



# Papillary Muscle Calcification as a Rare Cardiac Manifestation of $\beta$ -Thalassemia–Related Pseudoxanthoma Elasticum–Like Syndrome

Fethi Gül<sup>1</sup>, Damla Öztürk Efe<sup>2</sup>

<sup>1</sup>Division of Critical Care Medicine, Department of Anesthesiology and Reanimation, Marmara University Faculty of Medicine, İstanbul, Türkiye

<sup>2</sup>Department of Cardiology, Tekirdağ Namık Kemal University Faculty of Medicine, Tekirdağ, Türkiye

A 56-year-old man with a known diagnosis of  $\beta$ -thalassemia was admitted to the gastroenterology department with suspected gastrointestinal bleeding. During clinical follow-up, he developed septic shock and was transferred to the intensive care unit. Transthoracic echocardiography, followed by transesophageal echocardiography for hemodynamic assessment, revealed calcific deposits in the left ventricular papillary muscles, suggestive of calcification (Figure 1a-d).

This unexpected finding was subsequently confirmed by retrospective computed tomography, which provided objective evidence of papillary muscle calcification, while cardiac magnetic resonance imaging served a complementary role for tissue characterization and exclusion of alternative diagnoses (Figure 1e-h).

Cardiac masses and mass-like intracardiac findings are uncommon and may pose diagnostic challenges with important clinical implications.<sup>1</sup> Echocardiography is a widely available, non-invasive imaging modality for assessing cardiac function and structural abnormalities. In selected cases, three-dimensional transesophageal echocardiography can offer superior visualization, enhancing evaluation of these findings.<sup>2</sup>

Extensive papillary muscle calcification is rare, with a heterogeneous etiology often associated with ischemic cardiomyopathy, advanced

age, hypercalcemia, and end-stage renal disease.<sup>3</sup> Reports of extensive papillary muscle calcification identified via echocardiography are uncommon.

Patients with  $\beta$ -thalassemia may develop a pseudoxanthoma elasticum-like syndrome, characterized by degenerative and calcific changes in the cardiovascular system.<sup>4</sup> Degenerative lesions are more frequently observed in the endocardium and valves of patients with  $\beta$ -thalassemia.<sup>5</sup> Previous studies have suggested that impaired ABCC6 function and related pathways may contribute to ectopic mineralization, including a report describing ABCC6 alterations in a patient with extensive papillary muscle calcification.<sup>6,7</sup> However, in the present case, this mechanistic link remains speculative, as genetic confirmation and targeted systemic assessments (dermatologic and ophthalmologic) were not performed.

In our patient, the papillary muscle calcification observed on echocardiography was interpreted as a potential manifestation of systemic mineralization associated with pseudoxanthoma elasticum-like syndrome. These findings highlight the importance of considering systemic mineralization disorders in addition to cardiovascular causes when intracardiac calcification is detected during echocardiographic evaluation.



**Corresponding author:** Fethi Gül, Division of Critical Care Medicine, Department of Anesthesiology and Reanimation, Marmara University Faculty of Medicine, İstanbul, Türkiye

**e-mail:** gulfethi@gmail.com

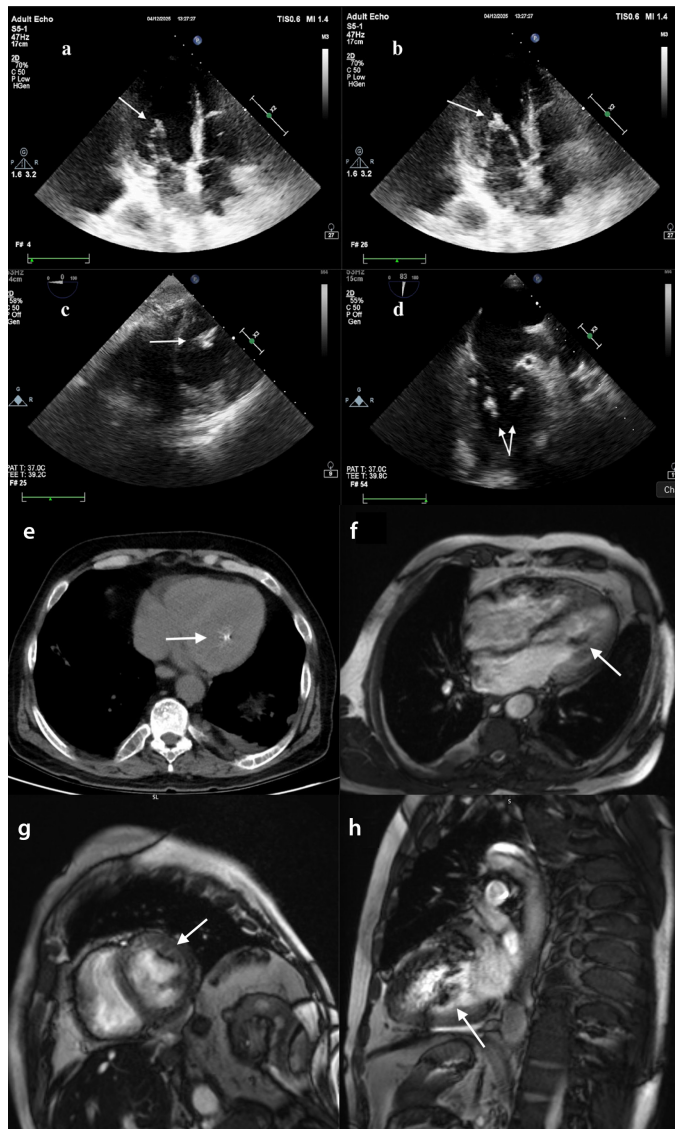
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**ORCID iDs of the authors:** FG. 0000-0002-6426-6436; D.Ö.E. 0000-0001-9102-7548.

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**FIG. 1.** Extensive papillary muscle calcification demonstrated by echocardiographic imaging. (a, b) Transthoracic echocardiography in the apical four-chamber view demonstrating marked echogenic calcific deposits in the papillary muscles. (c, d) Transesophageal echocardiography: (c) 0° transgastric view; (d) modified bicommissural view demonstrating marked echogenic calcific deposits in the papillary muscles. Extensive papillary muscle calcification demonstrated by multimodality imaging. (e) Thoracic computed tomography scan confirming dense papillary muscle calcification. (f-h) Cardiac magnetic resonance imaging demonstrating hypointense calcific areas on multiple pulse sequences.

**Informed Consent:** Written informed consent was obtained from the patient's son.

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