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Congenital bicuspid aortic valve in pediatric and early adults: Does valvular phenotype affect other parameters?

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Statement of the Problem: Bicuspid aortic valve is the most common congenital heart disease; with an incidence of 0.5% to 2%. Individuals with BAV are more liable to valvular disease including aortic stenosis, regurge and infective endocarditis. Many other conditions are associated to the BAV disease as ascending aortic dilatation or aneurysm, coarctation of the aorta, supravalvular aortic stenosis, patent ductus arteriosus, ventricular septal defect, and congenital coronary anomalies. We aim to assess congenital bicuspid aortic valve using cardiac MRI and to detect a relationship between the leaflet fusion pattern and other functional parameters including valvular regurge, stenosis and pressure gradient.

Methodology & Theoretical Orientation: Our study included 104 cases. All functional and morphological cardiovascular abnormalities were recorded as well as any associated congenital diseases. We found 54 cases (53.8%) of 1-RL morphology, 34 cases (32.7%) of 1-RN morphology, 8 cases (7.7%) of 0-AP and 6 cases (5.8%) of 0-lateral. Aortic stenosis and regurgitation were found in 80.75% of cases. Aortic stenosis was the most common valvular lesion being more evident in the 1-RN valve type. Aortic regurge was more predominant in the pediatric age group with no predilection for a specific valve phenotype. Left ventricular function was normal in most of our cases. 38 cases had associated aortic dilatation. Twenty six patients showed associated aortic coarctation. Intra cardiac shunts were the second most common associated anomaly after coarctation. Most of the associated congenital anomalies were found with the 1-RL valve morphology type. Other associated congenital anomalies were detected in 44 patients.

Conclusion & Significance: Cardiac Magnetic resonance should be performed for patients with bicuspid aortic valve to determine the valve phenotype, function and aortopathy for risk stratification and surgical management. Patients with RL type should be properly imaged to detect associated congenital anomalies.

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