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Medium Term Complications after Valve Surgery for Rheumatic Heart Disease in Burundian Population

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Abstract **Original Research Article**

Objective*:** shows the mid-term complications occurring in patients operated in Sudan followed by local cardiologists. ***Patients and methods*:** All patients who underwent valve heart surgery abroad for rheumatic heart disease and followed in BURUNDI were included in our study. ***Results*:** Middle age= 24, 72 ±11.8 years. There were many woman in our study (61.1%). Mitral valve surgery was the most performed (92.6%). The main medium-term complications were, atrial fibrillation (18.5%), pulmonary hypertension (12.9%) and death (5.5%). ***Conclusion: Atrial fibrillation, pulmonary hypertension and death were the main complications that occurred in our patients during the medium-term follow-up.

Keywords: Valve surgery, Rheumatic heart disease, Medium term complications.

I. INTRODUCTION

Surgical intervention remains an important treatment modality for those with more severe forms of RHD, yet disparities exist in access to and outcomes following RHD surgery [1]. Valve replacement surgery for RHD is major surgery, up to 3 valves may be replaced depending on the severity of the disease [2, 3]. Surgical risks include increased risk of morbidity or mortality from stroke, embolism, infection, and cardiac failure [3]. Mechanical valves are primarily used because they are more durable, although there is an associated increase in risk of thromboembolic or hemorrhagic events due to the concomitant need for anticoagulation therapy. In addition, RHD and endocarditis prophylaxis, and cardiac rhythm and rate control are necessary [4, 5]. The present study shows the mid-term complications occurring in patients operated in Sudan followed by local cardiologists.

II. PATIENTS AND METHOD

All patients who were diagnosed to have rheumatic valve heart disease and who underwent open heart surgery for the same disease were included in this study. The patients were operated in SUDAN but are followed postoperatively in Burundi by cardiologists. Every year, echocardiography is done for each patient and surgeon's cardiac team comes for support to local cardiologists for the patient follow up. Patients files are kept by a local association wich takes care to social, psychologic and financial follow up of patients. Intraoperative data and surgical techniques are not available and detailed in the files. Follow-up electrocardiographic and ultrasound data were available. Before surgery, any patient hadn't electrocardiographic or echocardiographic complication. Data were analyzed by using IBM Statistical Package for Social Sciences statistics 21 multilingual.

III. RESULTS

Preoperative Characteristics

Mean age of our patients was 24.72±11.80 years. The youngest was 9 and the oldest was 60 and 33 (61.1%) of them were female. No patient had cardiovascular risk factor. Most of our patients 50 (92.59%) had rheumatic mitral valve disease. Combined mitral and aortic valves lesion was seen in 15 (27.7%) patients. Five patients (9.25%) patients had isolated rheumatic aortic valve disease. 12(27.7%) patients had functional tricuspid valve regurgitation.

Table 1: Preoperative characteristics

Variables	N=54	Rate
Age	24.72±11.80	
Female	33	61.1%
Diabetic	0	0
HBP	0	0
Stroke	1	1.65%
Mitral valve replacement History	1	1.65%
Mitral valve disease	50	92.59%
Aortic valve disease	20	37.03%
Mitral valve disease	12	22.22%

Peroperative Data

All the patients were operated abroad (Khartoum, Sudan).47(94%) patients underwent mitral valve replacement and aortic valve replacement was performed in 18 (90%) patients (double valve replacement was done to 15 patients). All patients were treated with mechanical prosthesis. Mitral valve repair was performed in 3(6%) patients and in 2(10%) patients for aortic valve. Tricuspid valve repair was done in 12 patients (100%).

Table 2: Types of surgical procedures

Variables	N=54	Rate
Mitral valve replacement	47	94%
Aortic valve replacement	18	90%
Mitral valve repair	3	6%
Aortic valve repair	2	10%
Tricuspide valve repair	12	100%
Mitral annuloplasty	2	4%

Follow up

The average duration of follow-up was 3.46 ± 1.61years. Arrythmia was found in 12 patients (22.2%) including 10 patients with atrial fibrillation and 2 patients with atrio-ventricular block according to the electrocardiography. In patients who underwent mitral repair, one of them (33.3%) had moderate residual leakage and 2 patients had stenosis (66.7%). In the 2 patients who underwent aortic repair, moderate residual leakage was found. Severe residual leakage was found in 1(8.35%) patients after tricuspid repair. Six (11.1%) patients had left ventricular dysfunction including one with severe dysfunction. Right ventricular dysfunction was observed in 2(3.7%) patients. Moderate pulmonary hypertension was found in 7(12.96%) during the follow up. Prosthesis thrombosis was the only cause of the mortality observed in 3 cases (5.5%) after stopping anticoagulation.

Table 3: Complications

Complications	Case number	Rate
Atrial fibrillation	10	18.5%
AVB (atrioventricular block)	2	3.7%
Tricuspid residual severe leakage	1	8.3%
Severe dysfunction of LV	1	1.85%
Pulmonary hypertension	7	12.9%
Nonoperated valves:		
Tricuspid severe leakage	1	2.38%
Aortic severe leakage	1	2.9%
Death	3	5.5%

IV. DISCUSSION

Our study showed that valve replacement was more preferred than valve repair both at the mitral and aortic performed in 94% (replacement) vs 6% (repair) in mitral valve and 90% (replacement) vs 10%(repair) in aortic valve. Repair is associated with low operative mortality and morbidity, better haemodynamic characteristics, better preservation of LV function, improved late survival and a lower likelihood of valve-related complications, compared with replacement [6, 7]. However, valve repair in rheumatic MV disease patients remains controversial because several studies have demonstrated inferior durability of reconstruction in rheumatic patients [8-10].

This study done in young population, showed the use of mechanical prosthesis in all patients who underwent valve replacement. The data of our study are similar to those of the literature Indeed, more than 60% of operated rheumatic heart disease cases in Africa

currently receive a mechanical prosthesis valve [11]. Thromboembolism, bleeding, infective endocarditis and heart failure are the major problems due to anticoagulation and valve replacement [12-14]. In our study, bleedings did not occur in any patients.The majority of our patients had an acceptable study level to realize the importance of biological follow-up and would probably be the cause of the absence of bleeding complications. However, due to the lack of financial resources, 3 thromboembolic complications secondary to the discontinuation of anticoagulant treatment led to 3 deaths (5.5%). For the remaining 51 patients, their valvular prostheses were in good working order.

During follow up, ten of our patients had atrial fibrillation (18.5%) and two patients (3.7%) had atrio ventricular block. Thirty-seven percent of patients experienced new-onset postoperative AF [15]. There is a general agreement that patients with preoperative sinus rhythm have the best chance to maintain sinus rhythm [16]. In our study, the prevalence of AF was low. The low age of our study population, the selection of patients to operate targeting those without preoperative complications (atrial dilation) and good treatment probably of new-onset perioperative AF before discharge could justify the low prevalence of atrial fibrillation in med term follow up.

Valve repair surgery seemed to have no severe complications in the medium term in our study, having occurred in one patient who underwent a tricuspid repair and who had severe postoperative tricuspid insufficiencyduring the last foollow up. Previously, Kim and colleagues [17] reported that, during a mean echocardiographic follow-up duration of 66 ± 38.6 months, 16.7% of 115 patients with rheumatic mitral repair showed significant MR (>grade 2) or moderate mitral stenosis (mitral valve area, 1.2–1.4 cm2), but no severe stenosis. In view of the small number of patients who underwent surgical valve repair in our serie, these results are insufficient to enable conclusions on the success of valve repair particularly in rheumatic valve disease, which is often progressive. Akay and colleagues [18] found NYHA class IV, lower LVEF and increased left ventricular end-diastolic dimension were the risk factors affecting the long-term survival. The left ventricular ejection fraction LVEF in our study was severe in only one case (1.85%). If we considered LVEF, we could expect a high long-term survival rate. Unfortunately, LVEF is not the only factor affecting long-term survival. The occurrence rate of pulmonary hypertension was 12.9% in our series. Stephenson and colleagues [19] stressed pulmonary hypertension and emergency operation were also factors influencing late survival. This rate of pulmonary arterial hypertension should necessarily have a negative impact on the long-term survival rate of our patients.

V. CONCLUSION

This study showed that the mains complications after valve heart surgery for rheumatic heart disease were atrial fibrillation, pulmonary hypertension and death. These complications should affect the long term survival rate of our patients. Good clinical and ultrasound follow-up of patients as well as good archiving of data could improve subsequent studies.

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