CASE REPORTS

Presystolic Mitral Regurgitation

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Abstract
A case of mild to moderate aortic regurgitation with presystolic closure of mitral valve and presystolic mitral regurgitation is reported. This echocardiographic finding is a reliable marker of significantly increased LV end-diastolic pressure.

Case Report
A 46 yr. female was referred for evaluation for effort breathlessness. She was a known case of hypertension, hypothyroidism, bilateral medical renal disease, cholelithiasis, old non Q anterior myocardial infarction and hyperuricaemia. Clinical examination was normal. Electrocardiogram showed T inversion with QT prolongation (QTc-0.56 sec.) in leads V2-V5.

Echocardiographic evaluation revealed concentric remodeling (relative wall thickness 0.54, LV mass index 110 gm/m²). LV end diastolic dimension (36.9 mm), end systolic dimension (22.3 mm), ejection fraction (70.9%) and fractional shortening (39.57%) were normal. Mitral valve E-point-septal separation was 8.8 mm. Left atrial volume was normal (26.62 ml). There was mild hypokinesia of LV anterior wall and LV apex.

Mitral flow doppler revealed grade 1 diastolic dysfunction (E=0.42 m/sec, A=0.50 m/sec, E/A = 0.84, IVRT-144 m.sec, E wave deacceleration time=244 m.sec). Velocity of propagation of mitral flow on colour M-Mode was mildly reduced (424.1 mm/sec). Doppler evaluation of pulmonary vein flow was normal (S = 0.45m/sec, D = 0.36 m/sec, S/D ratio = 1.25, D wave deacceleration time 206 m.sec, A wave duration = 72 m.sec as against mitral flow A wave duration of 89 m.sec).
Discussion

Normally left ventricular end diastolic pressure remains below left atrial pressure until beginning of LV systole. After beginning of LV systole, LV pressure rises above LA pressure and closes mitral valve. When left ventricular end-diastolic pressure is raised, it rises above left atrial pressure in late diastolic and results in late diastolic (presystolic) closure of mitral valve (Figure 5). This can results in late diastolic (pre-systolic) mitral regurgitation. It also results in attenuation or absence of mitral component of first heart sound. These abnormalities are frequently seen in acute aortic regurgitation but can be seen in any condition with raised LV end diastolic pressure. Presystolic closure of mitral valve and presystolic mitral regurgitation are very sensitive markers of raised LV end diastolic pressure.

Conclusion

Isolated presence of presystolic closure of mitral valve and presystolic mitral regurgitation is a reliable marker of significantly raised LV end diastolic pressure.

References

