

Sample PBLD for SCA annual meeting

Severe Pulmonary Hypertension and Noncardiac Surgery – No Need to be Afraid!

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(note current submission process is limited to one PBLD author)

Brief Overview of Case

A 46-year-old man with pulmonary hypertension is presenting for a laparoscopic cholecystectomy with a planned laparoscopic approach. His past medical history includes systemic lupus erythematosus and severe pulmonary hypertension, obstructive sleep apnea, and diabetes mellitus. His body mass index is 51 kg/m² and he is currently using CPAP at night. His medications include Hydroxychloroquine, mycophenolic acid, prednisone, selexipag, and ambrisentan. He has a moderate, but stable, pericardial effusion that is being monitored by echocardiography and computer tomography. At presentation he is WHO functional class III, euvolemic, and he has a 6-minute walk test distance of 312 m.

Transthoracic echocardiogram

He has normal left ventricular systolic function (ejection fraction: 60-65%) and a flattened septum consistent with right ventricular pressure overload. The right ventricle (RV) is severely dilated and the right atrium severely enlarged. The right ventricular systolic function is moderately reduced. The tricuspid annular systolic excursion (TAPSE) is 0.9 cm. Mild to moderate tricuspid regurgitation is noted. Estimated right ventricular systolic pressure (RVSP) is 56 mm Hg. Estimated right atrial pressure is 18 mm Hg.

Right heart catheterization

Pulse: 91 beats/min, systolic blood pressure: 134 mmHg, diastolic blood pressure: 76 mmHg, arterial oxygen saturation: 98%. He has moderate right heart filling pressure (right atrium 16mmHg) and slightly above normal left heart filling pressure (wedge pressure 13 mmHg). The mean pulmonary artery pressure is elevated at 37 mmHg, consistent with pulmonary hypertension. The cardiac index is normal at 4.3 l/min/m². Pulmonary vascular resistance index is 3.9 Woods Units.

Questions

Question 1

- What is pulmonary hypertension and how is it classified (severity and class)?
- How is pulmonary hypertension treated in outpatients?

Question 2

- What is the perioperative mortality risk for patients with pulmonary hypertension?
- Does diminished right ventricular function affect pulmonary arterial pressures?

Question 3

- How can you determine that the patient has been optimized and how can it be achieved?
- Should this patient undergo an open procedure instead?

Question 4

- What monitors will you be using?
- Describe your plan for intraoperative management?

Session Objectives

1. Describe the classification and outline the pathophysiology of pulmonary hypertension
2. Explain perioperative changes that impact pulmonary vascular resistance and right heart function
3. Plan a systematic anesthetic approach to patients with pulmonary hypertension undergoing non-cardiac surgery