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## Introduction

Pulmonary embolism (PE) is rare but catastrophic when it occurs. We present a teenager who presented with PE and a possible rare etiology that has not been described in pediatric patients. Anesthetic considerations with emphasis on team approach will also be discussed.

## Case Report

A 17 year old male presented at an outside ER with shortness of breath and chest pressure. He collapsed and became unresponsive and presented to our hospital where his symptoms resolved.

While in ER, he again complained of chest pain and shortness of breath. Oxygen saturation dropped to 80% and arterial blood gas revealed a PaO<sub>2</sub> of 35 mmHg. Chest radiograph revealed clear lungs and an enlarged azygos vein. CT revealed large bilateral pulmonary emboli. Echocardiogram revealed normal anatomy, moderately dilated RV, mildly diminished RV systolic function, and normal LV systolic function. Interventional radiology (IR), cardiology, heme/oncology, pediatric intensive care, and anesthesiology were consulted. ECMO team was notified and was put on standby. General anesthesia was induced with a combination of small doses of propofol and ketamine and maintained with sevoflurane, fentanyl. IR performed pulmonary angiography and injection of alteplase into both main pulmonary arteries. Clot maceration and partial aspiration was also performed. A thrombolysis infusion catheter was placed for alteplase drip. At the end of the procedure, he had an episode of cardiovascular collapse requiring brief chest compressions and a dose of epinephrine with return of circulation and rhythm. He was transferred to the pediatric intensive care unit.

After normal lower extremity Doppler study and two angiographies showing marked reduction in clots, the indwelling catheter was removed. He was transitioned from heparin to enoxaparin and was discharged home on anticoagulation.

## Discussion:

The patient has situs ambiguus and IVC interruption with azygos continuation. In the literature, there have been demonstrations of DVT (both lower extremity, iliac, and IVC) in both children and adults.<sup>1</sup> There have also been reports of PE with this abnormality in adults but not in children.<sup>2</sup> Since all his workup was negative, the author propose this abnormal anatomy as the culprit for the cause of PE. This seems logical since replacing a large structure (IVC) with a small one (azygos) will have an effect on venous stasis and thrombotic risks. The anesthetic management of these patients should focus on the hemodynamic instability with the possibility of requiring ECMO if total obstruction of blood flow to the lungs occurs or cardiovascular collapse that is unresponsive to medical management. The use of vasopressors depends on the specific problem with pulmonary hypertension and right heart dysfunction/failure in mind. The anesthetic with the least effects on cardiovascular stability should be used. Early communication and clear understanding regarding plan of care amongst the different specialties; IR, cardiology, heme/oncology, and pediatric intensive care, anesthesiology, ER, and cardiothoracic service are of utmost importance.

## References:

1. Annals of Vascular Surgery, 265, 2 (February 2011): 5-8.
  2. Annals of Vascular Disease, 6, 2, (April 2013): 195-197.
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