

3. Define pulmonary hypertension and describe your initial assessment and management of a patient with known pulmonary hypertension who presents with a lower respiratory tract infection now requiring intubation, mechanical ventilation and cardiovascular optimization.

Significant Pulmonary hypertension (PH) is defined as systolic pulmonary artery > 40 mm Hg or mean PA (mPA) > 25 mm Hg. (normal mPA: 14 +/- 3 mmHg).

Assessment and management of this case centre around:

- the increase in pulmonary artery pressure (PAP's) that occur in this setting,
- as the RV adapts poorly to sudden increases afterload right ventricular failure (RVF), may develop,
- Mortality in this case will most likely be due to progression of compensated RVF to end-stage failure.

Fail

The candidate must speak about right ventricular function and the possibility of RVF to pass this question.

Pass (3)

- Know definition of significant pulmonary hypertension
- Clinical exam.: degree respiratory distress, clubbing, signs RVF, lungs signs
- Start empiric/guided antimicrobial therapy early.
- Arterial line/ABG assess degree of hypoxia/hypercarbia/acidosis, all increase PAP's
- Anticipate need for (1) vasopressors (phenylephrine, noradrenaline) to maintain MAP post intubation, (2) when systemic pressures adequate, dobutamine or milrinone to increase cardiac output. Ideally femoral central line prior to intubation.
- Rapid fluid administration *limited* until invasive or echo-doppler assessment of volume status can be made. When volume status is not clear, it is reasonable to infuse 200 mL of saline over 15 minutes to assess the effect on systemic pressure.
- Anticipate need for iNO post intubation,
- Mechanical ventilation may induce or worsen RVF as elevated transpulmonary pressures increase RV afterload and decrease SV. Low tidal volume and low PEEP best ventilator settings.

Good Pass (4) Above and....

- iNO decreases PVR without increasing intrapulmonary shunting.
- May need IV prostacyclin and NG Sildenafil in due course.
- Patients with chronic PHTN will be anticoagulated.
- Both pulmonary artery catheter and echocardiography to monitor RV.

Excellent (5) Above and

- Understand the underlying cause of PHTN as may be systemic other problems
- Echo signs decompensating RV; dilatation, severe TReg, reduced systolic fxn.