

Apical Hypertrophic Cardiomyopathy - Masquerade of Acute Coronary Syndrome

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Abstract

Chest pain is the one of the most common reason for adult visits to the emergency department. Screening for life threatening conditions is high priority in these patients; however keeping in mind lesser known yet important etiologies may help triage patients better. Apical Hypertrophic Cardiomyopathy (HCM) is a relatively benign variant commonly seen in East Asian population that may present as acute coronary syndrome and work up in these patients are often similar to coronary artery disease. We discuss in this case report about a middle aged male presenting with chest pain and later found to have apical HCM guided by imaging.

Keywords: Apical hypertrophic cardiomyopathy; Acute coronary syndrome; Echocardiography

Introduction

Acute coronary syndrome (ACS) is a common cause of chest pain with an annual incidence of one million cases. Although it is necessary to rule out several other entities such as pericardial diseases, aortic dissection, pulmonary embolism, pneumothorax, when evaluating someone with ACS, it is also important to consider uncommon etiologies such as Takotsubo stress cardiomyopathy and hypertrophic cardiomyopathy. Here in, we discuss the utility of multi-modality imaging in diagnosing apical hypertrophic cardiomyopathy.

Case Report

A 52 year old Caucasian male with a history of hypertension presented to emergency department with acute onset of chest heaviness and dyspnea on exertion. Medications included amlodipine and aspirin. Cardiopulmonary exam was within normal limits. Cardiac biomarkers were negative. Chest X ray showed cardiomegaly. 12 lead electrocardiogram (EKG) showed sinus rhythm, left ventricular hypertrophy and prominent negative "T" waves in leads I, aVL, V4, V5, V6 (Figure 1). Transthoracic echocardiogram demonstrated apical hypertrophy with apical hypokinesis (Figure 2). Exercise nuclear scintigraphy revealed an abnormal perfusion defect in the distal inferolateral and apical segments with reversibility at rest suggestive of ischemia (Figure 3). Diagnostic cardiac catheterization revealed patent epicardial coronaries. Left ventriculogram revealed 'ace of spade' left ventricle (LV) configuration during systole suggestive of apical hypertrophic cardiomyopathy (Figure 4). Beta blocker was added to this patient's treatment regimen which improved his symptoms.

Discussion

Apical hypertrophic cardiomyopathy (HCM) is a relatively benign form of HCM that is frequently seen in Asian population [1]. Clinically, it resembles acute coronary syndrome in symptomatology (unstable angina, dyspnea on exertion), EKG changes (T wave inversion, ST-T changes), echocardiographic features (apical regional wall motion abnormalities), scintigraphic appearance (perfusion defects with reversible ischemia) [2]. Mismatch between the myocardial oxygen demand and supply explains the clinical presentation, EKG findings and perfusion defects. Left ventriculogram revealed the pathognomonic 'ace of spade' configuration [3]. Contrast administration during echocardiography is helpful in demonstrating the apical hypertrophy.

12 Lead Electrocardiograms

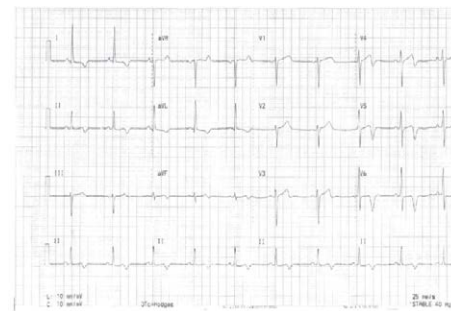


Figure 1: 12 lead electrocardiogram showing prominent T wave inversion in leads I, aVL, V4-V6.

Echocardiogram- Apical 2 Chamber View

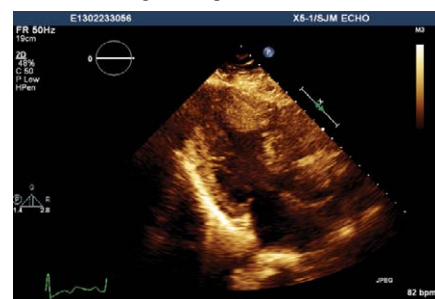


Figure 2: 2 chamber view of transthoracic echocardiogram shows the apical hypertrophy with narrowing of left ventricular (LV) apex. Rest of the LV wall appear normal in thickness.

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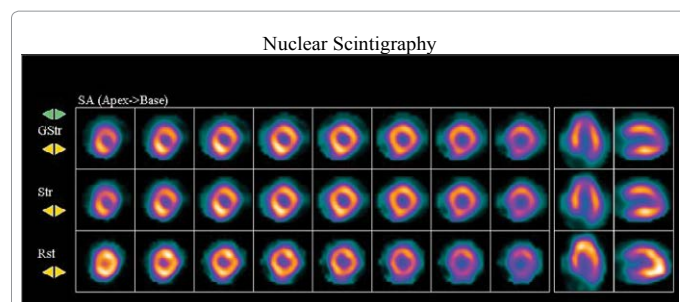


Figure 3: Myocardial perfusion scan demonstrating reversible ischemia in the apical segment of left ventricle seen as a cold spot (white arrows) in the stress (Str) images. The rest (Rst) images shows normal perfusion pattern.

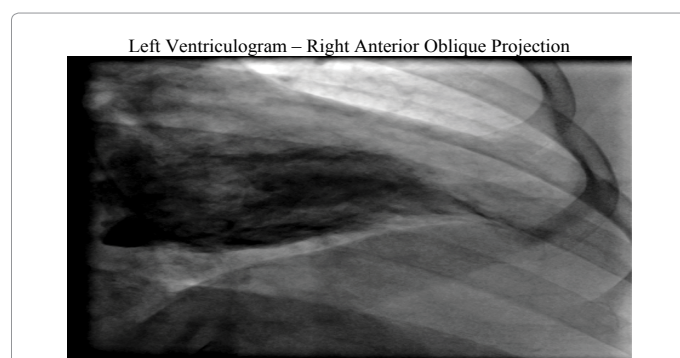


Figure 4: Right anterior oblique (RAO) projection showing the characteristic “ace of spade” configuration of left ventricular apex.

Depth of the giant negative “T” wave does not correlate with severity of apical hypertrophy [4]. Treatment includes beta blockers, calcium channel blockers. Antiarrhythmic drugs or implantable cardioverter-defibrillator may be needed for intractable arrhythmias.

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