2013, BANGLORE , LEVEL 2 ACCREDITATION TEST

QS NO -01

Transmitral velocity, flow propagation velocity (*Vp*), and mitral annular velocities were recorded in a 65-year-old hypertensive with New York Heart Association (NYHA) class III dyspnea and a two-dimensional echocardiogram that showed concentric left ventricular hypertrophy (LVH), enlarged left atrium, and LV ejection fraction >70% (~~Figure 1~~).

Which of the following statements is FALSE regarding this patient's condition?

A. A transmitral E/A <1 cannot be used as an index of normal LV filling pressures in this patient.

B. An E/Vp ratio of 1 indicates normal LV filling pressures in this patient.

C. Enlarged left atrium is a common finding in this patient's condition.

D. The E/E' ratio derived from the septal and lateral corners of the annulus are indicative of elevated LV filling pressures.

Commentary

The correct answer is B.
In patients with normal LV systolic function, the transmitral E/A ratio is unreliable for estimation of filling pressures. The ratio of transmitral E-velocity to the annular E' is the best index of filling pressures in these patients. A ratio >15 is highly predictive of a mean left atrial pressure >15 mm Hg. The ratios in this patient for septal and lateral corners are 20 and 17, respectively.

Although the E/Vp ratio has been used also as an index of filling pressures, it becomes unreliable in patients with concentric LVH, small cavities, and hyperdynamic function. Thus, a ratio of 1 in this patient, although normal, is not a reliable indicator of a normal left atrial pressure. The vast majority of patients with dyspnea due to diastolic dysfunction have an enlarged left atrium.

Reference(s)

1. Rivas-Gotz C, Manolios M, Thohan V, Nagueh SF. Impact of left ventricular ejection fraction on estimation of left ventricular filling pressures using tissue Doppler and flow propagation velocity. Am J Cardiol 2003;91:780-4.

2. Ommen SR, Nishimura RA, Appleton CP, et al. Clinical utility of Doppler echocardiography and tissue Doppler imaging in the estimation of left ventricular filling pressures: a comparative simultaneous Doppler-catheterization study. Circulation 2000;102:1788-94.