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Study of left atrial compliance in rheumatic mitral stenosis

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Introduction & Aim: Left Atrial Compliance (LAC) is an important determinant of cardiac function, both in the normal and pathological state. The basic hemodynamic features of Mitral Stenosis (MS) are an elevation of Left Atrial (LA) pressure, resulting from antegrade flow across the Mitral Valve (MV). The severity of MS and extent of narrowing of MV orifice determine the degree of LA pressure. The aim is to study the left atrial compliance in patients with Rheumatic Mitral Stenosis, to analyse the predictors of LA pressure in rheumatic MS, to study effects of successful Balloon Mitral Valvuloplasty (BMV) on left atrial compliance.

Method: 50 patients undergoing BMV by Inoue technique were included in this study. Doppler echocardiography was performed in all before BMV. Left atrial size, left ventricular end diastolic dimension, left ventricular end systolic dimension and left ventricular ejection fraction were calculated. Mitral valve area (MVA) was measured by 2D echo planimetry and pressure half time method from continuous mitral flow velocity profile. Mean Mitral Valve Gradient (MVG) was also measured by continuous wave Doppler echocardiography. During BMV procedure right heart catheterization was performed with balloon tipped catheter. Pulmonary capillary wedge pressure, systolic, diastolic and mean pulmonary artery pressures were measured with fluid filled catheters. Trans-septal puncture was done from right femoral vein with broken brought needle and Mullins transeptal sheath. Left heart catheterization was performed through it. The left atrial 'a' and 'v' waves amplitude were measured at end-expiration cardiac output was determined by Fick's method. LAC was calculated by dividing the systolic rise in LA pressure by stroke volume.

Result: Though LAC was depressed in patients with rheumatic MS and improved dramatically (from 2.5 ± 0.51 to 7.11 ± 1.71 cm^3/mmHg) following successful BMV. Those with higher LA mean pressure had lower LAC. Those with higher PA pressure, higher TMG, Lower MVA and lower LAC had higher mean LA Pressure with strongest negative relationship noted with LAC. However in multivariate analysis only TMG and LAC were predictors of LA pressure.

Conclusion: LAC is important determinant of left atrial pressure in patients of rheumatic mitral stenosis and which correlates with symptomatology. Rheumatic MS has markedly depressed LAC. This depressed compliance improves immediately following successful balloon mitral valvuloplasty. This improvement in compliance occurs irrespective of left atrial mean pressure

Biography

Raghav Lumb is Graduated from Kurukshetra University, Haryana, India and has completed his Post Graduate in Internal Medicine from Bharati Vidhyapeeth University Medical College, Pune, India. He is presently an Aspiring Resident of DM Cardiology.

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