also revealed relatively higher incidence of acquired valvular heart disease among the age groups of 51-60 years and above 60 years, which is due to a relatively higher incidence of mitral regurgitation due to ischaemic heart disease in this same age group.

Sl. No.	Age (Years)	Number of Cases	Percentage of Cases
1.	11-20	10	14.7%
2.	21-30	26	38.23%
3.	31-40	23	33.82%
4.	41-50	6	8.82%
5.	51-60	2	2.94%
6.	Above 60	1	1.47%

Table 3. Age Incidence of Rheumatic Valvular Heart Disease (N=68)

Age incidence of rheumatic valvular heart disease as observed from our study indicates a high incidence among the group of 21-30 years (38.23%) and 31.40 years (33.82%). A relatively higher incidence in the age group of 11-20 years, i.e. 15% is probably due to the less number of cases studied.

Sl. No.	Sex	Number of Cases
1.	Male	56
2.	Female	44

Table 4. Sex Incidence of Acquired Valvular Heart Disease (n=100)

Above table reveals sex incidence of acquired valvular heart diseases. From our study, it is observed that acquired valvular heat diseases. From our study, it is observed that acquired valvular heart disease is most common in male patients (56%).

Sl. No.	Sex	Number of Cases	Percentage
1.	Male	33	47.05%
2.	Female	35	51.47%

Table 5. Sex Incidence of Rheumatic Valvular Heart Disease (n=68)

The sex incidence of rheumatic valvular heart disease observed in the above table shows that rheumatic valvular heart disease is most common in females (51.47%) than males (47.05%).

Sl. No.	Status	Number of Cases/ Percentage of Cases
1.	High	9
2.	Middle	21
3.	Low	70

Table 6. Relationship of Socioeconomic Status to Acquired Valvular Heart Disease (N=100)

In our study, it is observed that acquired valvular heart disease is more common in low socioeconomic patients.

Sl. No.	Socioeconomic Status	Aetiology				
		Ischaemic	Atherosclerotic	Hypertension	Rheumatic	Other
1.	Higher	5	4	-	-	-
2.	Middle	5	6	1	8	1
3.	Lower	2	2	3	60	3
	Total	**12**	**12**	**4**	**68**	**4**

Table 7. Aetiological Relationship to the Socioeconomic Status (N=100)

Above table explains the relationship of socioeconomic status to acquired valvular heart disease. From our study, it is observed that the disease is commonest among low socioeconomic group. Previous studies showed that rheumatic heart disease is more prevalent in underdeveloped and developing countries than in developed countries and among the population with multiple social issues such as poverty. Low Socioeconomic Status (SES), overcrowded dwellings, undernutrition, poor sanitation, cultural constraints and suboptimal medical care. The study conducted by Johnston revealed that there is direct relationship between low socioeconomic status and rheumatic heart disease. As the rheumatic heart disease is the commonest among acquired valvular heart disease, our study of acquired valvular heart disease also confirmed the fact that the acquired valvular heart disease is common in low socioeconomic group.

Sl. No.	Aetiology	Number of Cases Percentage
1.	Rheumatic	68
2.	Ischaemic	12
3.	Atherosclerotic	12
4.	Mitral valve prolapse	2
5.	Hypertensive	4
6.	Connective tissue disorder	2

Table 8. Aetiology of Acquired Valvular Heart Diseases (N=100)

It is observed from this table that there are 68 cases of rheumatic valvular heart disease. This is followed by ischaemic heart disease and atherosclerotic disease. We have also noted 4 cases of hypertensive heart disease and 2 cases of MVP and connective diseases.

Sl. No.	Type of Valvular Lesion	Number of Cases/Percentage
1.	Mitral regurgitation	25
2.	Mitral stenosis	19
3.	MS + MR	12
4.	Aortic stenosis	4
5.	Aortic regurgitation	8
6.	AS + AR	14
7.	Multivalvular	18

Table 9. Incidence of Different Valvular Lesions In Acquired Valvular Heart Disease (N=100)

From this table, it is evident that out of 100 cases of acquired valvular heart disease, the maximum brunt is borne by mitral valve. This valve is involved in 56%.

Aortic valve is involved in 26% of cases and both aortic and mitral valves are involved in 18% of cases. The commonest type of acquired valvular heart disease is isolated mitral valve regurgitation in 25% followed by isolated mitral stenosis (19%).

Sl. No.	Type of Valvular Lesion	Number of Cases	Percentage
1.	Mitral stenosis	19	27%
2.	Mitral regurgitation	10	14%
3.	Mitral stenosis + regurgitation	12	17%
4.	Aortic stenosis	-	-
5.	Aortic regurgitation	-	-
6.	Aortic stenosis + aortic regurgitation	9	13%
7.	Multivalvular disease	18	26%

Table 10. Incidence of Different Valvular Lesions in Rheumatic Heart Disease

From this table, it is observed that in rheumatic heart disease, mitral valve is most commonly involved. Out of 68 cases, 19 (27%) are with isolated MS, 10 (14%) cases with isolated MR, 12 (17%) cases with MS, 9 (13%) cases are AS with AR and 18 cases (26%) with multivalvular disease. Total number of cases studied 68.

Patients with History of Rheumatic Fever	Percentage
41	60.29%

Table 11. Positive History of Rheumatic Fever in Patients With Rheumatic Valvular Heart Disease

From our study of 68 cases of rheumatic valvular heart disease, it is observed that there is a positive history of rheumatic fever in 60.29% of cases, this is consistence with figures of western authors, i.e. 60-70%.

Sl. No.	Chest X-Ray Findings	Number of Cases
1.	Cardiomegaly	52
2.	Pulmonary congestion	40
3.	Left atrial enlargement	28
4.	Pleural effusion	4
5.	Aortic calcification	2

Table 12. Chest X-Ray Findings in Valvular Heart Diseases

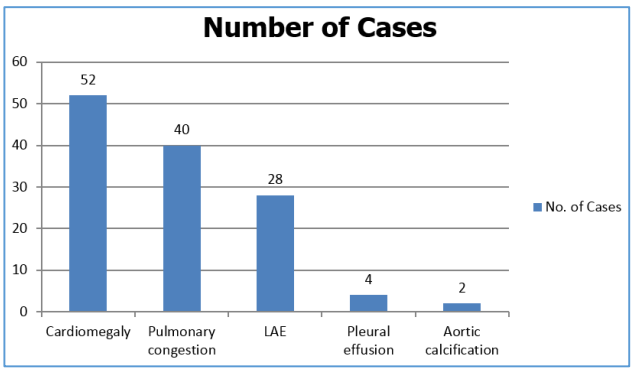

Figure 1. Chest X-Ray Findings in Valvular Heart Diseases

In our study, it is observed that most common chest x-ray finding is cardiomegaly. Left heart border straightening is seen in 28 cases. Aortic calcification is seen in 2 cases with aortic valve calcification.

Sl. No.	ECG Findings	Number of Cases
1.	Fibrillary waves	22
2.	Left atrial enlargement	38
3.	Left ventricular hypertrophy	36
4.	Right ventricular hypertrophy	44
5.	ST depression, T-wave inversion	48

Table 13. ECG Findings in Various Valvular Heart Diseases

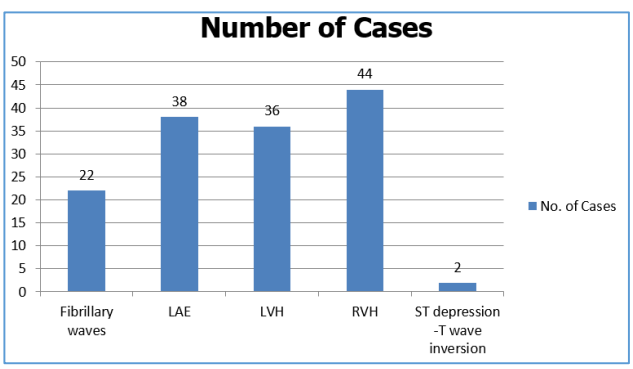

Figure 2. ECG Findings in Various Valvular Heart Diseases

From our study, AF, LAE and RVH are more commonly seen in isolated MS cases. LVH is most commonly seen in patients with aortic stenosis.

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

Table 14. Percentage of Incidence of Complications in Acquired Valvular Heart Diseases

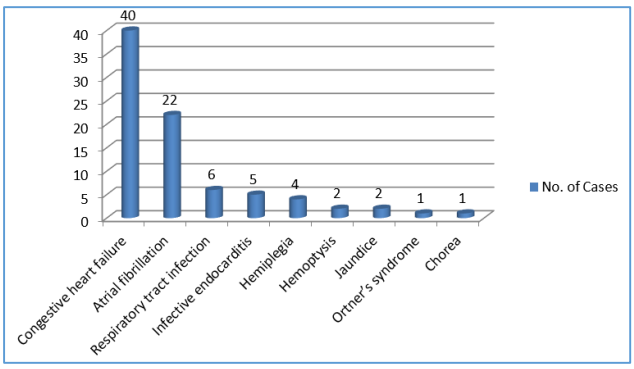

Figure 3. Percentage of Incidence of Complications in Acquired Valvular Heart Diseases

From the above table, 40% developed congestive heart failure being the most common complication noted in our study. Patients with AF 22%, infective endocarditis was noted in 5% cases, hemiplegia in 4% cases, chorea in 1 case and Ortner's syndrome in 1 case. Pleural effusion is noted in 4 cases as part of CHF, which was resolved after treatment.

Sl. No.	Type of Valvular Lesion	Number of Cases	Percentage of Cases
1.	Mitral stenosis	8	20%
2.	Mitral regurgitation	12	30%
3.	MS + MR	4	10%
4.	Aortic stenosis	-	-
5.	Aortic regurgitation	-	-
6.	Multivalvular lesion	16	40%

Table 15. Incidence of Different Valvular Lesions in Patients with Congestive Heart Failure (N=40)

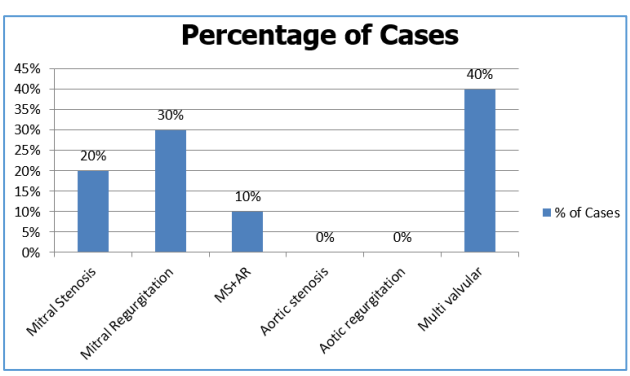

Figure 4. Incidence of Different Valvular Lesions in Patients with Congestive Heart Failure (N=40)

In patients with CHF, the most common underlying valvular heart disease is multivalvular lesion followed by mitral regurgitation. Eight of the patients have mitral stenosis and 4 patients have mitral stenosis with mitral regurgitation. None of the patients have isolated aortic valve involvement.

Sl. No.	Type of Valvular Lesion	Number of Cases	Percentage of Cases
1.	Mitral stenosis	1	20%
2.	Mitral regurgitation	-	-
3.	MS + MR	1	20%
4.	Aortic stenosis	-	-

5.	Aortic regurgitation	-	-
6.	AS + AR	-	-
7.	Multivalvular lesion	3	60%

Table 16. Incidence of Different Valvular Lesions in Patients with Infective Endocarditis (N=5)

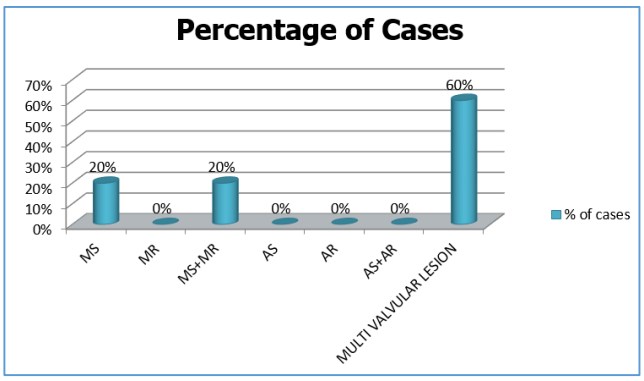

Figure 5. Incidence of Different Valvular Lesions in Patients with Infective Endocarditis (N=5)

In our study, out of 5 cases of infective endocarditis, 3 patients have multivalvular lesions, 1 patient with mitral stenosis and 1 with MS with MR.

DISCUSSION

100 cases of acquired valvular heart diseases admitted in Government General Hospital, Kakinada, were analysed.

About 68 cases, we observed to be rheumatic in origin and 12 cases were ischaemic in origin and 12 were of atherosclerotic in origin indicating the rheumatic heart disease to be the most prevalent cause for acquired valvular heart disease. In our study, most of the patients with acquired valvular heart disease are of low socioeconomic status. Our study coincides with Periwal KL et al.

Rheumatic fever is a social disease linked to poverty overcrowding and poor housing.[4,5,6]

Out of 100 cases studied, mitral valve involvement was noted in 56 cases indicating the most common valve to be involved is mitral valve, which is similar to the study of Kutumbaih et al.[6] Out of this, 19% cases had mitral stenosis, 25% cases had mitral regurgitation and 12% cases are with MS + MR. Multivalvular lesion constituted 18% of cases and aortic valve involvement occurred in 26% cases, which is as per the study of Hodge et al.[7,8] Siddharth Vinod Lakhani et al[9] observed 10% cases of mitral stenosis, 27.2% of aortic valve involved cases. Our study nearly correlates to the above study.

Among acquired valvular heart disease, isolated mitral regurgitation is most common. Among rheumatic valvular heart disease, isolated MS (27%) is most which is found by Banrjea et al.[10]

SUMMARY AND CONCLUSION

- The most common cause of acquired valvular heart disease is rheumatic heart disease.
- The acquired valvular heart disease is more common in patients with low socioeconomic status.
- Acquired valvular heart disease is more common in males. Females are more affected in rheumatic valvular heart disease.
- 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.
- Mitral stenosis is the most common valvular lesion among rheumatic valvular heart disease.
- Breathlessness is the most common complaint.
- Congestive heart failure is the most common complication.
- Multivalvular lesion is the most common valve involvement in patients presenting with congestive heart failure and infective endocarditis.
- Patients having atrial fibrillation are noted to have mitral stenosis more commonly.
- Mitral stenosis is the valve abnormality commonly noted in patients presenting with haemoptysis, respiratory tract infection and chorea.
- Left-sided hemiplegia is common in patients with acquired valvular heart disease.
- The analysis of the present study gives us insight into the various types of presentation of acquired valvular heart disease and to increase awareness besides early detection of valvular diseases clinically. It also helps in planning of early treatment of valvular heart diseases. This study also helps in proper plan of treatment, thus decreasing mortality and morbidity of acquired valvular disease.

REFERENCES

[1] Padmavathy S. Rheumatic fever and rheumatic heart disease in developing countries. Bull WHO 1978;56(4):543-550.
[2] Jose JV, Gomathi M. Declining prevalence of rheumatic heart disease in rural school children in India: 2001-2002. Indian Heart J 2003;55(2):158-160.
[3] Mathur KS, Wahal PK. Epidemiology of rheumatic heart disease--a study of 29,922 school children. Indian Heart Journal 1982;34(6):367-371.
[4] Aggrwal OP, Bashin SK, Sharma AK, et al. A new instrument (scale) for measuring socioeconomic status of a family: preminary study. Indian J Com Medicine 2005;30(4):111-114.
[5] Bonow RO, Carabello BA, Chatterjee K, et al. ACC/AHA 2006 guidelines for the management of patients with valvular heart disease. Circulation 2006;114:e84-e231.
[6] Kutumbiah P. Rheumatic fever and rheumatic heart disease in India: review of 25 years of study and progress. Indian J Pediatr 1958;25(123):240-245.
[7] Hodge EHV. Rheumatism in India. Indian Med Gaz 1932;67:241-244.
[8] Meenakshisundaram R, Thirumalai-kolundusubramanian P. Valvular heart disease in Indian subcontinent: social issues. Indian J Community Med 2009;34(1):57-58.

[9] Lakhani SV, Joglekar VK. Clinical study of valvular heart disease. Journal of Medical Thesis 2013;1(1):8-11.

[10] Benerjea JC. Incidence of rheumatic heart disease in India. Indian Heart J 1965;17(3):201-202.