Unusual Doppler finding in fatal right ventricular outflow obstruction caused by lymphoma

Ghais Mirrani1,2, Ghulam Akbar1, Wajeea Saeed3, Shantanu Patil4, and Muhammad Rizwan Sardar1,2*

1Department of Cardiology, Lankenau Medical Center, Mainline Heart Center, Wynnewood, PA 19096, USA; 2Department of Medicine, Thomas Jefferson University, Philadelphia, PA, USA; 3Department of Medicine, Albert Einstein College of Medicine, Bronx, NY, USA; and 4Department of Medicine, Albert Einstein Medical Center, Philadelphia, PA, USA

* Corresponding author. Tel: +1 347 327 2734; E-mail: rizwansardar@hotmail.com

A 57-year-old male presented with dyspnoea, cough, and weight loss for a month. He was in mild respiratory distress and had BP of 90/60 mmHg and heart rate of 130 bpm. CT scan of the chest showed large mediastinal mass compressing the main pulmonary artery, large pericardial effusion, and no pulmonary embolism (Panel A). His BP dropped to 60/30 mmHg, which responded to fluid challenge. Considering impending clinical cardiac tamponade, 330 cm³ straw colour fluid was drained under transthoracic echocardiogram (TTE) guidance. Right ventricular outflow tract (RVOT) obstruction caused by extrinsic mass was found (Panels B and C and see Supplementary data online, Movie S1) with a peak RVOT velocity of 3.3 m/s and gradient of 43 mmHg. There was systolic and diastolic antegrade gradient (peaked at the atrial contraction, red arrow) across the RVOT obstruction, indicating significantly higher pressures in the proximal right ventricular (RV) chamber in systole and diastole avoiding chamber collapse (Panels B and D, see Supplementary data online, Movie S1). Following excision biopsy of the lymph node, patient was hypoxic and therefore intubated. Soon after intubation he had asystolic cardiac arrest and could not be resuscitated. Our case highlights the complex physiology of a patient with RVOT obstruction secondary to a mass, which was found to be a lymphoma on the biopsy. TTE did not reveal classic tamponade physiology of chamber collapse, but there were respiratory variations of ≥25% on tricuspid inflows only (Panels E and F). Positive pressure ventilation in the presence of RV obstruction caused reduced venous return and preload as well as an increase in the afterload with eventual cardiogenic shock and cardiac arrest. However, a sudden increase in the vagal tone during the procedure and vasodilatation due to general anaesthesia could also be potential causes of his cardiac arrest.

Conflict of interest: none declared.

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.

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