REFERENCES


REPLY

We are grateful for Drs. Henein and O’Callaghan’s interest in our study (1). Although we agree that ischemia may contribute to impaired long-axis lengthening and a restricted left ventricular (LV) filling pattern in some patients, these abnormalities can occur in the absence of ischemia.

Drs. Henein and O’Callaghan repeat the common misconception that early rapid left ventricular filling ceases when LV pressure equals left atrial pressure. Early diastolic LV filling results from the acceleration of blood from the left atrium to the left ventricle (LV) in response to a pressure gradient (2). As LV relaxation slows, the ventricle fills, and the left atrium empties; the pressure gradient is reduced and then abolished. When LV and left atrial pressures are equal, there is no longer a pressure gradient to accelerate blood into the LV, so the rate of LV filling stops increasing. After this time, LV pressure exceeds left atrial pressure, and this decelerates and eventually stops LV filling (3). Thus, the peak rate of LV filling occurs coincidently with equalization of left atrial and LV pressures (see Fig. 3 of our report [1]).

We found that under normal conditions, peak LV filling and LV long-axis lengthening occurs simultaneously and is coincident with the equalization of LA and LV pressures. With impaired relaxation, the long-axis lengthening of the ventricle is delayed and occurs after crossover of left atrial to LV pressure and, thus, is much less sensitive to left atrial pressure. This explains why the peak rate of long-axis lengthening (EM) is reduced in patients with slow LV relaxation, even if left atrial pressure is markedly elevated.

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REFERENCES


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