LETTER TO EDITOR

Postoperative Hemidiaphragmatic Paralysis and Platypnea-Orthodeoxia Syndrome

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To the Editors

Platypnea-orthodeoxia syndrome (POS) is an uncommon clinical syndrome characterized by dyspnea and hypoxia in the upright position and is most often due to hepatopulmonary syndrome. POS can also, however, result from an intracardiac shunt even in the face of normal intracardiac pressures.¹ We report a case of platypnea-orthodeoxia due to postoperative right hemidiaphragmatic paralysis, which caused right atrial compression and shunting through an atrial septal aneurysm with an associated atrial defect. Written consent was obtained from the patient to discuss this clinical case.

A 67-year-old woman with a medical history of obesity was admitted for persistent hypoxia after resection of a thymoma via a right-sided muscle-sparing thoracotomy. She was found to have platypnea-orthodeoxia with oxygen saturations of 88 to 89% when supine and 80 to 83% when upright. Initial chest radiography revealed right hemidiaphragmatic elevation with a small pleural effusion; computerized tomography (CT) of the chest with contrast on postoperative day (POD) three was only notable for hemidiaphragmatic elevation abutting the right atrium (Fig. 1). With lack of resolution, a transesophageal echocardiogram (TEE) was performed on POD 12, demonstrating compression of the right atria from the diaphragm in addition to a large atrial septal aneurysm with an associated interatrial communication (Fig. 2). Next, a transthoracic echocardiogram (TTE) was performed in the supine and upright positions, revealing a bulging atrial septal aneurysm and a shunt only when upright (Fig. 3). Cardiac catheterization showed normal intracardiac pressures and right atrial compression that shifted the heart leftward and favored blood flow from the inferior vena cava toward the fossa ovalis and atrial septal aneurysm. Percutaneous closure of the defect was performed.

POS results in hypoxia and dyspnea in the upright position due to positional right-to-left shunt unrelated to intracardiac pressure.

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Fig. 1: CT of the chest with pulmonary angiography. Imaging obtained on POD three for persistent hypoxia was negative for pulmonary embolism but was notable for persistent hemidiaphragmatic elevation (left) and abutting the right atrium (right)
Postoperative development of POS is rare and is diagnosed by observing supine-to-upright decrements in pulse oximetry. Shunt should be assessed for via supine and upright echocardiography, utilizing an agitated bubble study with Valsalva maneuver. If no shunt is identified, noncardiac etiologies of POS should be assessed for with respiratory and abdominal imaging. If a shunt is present and imaging is not declarative, cardiac catheterization to assess right atrial pressure should be performed. If normal, postoperative right hemidiaphragmatic paralysis, however, can compress the right atria and point blood toward the preexisting atrial septal aneurysm and interatrial communication.

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anatomic abnormalities that cause POS can be assessed for with radiography, CT, fluoroscopy, or cardiac magnetic resonance imaging. Management emphasizes percutaneous closure of the anatomic defect.

Micah T Long directed the creation of the work and prepared, drafted, and revised the manuscript, including important intellectual content, and approved the final manuscript.

Kaitlin V Bradley prepared and drafted the initial manuscript, critically reviewed the manuscript, provided commentary, and approved the final version of the document.

Jeremy Grate critically revised the manuscript for important intellectual content and approved the final version of the document.

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