

Quadricuspid Aortic Valve As Cause Of Congestive Cardiac Failure — Case History

M. A. CHEEMA*

INTRODUCTION

A case of Quadricuspid Aortic Valve presenting with congestive Cardiac failure was operated and Aortic Valve replacement was done. Aortic Valve was found to be Quadricuspid. Whereas Bicuspid Aortic Valve is primarily stenotic, Quadricuspid Valve is primarily incompetent.

CASE HISTORY

Fifty years old male had grade III dyspnoea, chest pain and one syncopal attack. His condition improved with digoxin, diuretics and Captopril. On enquiry it was found that the disability increased over last four years. He did not have orthopnoea or paroxysmal nocturnal dyspnoea. There was no history suggestive of Rheumatic fever in childhood.

Clinical examination showed him to be obese, weighing 90 Kg. He was in Sinus Rythm. Pulse was collapsing and B.P. 140/60. JVP was raised.

Liver was tender and palpable 3 cm below the costal margin. Apical impulse was heaving and palpable in 6th intercostal space just outside mid clavicular line. On Auscultation there was harsh Systolic murmur at Aortic area radiating to Carotids. Early diastolic murmur of blowing character was audible at left sternal edge. Lungs were clear on auscultation.

X-ray chest showed cardiac enlargement and dilated Ascending Aorta. E.C.G. showed Sinus Rythm Lt Axis deviation, Lt. Ventricular Hypertrophy and overloading with strain pattern. 2 D Echocardiogram showed dilated hypertrophic Lt. Ventricle. L.V. dimension

Dd 56/34 with Ejection fraction of 58% DS
Aortic Valve operating was 12 mm.

Cardiac catheterization findings were:

Pressure RA 14/4 RV 44/8 MPA 44/16

LV 220/8

AO 160/76

L.V. Angio showed moderately pumping L.V. with marked post stenotic Aortic dilatation. Aortic root injection revealed grade II Aortic Regurgitation. Coronary Angiography showed normal coronary arteries.

He was operated on 09 Jan, 88 Cardiopulmonary bypass was started with Aortic arch cannula and two stage Atricaval cannula. Local Cooling and systemic hypothermia 28°C maintained. Transverse Aortotomy was done and cardioplegia given through coronary ostia. Valve was found to have thickened cusps with edges not meeting. Aortic Valve was excised and decision was made to put in 23 mm Bjork Shiley valve. Till then it was not appreciated that the valve was quadricuspid. As a routine I use 2/0 prolene at the three commissure and then continuous stitch for the respective cusp edge. It was while stitching the Rt. coronary cusp edge that I discovered a cusp edge additional to the remaining non coronary cusp. One more suture was used then. Inspection of the valve after the operation confirmed it to be quadricuspid.

Patient made uneventful recovery. His cardiac failure improved and three months after operation he didn't require Digoxin.

* Professor I/C Cardiovascular Unit, Mayo Hospital and King Edward Medical College, Lahore - Pakistan.

DISCUSSION

Abnormally of semilunar valves is one of the common congenital cardiac abnormalities. Most well known of these is Bicuspid Aortic valve¹. Aortic valve may be unicuspid or quadricuspid also². Same abnormalities may affect the pulmonary valve³. Whereas morphological abnormalities of pulmonary valve is not usually accompanied by deranged function same is not true of Aortic valve. Bicuspid Aortic valve is stenotic and becomes more so with passage of time. On the other hand Quadricuspid Aortic valve is primarily incompetent and later may become stenotic also⁴.

The cusps sizes in Quadricuspid valve may vary and are not always equal in Aortic and pulmonary valves. However several patients with congenital Bicuspid pulmonic and Aortic valves are on record. Bicuspid Aortic valve has incidence of 2% in general population. The frequency of Quadricuspid valve has been found to 1 in 400⁷ to 1 in 2000 necropsies.

Horuitz and Roberts found 8 Quadricusps pulmonic and 2 Quadricuspid Aortic valve in 6000 necropsies. De Varies observed only 1 in 3600 necropsies⁵.

Quadricuspid semilunar valve may be associated with other cardiac abnormalities. Recorded

abnormalities are Atrial septal defect, ventricular septal defect, Patent ductus Arteriosus and partial A. V. canal defect¹.

The normally functioning pulmonary quadricuspid valve is not prone to greater incidence of Endocarditis. However quadricuspid Aortic valve is prone to Endocarditis as well as Rheumatic process¹.

REFERENCES:

1. Larry E. Horuitz, William C Roberts: Quadricuspid Semilunar valve. American J-Cardiology Vol. 31, 623-626.
2. Faicone WM, Roberts WC, Morrow AG, at: Congenital aortic Stenosis resulting from a unicommissural valve. Clinical and anatomic features in twenty-one adult patients; Circulation 44:272-280, 1971.
3. Kissin M: Pulmonary insufficiency with a supernumerary cusp in the pulmonary valve. Report of a case with review of the literature. American Heart J. 12:206-227, 1936.
4. Pereiz D1, Chaugfoot GH, Goulay RH: Four-cuspid Aortic valve with significant hemodynamic abnormality. Amer. J. Cardiol 23:291-293, 1969.
5. De Varies WM: Uber Abweichungen in der/Sh/der Semilunark; appen Beitr Path Anat 64: 39-54, 1918.