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An Unusual Electrocardiographic Finding: Himalayan P Waves

Sıra Dışı Bir Elektrokardiyografik Bulgu: Himalaya P Dalgaları

CASE IMAGE
OLGU GÖRÜNTÜSÜ

A 29-year-old man with no previous medical history was admitted with progressive shortness of breath that had developed over the past two weeks. Upon admission, arterial blood pressure was recorded at 110/65 mmHg, and the heart rate was 80 beats per minute. Physical examination revealed crackles at the base of both lungs and elevated jugular venous pressure. An electrocardiogram (ECG) displayed low QRS voltages in leads DI, DII, DIII, aVR, aVL, aVF, and V_1–V_2, along with biatrial abnormalities characterized by exceptionally tall (particularly in lead V_2 > 6 mm) and wide P waves (Figure 1). Transthoracic echocardiography indicated biventricular hypertrophy, mild pericardial effusion, severe biatrial dilation (Figure 2, Video 1), moderate mitral and tricuspid regurgitation, a restrictive left ventricular (LV) filling pattern, and an elevated pulmonary artery systolic pressure of 59 mmHg. The LV ejection fraction was measured at 50%. Comprehensive cardiomyopathy investigations were negative for hypertrophic cardiomyopathy, amyloidosis, human immunodeficiency virus (HIV), and sarcoidosis. Cardiac magnetic resonance imaging was consistent with restrictive cardiomyopathy (RCMP). Coronary angiography showed normal coronary arteries. Endomyocardial biopsy revealed mild perivascular fibrosis and moderate myocyte hypertrophy. Measurements during simultaneous right and left heart catheterization included a mean right atrial pressure of 23 mmHg, right ventricular pressure of 60/26 mmHg, pulmonary artery pressure of 61/34 mmHg with a mean of 43 mmHg, pulmonary capillary wedge pressure of 35 mmHg, and pulmonary vascular resistance of 272 dynes·second·cm^{-5} (3.4 Wood units). The cardiac index was severely reduced to 1.35 L/min/m^2. Further examinations excluded secondary causes of RCMP, leading to a diagnosis of primary

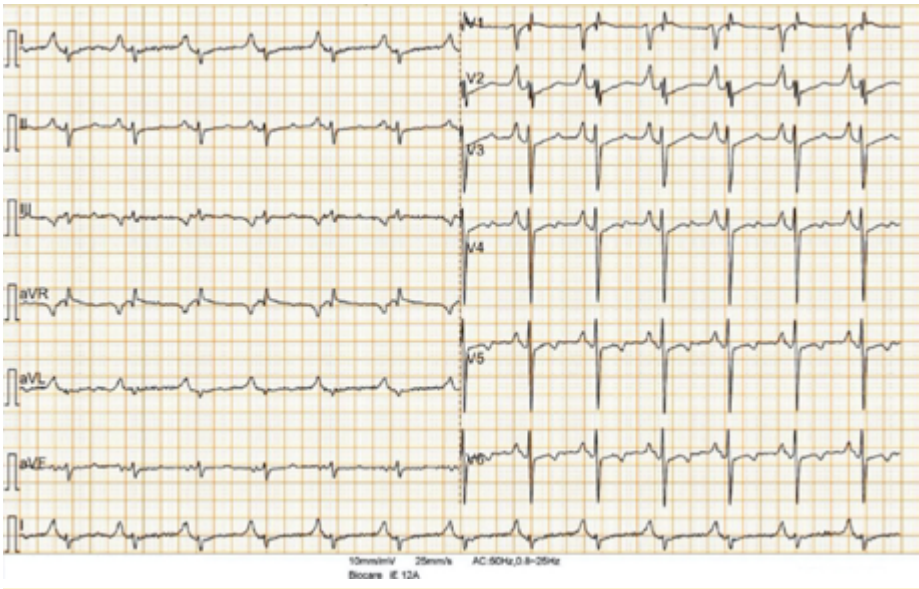

Figure 1. Electrocardiography on admission showing low-voltage QRS in all limb leads and very tall and wide P waves (especially in lead V_2), known as Himalayan P waves.

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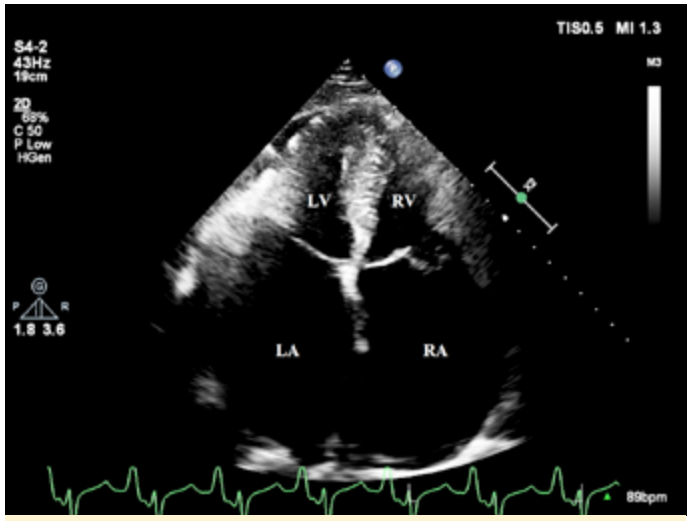

Figure 2. Transthoracic echocardiography from the apical four-chamber view showing severe biatrial dilatation.

RCMP. The patient received intravenous furosemide, showed clinical improvement, and became a candidate for cardiac transplantation. He was discharged without complications.

The prominent (> 5 mm) and peaked P waves, referred to as giant or Himalayan P waves, indicate severe right atrial enlargement. These waves have been identified in conditions such as congenital heart defects, including tricuspid atresia and Ebstein's anomaly, as well as hypertrophic and ischemic cardiomyopathies and chronic obstructive pulmonary disease (COPD). Rarely noted in cases of RCMP, the generation of Himalayan P waves is believed to result from delayed conduction of electrical impulses across a dilated right atrium, producing tall and broad P waves. During exacerbations of COPD, bronchospasm can lead to transient hemodynamic stress and right atrial hypoxia, further increasing the amplitude and peak of the P wave.

This case report emphasizes the utility of basic diagnostic tools such as ECG, which can guide the need for additional advanced testing to investigate underlying cardiac conditions. The presence of Himalayan P waves on an ECG should prompt consideration of significant structural heart disease.

Informed Consent: Written informed consent was obtained from the patient.

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Video 1. Transthoracic echocardiography from the apical four-chamber view showing severe biatrial dilatation.