MITRAL VALVULOTOMY FOR TIGHT MITRAL STENOSIS IN PATIENTS UNDER TWENTY YEARS OF AGE

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Mitral valvulotomy has long been established as standard treatment for mitral stenosis since the introduction by Harken[7] in the United States and Brock[4] in England, both in 1948. So far the majority of the reports in the western literatures were among the older age group, In patients below 20, it is a general practice to defer mitral valvulotomy as long as possible to avoid early restenosis[13]. The natural history of rheumatic heart disease in the Western countries is quite different from the Eastern[6]. In the West, rhneumatic heart disease usually begins between the age of 10 and 20. and the symptoms usually develop around the age of 30 to 50 years. The disease, in the East, starts much earlier, usually between the age of 5 to 10 years, and have already pogressed to full development at the age of 10 to 15 years. At Chulalongkorn Hospital, a number of young patients who had tight mitral stenosis with intractable heart failure were operated upon by mitral valvulo tomy. Present, herein, is a report of study of these patients.

Materials and Methods:

During the year 1965 to 1968, 143 patients with mitral stenosis had surgical mitral valvulotomy. Among these patients, 36 or 25.1 per cent were under the age of 20 years; six patients were between the age of 10 to 15, and 30 were between 15 to 20.

In 78 per cent of the total cases, Tubb's transventricular dilator were used; in the remainder, valvulotomies were carried out by digital splitting.

Results:

The age incidence of patients in this series is in contrast to most reported from the West, where most of the patients were older than 20 years of age,[1, 2, 8, 9, 11, 12] However, the age group of the patients in this study is comparable to that reported from india[5] and Israel[3] Comparison of the age incidence as percentage to mitral valvulotomies between the patients in this series and others is given in table I.

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Other results of this study are summarised as follows.

Economic and social status

All but one were admitted to the charity wards. This reflected that the majority of the patients were in the poor class, with the posibility of low standard of hygiene and poor nutritional status.

History of Rheumatic Fever

Twenty patients (55.5 per cent) gave the history of rheumatic fever, ranging form 2 to 11 years before the operation. Cherian et al.[5] reported 53 per cent of their cases had similar history. Biopsies of the left atrium showed evidence of rheumatic carditis in 45.4 per cent of cases.

Symptoms Wood's[13] method of grading of dyspnea into 4 grades was used in this series. Grade 1, represent slight incapacity; grade 2, moderate incapacity; grade 3 severe incapacity and grade 4, total incapacity In the present series, 5.5 per cent belonged to grade 2, 66.7 per cent to grade 3 and 27.8 per cent to grade 4, (table 2)

Hemoptysis: 28 per cent of the patients were presented with hemoptysis.

Radiological Features: All had left atrial and right ventricular enlargement; 82 per cent showed hilar congestion and 48 per cent had horizontal costophrenic lines, suggesting interstitial pulmonary edema.[10] (Table 3)

Electrocardiogram: Atrial fibrillation was present in 14 per cent. P mitral and abnormal P wave suggesting left or right atrium enlargement were present in 85 per cent; Tall R wave in lead V, suggesting right ventricular hypertrophy were found in all cases.

Operative findings: (Table 4)

Calcification: Calcification of the valve was present in 13 per cent.

Valve Orifice: The valve orifice measured at the time of operation was less than 1 cm. in diameter in 90 per cent of cases. In the remainder 10 per cent, the orifice measured between 1 to 1.5 cm.

Left atrial thrombus: No left atrial thrombus was observed.

Associated mitral regurgitation: Mitral regurgitation of non-significant severity was present in 2 cases.

Post operative course and follow up: There was no mortality in the younger age group and there was no severe regurgitation followed the valvulotomies. Our over-all mortality in all age group was 3.3 per cent.

Follow-up The patients were followed up from 6 months to 3 years The grading of the improvement was according to the improvement of the incapacity; good for much improvement, fair for mild improvement and poor for worse or no change. 72

COMPARISON OF INCIDENCE OF MITRAL VALVULOTOMY IN YOUNG PATIENTS

AUTHOR	COUNTRY	AGE (yr.)	Total Valvulotomies	Younger Group as percentage of Total
LOGAN and TURNER (1953)	U.K.	<19	100	1
GOODWIN et.al (1955)	U.K.	<20	75	3
BAILEY and BOLTON (1956)	U.S.A.	<20	1000	1
ANGELINO et.al (1956)	ITALY	<16	600	2
GLOVER (1959)	U.S.A.	<18	1500	1
BORMAN et.al (1961)	ISRAEL	<16	173	8
CHERIAN et.al (1963)	INDIA	<20	373	38
PRESENT SERIES (1968)	THAILAND	<20	143	23

Table 1.

SEVERITY OF SYMPTOM AS GRADE OF EFFORT INTOLERANCE

Grade	Percentage of Patients
1	NIL
2	5.5
3	66.7
4	27.8

28 Percent Present with Hemoptysis

Table 2. Wood's method of grading is used in this series.

RADIOLOGICAL FEATURES

Radiological Features	Percentage of Patients
Left Atrial Enlargement	100
Right Ventricular Enlargement	100
Hilar Congestion	82
Horizontal Contophrenic Lines (Kerley)	48

Table 3. Radiological features of the patients are given.

OPERATIVE FINDINGS

FINDINGS	PERCENTAGE OF PATIENTS
MITRAL VALVE CALCIFICATION	13
LEFT ATRIAL THROMBUS	NIL
ASSOCIATED MITRAL REGURGITATION	5
VALVE ORIFICE: LESS THAN 1 CM	90
VALVE ORIFICE: BETWEEN 1 TO 1.5 CM	10
EVIDENCE OF RHEUMATIC CARDITIS FROM LEFT ATRIUM BIOPSIES	45

Table 4. Findings at the operation are given in this table.

per cent were good, 19 per cent, fair and 9 per cent were poor. In one case (2 per cent) the patient came back after 11 12 months due to restenosis. Second mitral valvulotomy was successful. This case was digitally splitted at the first operation.

Discussion

The high incidence of tight mitral stenosis in young patient of which surgical treatment is urgently needed in this series supports the difference in the natural history of rheumatic heart disease in the Eastern Countries from that in the West. There are many factors that may contribute to this high incidence besides the difference of the natural history of the disease, such as the climate, the nutrition factor, the host response and the standard of living. If the stenosis is severe, it is justified in the author's opinion, to perform surgical treatment as the rate of restenosis is low and the operative result is, in our series, satisfactory.

Summary:

143 patients were operated for mitral stenosis by mitral valvulotomy at Chulalongkorn Hospital. Among these, 36 or 25.1 per under 20 years of age. Clinical and operative data were described.

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