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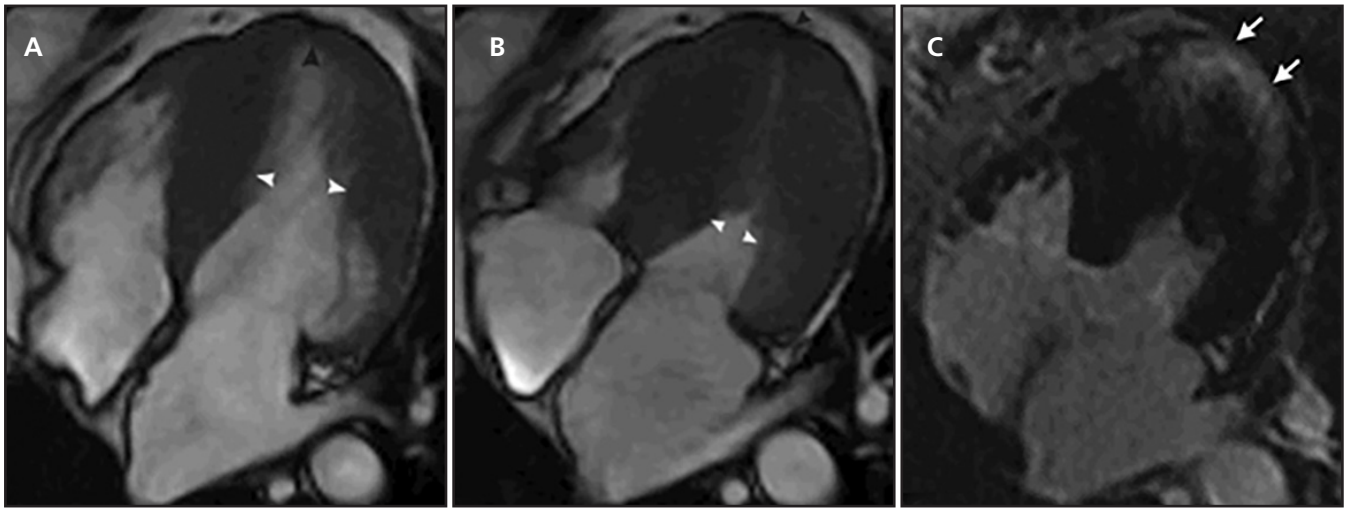

Hypertrophic Cardiomyopathy

A 60-year-old woman presented with chest pain. Echocardiogram was consistent with hypertrophic cardiomyopathy (HCM) and cardiac MRI was requested to better define the pattern of the disease.

EKG-gated cardiac MRI four-chamber views (fast imaging employing steady-state acquisition [FIESTA]) diastole [A] and systole [B] and late gadolinium enhancement [C]) demonstrate marked midventricular hypertrophy (white arrowheads, A and B) with sparing of the apex (black arrowhead). There is marked left ventricular cavity narrowing (B). Confluent subendocardial to midmyocardial circumferential delayed enhancement is present in the midlateral and apical segments (arrows, C). At end diastole, the interventricular septum shows more severe thickening relative to the other segments and myocardial mass is markedly increased. Delayed apical enhancement suggests progression to the "burned out apex" with eventual apical aneurism formation.[1]

Differential diagnostic considerations include athlete's heart, infiltrative cardiomyopathy, and aortic stenosis. The wall thickness in athlete's hearts is less pronounced than that of HCM. Concentric wall thickening found with infiltrative cardiomyopathy and aortic stenosis differs from the predominantly septal thickening found with HCM.

MRI can accurately identify the presence and distribution of myocardial thickening and define the morphological variant of HCM.[2] The most common MR diagnostic feature is left ventricular wall thickness ≥ 15 mm at end diastole.[1] The extent of myocardial fibrosis characterized by late gadolinium enhancement can serve as a predictor of major dysrhythmia.[1]

References

1. Noureldin RA, Liu S, Nacif MS, et al. The diagnosis of hypertrophic cardiomyopathy by cardiovascular magnetic resonance. J Cardiovasc Magn Reson 2012;14(1):17.
2. Gersh BJ, Maron BJ, Bonow RO, et al. 2011 ACCF/AHA guideline for the diagnosis and treatment of hypertrophic cardiomyopathy: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation 2011;124(24):2761-2796.