

Problems faced in the surgical management of rheumatic heart disease in Nepal

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Abstract

Rheumatic heart disease (RHD) is a very common cardiac disease in Nepal. The public awareness among Nepalese population is negligible, therefore it is seen in very early age and in severe form. The majority of the patients are of low socio-economical condition, who cannot afford expensive valve replacement surgery. All these facts create a daunting problem in the surgical management of the disease for the newly established open heart surgery unit.

The first regular open heart surgery in Nepal was started on 20 February 1997 in Tribhuvan University teaching Hospital (TUTH), Kathmandu. Closed heart surgery was the only procedure available for isolated mitral stenosis in the past. Since 1997 in three years, a total of 285 cases of RHD were referred for surgery. Male to female ratio was 1.1:1.0. The youngest patient was 3 years and oldest 58 years with a mean age of 30 years. There were 32 patients (11%) under the age of 16 years. The isolated mitral valve disease was found in 195 cases (68%), aortic valve disease in 28 cases (10%) and double valve disease in 62 cases (22%). In the mitral valve disease, severe subvalvular fusion and calcification were found in 101 (52%) and 76 patients (39%) respectively, whereas closed mitral commissurotomy (CMC) was possible in only 69 patients (35%).

In 3 years, 104 cases of valve surgeries were performed at TUTH. CMC was performed in 55 cases whereas open heart surgery in 49 cases of RHD patients. Here we present our difficulties in beginning regular open heart surgery in Nepal and the problems faced by our patients.

Keywords: Rheumatic heart disease; open heart surgery; Nepal.

Introduction

In Nepal due to lack of public awareness, Rheumatic Heart Disease (RHD) is the most common cardiac disease in children and adults. For the last three decades, closed mitral commissurotomy (CMC) was the only surgical procedure available for the treatment of isolated mitral stenosis. And the procedure is still being done as to this date there is not a single fully equipped heart centre and cathlab in Nepal. Few enthusiastic surgeons, and anaesthetists initiated a regular open heart surgery at Tribhuvan University Teaching Hospital (TUTH), Kathmandu in 1997. Performing open heart surgery on young patients and unmarried females create an immense problem as the poor patients could afford only one operation in their life time. The newly established open-heart surgery team of TUTH faces a great challenge in their management.

Materials & Methods

All the patients referred to the cardiothoracic unit of the Department of Surgery of TUTH for surgery were studied retrospectively. All the data were collected from patient records and followup charts. The patients' detailed history, socio-economical status, history of sore throat, joint pain, and RHD prophylaxis were noted. The ECG, chest roentgenogram, fluroscopy of mitral valve area for calcification, detailed colour Doppler echocardiography, and intraoperative findings of all the patients were studied. The possibility of the closed mitral commissurotomy was ruled out when the echocardiographic predictors for severe mitral regurgitation score (Padial LR et al, 1996 & Wilkins GT et al, 1988)^{1,2} was above 8, or when there was severe mitral regurgitation, or presence of left atrial clot.

Patients were grouped into three socio-economical groups according to their ability to afford single valve replacement. Those patients who could not afford the surgery costing about Rs. 1,60,000.00 (US\$ 2318.84) were classed as low socio-economical group, those who could afford the money as middle class, and those who preferred to go abroad for the surgery as high class.

Results

Chart 1: Distribution of patients according to the age group:

<i>Age Group</i>	<i>Pts.</i>
2-10 yrs	11
11-16 yrs	21
17-25 yrs	94
26-35 yrs	107
36-45 yrs	49
46-55 yrs	11
> 56 yrs	2

Male to female ratio was 154 : 131 (1.17: 1.00)

Among the femals 55 patients (42%) were unmarried.

Chart 2: Socio-economical Status of the patients.

Low	196
Medium	78
High	11

Chart 3: Public awareness, history of RHD, and patient compliance.

<i>Clinical symptoms</i>	<i>Pts.</i>	<i>PAH</i>	<i>Pts.</i>
Cough & Dyspnoe	242	Mild	46
Palpitation	120	Moderate	151
Chest pain	45	Severe	88
Hemoptysis	23		
Swelling of body	17		
Syncope	6		
Fever & joint pain	60		

Chart 5: Valve involved due to RHD.

Chart 6: The severity of the Mitral valve disease.

Chart 7: Types of operation performed

30 days Hospital Mortality: 6 patients (4.8%) Post-CMC (1), Post-MVR (2), Post-AVR (1), Post-DVR (2) Postoperative Clinical improvement: NYHA I (78%), NYHA II (21%), NYHA III (1%)

Chart 8: The reason for operation cancellation

Discussion

In Asia, Rheumatic heart disease is the commonest heart disease among children and young adults.^{3,4} In limited study in Nepal, the incidence of RHD among students was 1.3 per 1000 population.^{5,6} Similar study done among general population in northern India, showed the incidence of 6.4 per 1000 population.⁷ Our study showed that the public awareness of the disease among general population was very low compared to the Indian populations⁸, therefore it was assumed that the incidence of RHD among general population in Nepal should be more than that in northern India. The other reason for our assumption was the fact that, significant number of patients (26%) in our study also defaulted regular RHD prophylaxis. The cardinal symptoms of the disease were breathlessness and palpitation on exertion, occasional cough and hemoptysis, the history of fever and joint pain was found in less than 21% of patients. The majority of patients with RHD were treated conservatively and when the treatment failed, then the patients were referred for surgery.

The mitral valve was involved in two-third of the cases and 82% of them had long-standing atrial fibrillation. The echocardiographic and intra-operative findings showed that almost half of the patients had severely damaged valves (fig 1) with calcifications (fig 2) and severe subvalvular fusions. In all removed valves, there were large number of mononuclear cell infiltration (fig 3) which is not seen so extensively among the white population⁹; this may reflect a chronic immune reaction influencing the natural course of RHD for the worse. Therefore, the asian population with RHD has markedly higher rates of mortality compared to the white population, particularly in the lower age groups (under 45 years).¹⁰

Rheumatic heart disease contributes to significant cardiac morbidity and mortality in India. The disease predominantly affects the valvular endocardium culminating in crippling valvular deformities, preferentially involving the mitral valve, which maybe severely affected in children and young adults. This appears to be unique to India and the subcontinent and has been termed "juvenile mitral stenosis".¹¹ It is characterized by cardiomegalia (fig 4), refractory congestive heart failure, and marked by elevated pulmonary vascular pressure and progressive, fulminant clinical course. A significant number of patients referred for surgery were under sixteen years of age (12%), whereas the majority (70%) of them were in the active age group of 17 to 35 years of age, and most of them needed complicated valve repair surgery or valve replacement.^{12,13}

In the era of modern invasive cardiology¹⁴ and cardiac surgery, until 1997 in Nepal, only closed mitral commissurotomy was the surgical procedure available for the isolated mitral stenosis patients. In Nepal with the population of 24 millions, there is no fully equipped and functioning cathlab and heart centre. Few enthusiastic young surgeons and anaesthetists from Tribhuvan University Teaching Hospital initiated the first regular open heart surgery in Nepal in early 1997.¹⁵ With the beginning of open heart surgery services in Nepal, a large number of congenital and acquired heart disease patients had benefited from it. In the period of three years, the young open heart surgery team had performed 49 open valve surgeries but with its modest experience and the lack of appropriate instruments, the team is still not able to perform such complicated valve repair surgeries.

In only one-third of the patients with mitral valve disease, the closed mitral commissurotomy was possible whereas the remaining patients needed open heart surgery. The cost of open heart surgery in Nepal is almost two to three times cheaper than that in the neighbouring countries, which made the operation affordable to the majority of middle socio-economical class people. But still in the poor country like Nepal with annual per capita income of US\$ 180.00, the majority of the patients could not afford the expensive valve replacement surgery. And also those patients who could afford the surgery could not afford reoperation due to the economical constraints. Therefore, for the valve replacement only mechanical valve could be used because of its durability compared to the bioprosthetic valve^{16,17}. There equal number of male and female patients with RHD. Among females 42% were unmarried. Lifelong anticoagulation in young unmarried females with mechanical valve replacement invites another major social problem. With the mechanical valve replacement, an unmarried female has almost no chance getting married in Nepal as she could not bear a child due to the high risk of embriopathies and complications related to the pregnancy during anticoagulation.¹⁸

These problems could have been solved if the the team had enough expertise in performing complicated durable valve repair surgeries and had all the infrastructure and instruments for it. A good valve repair would overlast bioprosthetic valve^{19,20,21,22,23,24} and would be much cheaper and also could be performed in all age groups, solving the problem of managing very young RHD patients.²⁵ The existing facilities and manpower at Tribhuvan University Teaching Hospital does not permit an increase in numbers of open heart surgeries per year, which defenitely acted as an inhibitor in further development of the service.

Conclusion

Rheumatic heart disease is very common among children and young adults, the major factor for it is poor public awareness of the disease. Therefore, there is urgent need for public awareness programmes for prevention of the disease in Nepal.

Most of the patients present to the surgeons in their severe form of the disease, and the majority of them need valve replacement or complicated valve repair surgeries. The young open heart surgery team of Tribhuvan University Teaching Hospital is facing a real challenge in their management. There is an acute need for further training of the staffs in valve repair surgery and improvement of existing infrastructure of the hospital.

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