Importance of Himalayan P waves in hypertrophic cardiomyopathy and atrial fibrillation

A 25-year-old woman with hypertrophic cardiomyopathy, previous myomectomy (performed in 2000) and right atrial tachycardia ablation (performed in 2011) referred for catheter ablation for troublesome persistent atrial fibrillation. The previous resting 12-lead electrocardiogram in sinus rhythm demonstrated tall P waves (>5 mm) in lead V2 and P mitrale in the inferior limb leads (*Figure 1*). The atrial fibrillation electrocardiogram demonstrated high amplitude fibrillation waves in lead V1 (*Figure 2*).

During attempted atrial fibrillation ablation placement of a Deca-polar catheter from the right femoral vein into the coronary sinus was difficult. Multiple trans-septal punctures were attempted, but the catheter could not be positioned in the fossa ovalis because of a grossly dilated right atria (*Figure 3*). The procedure was abandoned because of the high risk of complication. Cardiac magnetic resonance imaging confirmed severely dilated right and left atria (*Figure 4*).

Permanent 'Himalayan' P waves are indicative of abnormal right atrial substrate and are associated with hypertrophic cardiomyopathy and left ventricular hypertrabeculation or non-compaction. **BJHM**

Figure 1. Electrocardiogram in sinus rhythm demonstrating sinus rhythm showed first degree heart block, left axis deviation, left ventricular hypertrophy. Himalayan P (>5 mm) in lead V2 and evidence of P mitrale in the inferior limb leads.

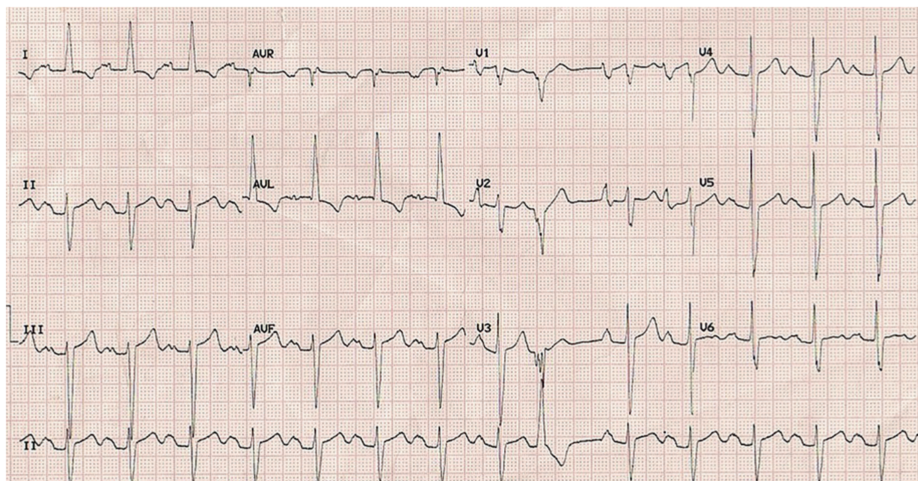


Figure 2. Electrocardiogram in atrial fibrillation demonstrating high amplitude fibrillation waves.

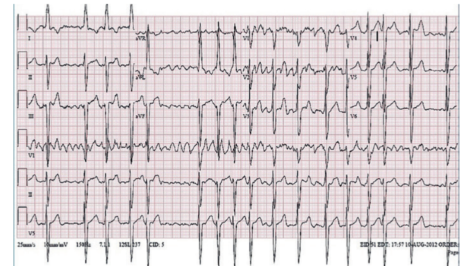


Figure 3. Right atrial angiogram during catheter ablation procedure showing gross dilation. The blue line defines the atria boundary.

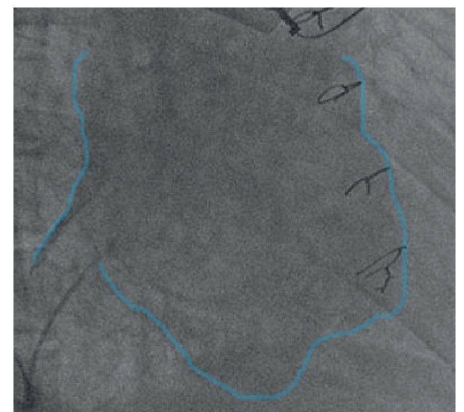
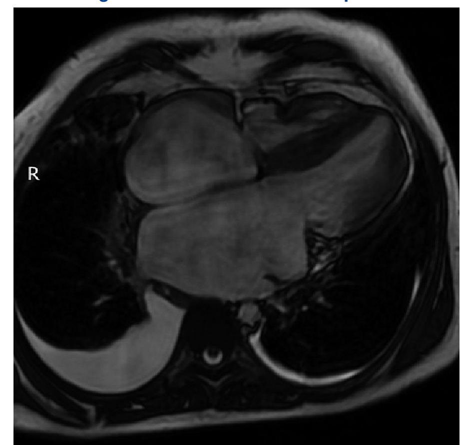


Figure 4. Cardiac magnetic resonance imaging scan (apical four chamber view) demonstrating grossly dilated left and right atria and thickening of the intraventricular septum.



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