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Acquired Valvular Heart Diseases at CHU Point G

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Abstract

Introduction: Valvular heart diseases refer to all conditions affecting the heart valves, which are flexible structures that separate the four chambers of the heart and also separate the heart from the major vessels. Dysfunction of these valves can be due either to a defect in opening called stenosis or valvular. While it is true that valvular heart disease is not as frequent as coronary artery disease or hypertension, it remains or important clinical entity posing numerous management challenges. **Objective:** This study aimed to determine the hospital frequency of valvular heart diseases and to establish the clinical and paraclinical profile of these patients. **Methods:** This was a prospective study conducted over a three-year period, from January 1, 2021, to December 31, 2023, involving all patients admitted for acquired valvular heart disease. narrowing, or to a failure to close properly. Results: During the study period, out of 1,959 admissions to the department, 78 were for valvular heart disease, representing a hospital frequency of 3.98%. Women were the most affected, accounting for 70.5% of cases, with a male-to-female ratio of 0.4. The most represented age group was 20 to 40 years, with 46.2% of cases and an average age of 41.45 years ± 19.75 years, ranging from 12 to 92 years. The rural population was the majority, accounting for 62.8% of cases. A history of recurrent sore throat and polyarthralgia was found in 61.5% and 34.6% of patients, respectively. The main symptom was dyspnea, present in 93.6%. A global heart failure syndrome was observed in more than one in three patients, or 37.2%. In paraclinical tests, the measurement of anti streptolysin O (ASLO) performed in 35 patients was positive in only 11.43%; Cardiomegaly was present in more than half of the patients, specifically 59%, and atrial fibrillation was observed

in 32% of patients; on cardiac Doppler echocardiography, valve thickening (94.8%) and valve retraction (21.8%) were visualized, resulting in mitral stenosis in 38 patients, or 48.72%, aortic insufficiency in 28 patients, or 35.90%, mitral insufficiency in 27 patients, or 34.61%, and aortic stenosis in 8 patients, or 10.25%. It was a multivalvular mitro-aortic involvement in 11.54%. Pure mitral stenosis (MS) was the dominant valvular lesion at 28.20%, followed by pure aortic insufficiency (AI) at 24.35%, pure mitral insufficiency (MI) at 12.82%, and pure aortic stenosis (AS) at 5.12%. The left atrium, right ventricle, and left ventricle were dilated in 42.3%, 43.6%, and 50% of cases, respectively. Left ventricular systolic function was reduced in 24.4%. Rheumatic etiology was the most frequent, accounting for 67.9% of cases, followed by degenerative disease in 24.4% and infectious endocarditis in 3.8%. Among the 78 patients, only 2 underwent surgical treatment with valve replacement, representing 2.56% of cases; the most majority 97.44% were receiving hemodynamic treatment. The complications were mainly heart failure, atrial fibrillation and stroke, at 93.58%, 32.05%, respectively. Mortality was 7.7%. Conclusion: Valvular heart diseases remain a current issue in our countries, mainly caused by ARF, and prevention remains the most effective measure.

Keywords

Valvular Heart Diseases, Cardiology Department, CHU Point G

1. Introduction

Worldwide, 2% of the population has valvular heart disease [1]. These are mostly rheumatic in developing countries and remain a major public health issue today, particularly in the African region [2]. In Western countries, they are mainly degenerative, with increased prevalence after the age of 65 [1]. Indeed, there are 15.6 million people with valvular heart disease worldwide, particularly in regions where rheumatism is endemic, such as Africa, Southeast Asia, and the Asia-Pacific area, with 230,000 deaths each year [3]. In Bamako, in 1992, valvular heart diseases accounted for 22.9% of admissions to specialized cardiology centers and 8.8% in 2020 [4] [5]. With a view to updating the data in our context, it seemed necessary to revisit valvular heart diseases in order to establish a status report in our department. This was a descriptive and prospective study conducted over a period of three years, from January 1, 2021, to December 31, 2023, involving all patients admitted for acquired valvular heart disease. A questionnaire was given to each participant included in the study, as well as certain additional tests performed:

- Anti-Streptolysin O assay
- ECG
- Doppler echocardiography
- Chest X-ray in the frontal view if needed

- Complete blood count, serum creatinine, blood glucose, serum electrolytes.

Definition criteria

- Valve narrowing or stenosis: reduction of the valvular opening area
  - Mitral: mitral valve area <1.5 cm^2
  - Aortic: aortic valve area <2 cm^2
- Organic valvular insufficiency: abnormal blood regurgitation through the valve
  - Mitral: mitral regurgitation due to poor coaptation, perforation, or valve restriction
  - Aortic: aortic regurgitation due to poor coaptation, perforation, or valve restriction
  - Tricuspid: tricuspid regurgitation due to annular dilation or valve lesion
- Poly valvular disease: simultaneous involvement of two or more valves.

2. Results

Out of 1959 admissions to the department, 78 were for valvular heart diseases, corresponding to a hospital frequency of 3.98%. Women were the most affected, accounting for 70.5% of cases, with a male-to-female ratio of 0.4. The most represented age group was 20 to 40 years, making up 46.2% of cases, with an average age of 41.45 ± 19.75 years, ranging from 12 to 92 years (Table 1). The rural population was the majority, comprising 62.8% of cases. A history of recurrent sore throat and polyarthralgia was found in 61.5% and 34.6% of patients, respectively. The main symptom was dyspnea, present in 93.6% of cases. More than one in three patients, or 37.2%, exhibited a global heart failure syndrome, while 35.9% had isolated right-sided heart failure. On paraclinical examination, the anti streptolysin O (ASLO) assay, performed in 35 patients, was positive in only 11.43% of cases; cardiomegaly was present in more than half, at 59%, atrial fibrillation was observed in 32% of patients; on cardiac Doppler ultrasound, valve thickening (94.8%) and valve retraction (21.8%) were observed, resulting in mitral stenosis in 38 patients or 48.72%, aortic regurgitation in 28 patients or 35.90%, mitral regurgitation in 27 patients or 34.61%, and aortic stenosis in 10.25% (Table 2). Pure mitral stenosis (MS) was the dominant valvular lesion at 28.20%, followed by pure aortic insufficiency (AI) at 24.35%, pure mitral insufficiency (MI) at 12.82%, and pure aortic stenosis (AS) at 5.12%. There was mitro-aortic multivalvular involvement in 11.54% (Table 2). The left atrium, right ventricle, and left ventricle were dilated in 42.3%, 43.6%, and 50% of cases, respectively. Left ventricular systolic function was reduced in 24.4%. Rheumatic etiology was the most frequent, accounting for 67.9% of cases. Of the 78 patients, only 2 underwent surgical treatment with valve replacement, representing 2.56% of cases. Complications were mostly heart failure, atrial fibrillation and stroke, occurring in 93.58%, 32.05% and 5.12%, respectively (Table 3). Mortality was 7.7%. **Conclusion:** Valvular heart diseases remain prevalent in our countries, mainly caused by rheumatic heart disease, and prevention remains the effective weapon.

Table 1. Repartition of patients for sexe and age.

Variables		Number	Percentage
Sexe	**Female**	**55**	**70.5**
	Male	23	29.5
Age	<20	7	9.0
	20 - 40	**36**	**46.2**
	41 - 60	21	26.9
	>60	14	17.9

Table 2. Repartition of patients for valvular lesions.

Valve Disease	Valvular lesions	Number	Percentage %
Single valve	Pure MS	**22**	**28.20**
	Pure AI	19	24.35
	Pure MI	10	12.82
	Pure AS	4	5.12
	Mitral disease	12	15.38
	Aortic disease	2	2.56
Multivalve	MI + AI	5	6.41
	MS + AI	2	2.56
	Aortic disease + MS	2	2.56

Table 3. Repartition of patient for therapeutic and complications.

Variables		Number	Percentage
Moyens thérapeutiques	Valve surgery with replacement	2	2.56
Complications	Heart faillure	**73**	**93.58**
	Atrial Fibrillation	25	32.05
	Stroke	4	5.12
	CavitaryThrombus	2	2.56
Mortality		6	7.7

3. Discussion

This 3-year prospective study highlighted certain aspects of valvular heart disease in the cardiology department of CHU Point G. The hospital frequency of valvular heart disease of 3.85% in this study is much lower than those observed by Ikama [6] and Coulibaly S [3], with 9.4% and 8.2% respectively. This reflects the decline of rheumatic endemic disease affecting our disadvantaged populations. Females

predominated at 70.5%, with a mean age of 41.45 years ± 19.75; the same observation was made by Coulibaly S [3] with 58.3% women. In agreement with the literature, the majority of patients were young and female. The predominance of women could be explained by a combination of biological, environmental, and sociocultural factors in women. Patients from rural areas were the majority, accounting for 62.8% of cases, with histories of recurrent sore throat and polyarthralgia in 61.5% and 34.6% of cases, respectively. This can be explained by poor living conditions in rural areas, limited access to healthcare, and malnutrition, which promote streptococcal infections (sore throat) and their complication into acute rheumatic fever. At admission, more than one in three patients, or 37.2%, were in the stage of global heart failure compared to 40% in Valvafric [7]; these results thus reflect delayed diagnosis, with patients being seen at the stage of complications.

Valvular lesions in order of frequency were mitral stenosis in 38 patients (48.72%), aortic insufficiency in 28 patients (35.90%), mitral insufficiency in 27 patients (34.61%), and aortic stenosis in 8 patients (10.25%). There was polyvalvular mitroaortic involvement in 11.54% of cases. Their rates differ from those reported by Valvafric [7], where MI at 52.8% and AI at 32.1% were the most frequent. Their impact on the cardiac chambers was mainly a dilation of the left atrium, right ventricle, and left ventricle in 42.3%, 43.6%, and 50% respectively, and reduced left ventricular systolic function in 24.4%; indicating the chronic progression of these valvular lesions. Rheumatic etiology was the most common, accounting for 67.9% of cases, followed by degenerative disease in 24.4% and infectious endocarditis in 3.8%. This finding aligns with that of Ionescu [8], who reported 53.8% rheumatic cause and 19.7% degenerative cause. Acute rheumatic fever remains the main cause in our African regions, probably due to overcrowding and the lack of proper care for streptococcal infection. Of the 78 patients, only 2 underwent surgical treatment with valve replacement, *i.e.*, 2.56%, compared to 97.44% receiving medical treatment despite the advent of cardiac surgery in Mali. This could be explained by the fact that the financial costs of heart surgery are still too high for the vast majority of affected patients. Over three years, we recorded 6 cases of death, representing a mortality rate of 7.7%; despite the fact that most patients had difficulty undergoing surgical intervention. This highlights the important role of hemodynamic medical treatment in the absence of surgical treatment, which remains the best appropriate curative option.

4. Conclusion

Acquired valvular heart diseases, mainly of rheumatic origin, represent a major public health challenge in our context. Faced with the inability to access costly surgery, primary prevention through increased awareness of hygiene rules and rigorous treatment of the field of otorhinolaryngology infections is the most viable and urgent strategy to curb this condition, save lives, and reduce the burden of complications (heart failure, stroke).

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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