Surgical Experience with Rheumatic Mitral Valve Disease in Children

Ricardo Lima, Claudio Gomes, Jorge Rodrigues, Mozart Excobar, Mauro Arruda, Ivan Cavalcanti, Edgar Victor, and Carlos Moraes

In developing countries, rheumatic heart disease continues to be a challenging problem. The disease often affects young people from the lower strata of the population in an accelerated and severe form that produces early valve damage, which can be relieved in some patients only by surgery [1-3]. In this paper, we review our experience with surgical management of rheumatic mitral valve disease in patients below the age of 15 years.

Materials and Methods

During the period from April 1960 to January 1985, 1,031 patients underwent mitral valve surgery at the Federal University of Pernambuco Medical School and at the Institute of Disease of the Chest, Recife, Brazil. One hundred sixteen (11.3%) patients were below the age of 15 years. Thirty-four patients were under the age of 10 years (mean, 8.0 ± 1.8 years, SD). There were 65 girls and 51 boys ranging in age from 3–15 years (mean, 11.9 ± 2.9 years SD). Body weight ranged from 11–57 kg (mean, 28.4 ± 8.5 kg, SD). Ninety-seven (83.6%) patients had a history of rheumatic disease or were in active carditis at the time of hospital admission. As classified by the New York Heart Association, 21 were in class II, 53 in class III, and 42 in class IV (functional statuses) prior to surgery. Every effort was made to operate during the inactive phase of the rheumatic fever, and medical treatment was established whenever there was clinical or laboratory evidence of active disease. Disability of moderate-to-severe degree was the main indication for surgery in children with inactive disease. However, 28 (24.1%) patients with severe mitral incompetence had evidence of rheumatic activity at the time
of surgery, and surgery was recommended because of congestive heart failure responsive to medical management. At surgery, every effort was made to preserve the natural valve whenever possible. Thirty-two children underwent mitral commissurotomy (MC) (2 closed and 30 open), 17 had mitral annuloplasty (MA), 45 had mitral replacement (MVR), and 21 had double-valve procedure (1 MC + tricuspid replacement, 2 MC + tricuspid annuloplasty, 2 MC + aortic replacement, 1 MA + aortic replacement, 13 double-valve replacement, and 2 MVR + tricuspid annuloplasty). One patient had a triple-valve procedure (MA + tricuspid annuloplasty + aortic replacement). The technique of valve replacement varied through the years. The data in this study were accumulated retrospectively from hospital and office records.

Results

Seventy-eight patients (67.2%) are alive at present. Of those who died, 25 (21.5%) died in the early postoperative period (within 30 days of surgery regardless of the cause) and 13 (14.3%) died later. Isolated mitral commissurotomies, were carried out in 32 children. Thirty (93.7%) are still alive. There was only one (3.1%) early death. He was a 15-year-old boy with mitral stenosis, tricuspid regurgitation, and severe pulmonary hypertension who died on the first postoperative day of low cardiac output syndrome. One child (3.2%) died 3 months after surgery from active rheumatic fever and congestive heart failure. Three patients underwent second procedures and had tissue valve prostheses implanted. Seventeen patients underwent mitral valve annuloplasty. In this group, there are 10 survivors (58.8%). There were three early (17.6%) and four late deaths (28.6%). Three patients died in the late postoperative period due to recurrent mitral incompetence. Two patients underwent second procedures for mitral valve replacement and one died in the immediate postoperative period. Forty-five children had mitral valve replacement. Eleven (24.4%) patients died during the early postoperative period. Low cardiac output was the most common cause of death (seven patients). There were five (14.7%) late deaths. The following cardiac valve prostheses were used in this group: dura-mater valves (22), Ciconol bovine pericardial valves (11), Starr-Edwards valves (4), autologous pericardial valves (4), Hancock valves (3), and Lillehei-Kaster valves (1). Five patients (four with tissue valves and one with a mechanical valve) underwent second procedures due to prosthesis dysfunction. Twenty-two patients were classified in the miscellaneous category. Ten (45.5%) died in the early postoperative period. Low cardiac output and arrhythmias were the most common cause. There were three (25.0%) late deaths in this group not related to the valve used. All of the surviving children have been followed for a period of 3–180 months. Each showed significant improvement and has returned to school or normal activities or both.