

Expanding the Differential of Hypotension: Acute RV Failure After Intramedullary Nail Fixation Under Epidural Anesthesia

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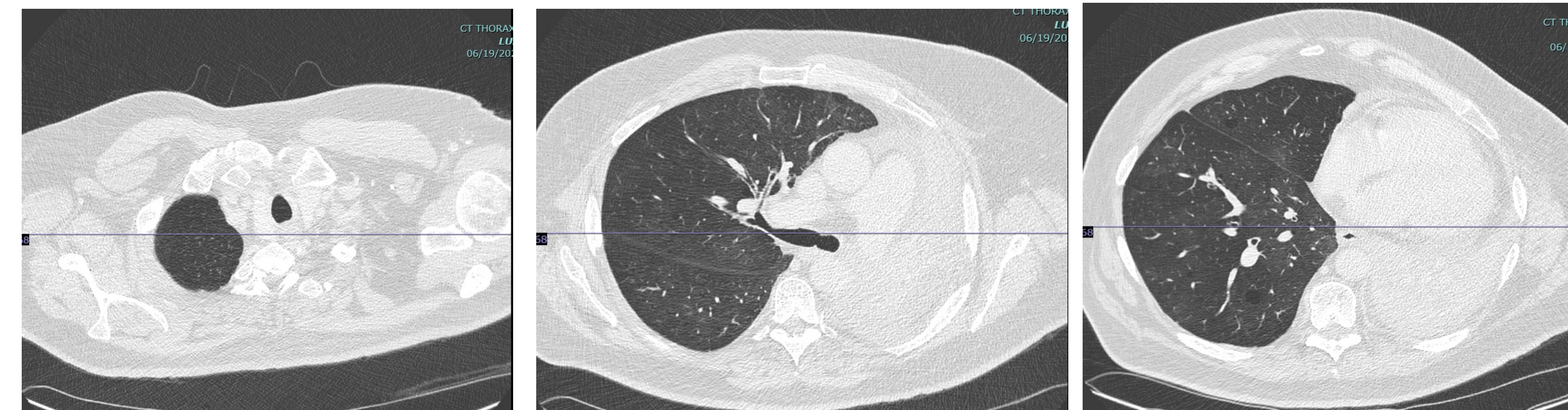
BACKGROUND

- Anesthetic management for patients with cardiac disease undergoing non-cardiac surgery requires careful attention to physiologic, pharmacologic, and surgery-specific factors that can negatively impact cardiac function.
- Patients with pulmonary hypertension (pHTN) face particularly high perioperative morbidity and mortality. Intraoperative hypotension in this group may indicate worsening RV dysfunction.
- Despite preventive efforts, acute RV failure may still occur within a complex clinical scenario

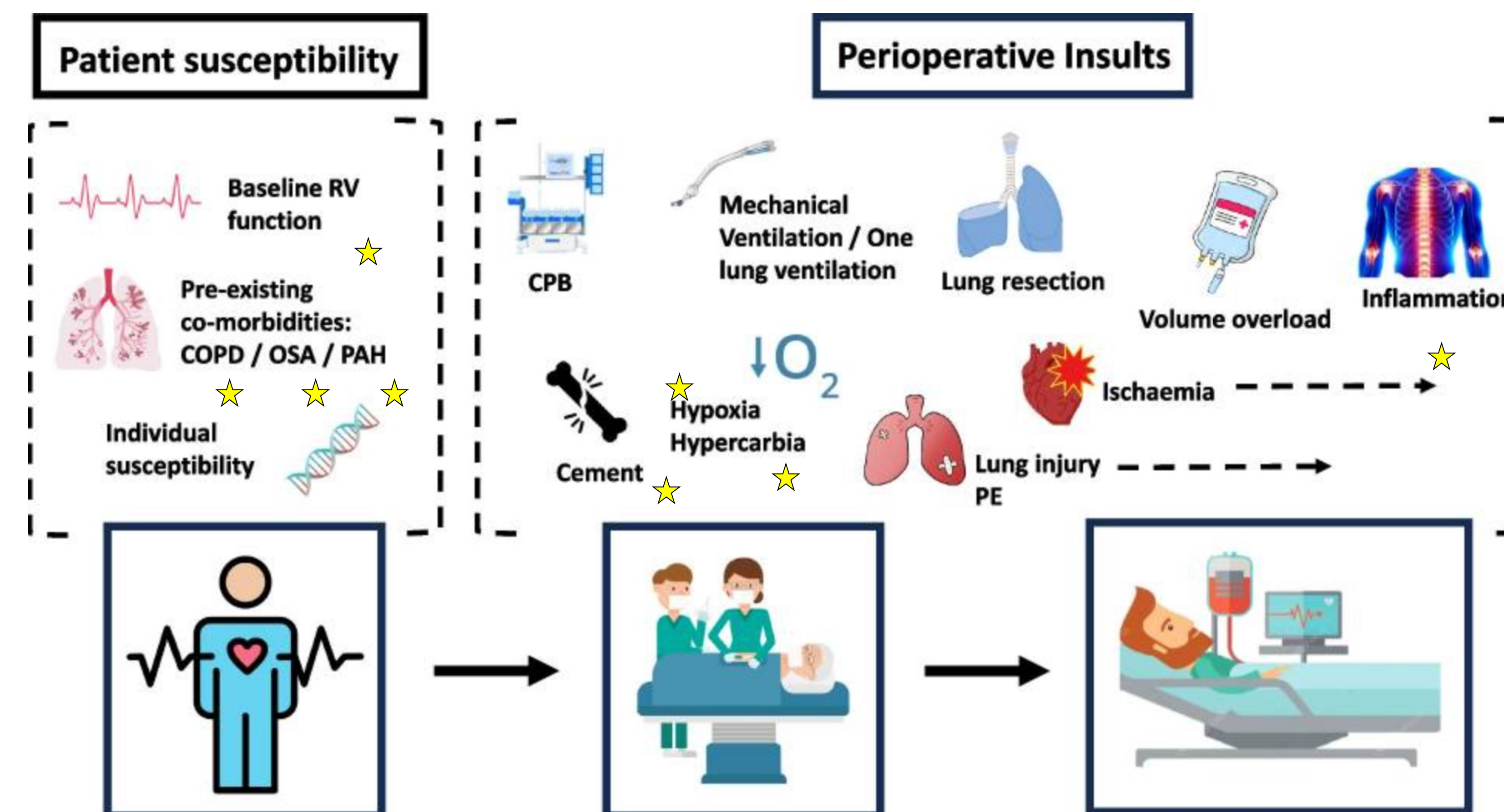
CASE DESCRIPTION

- 60-year-old male with metastatic SCC (lung, bone, brain), severe COPD, OSA, obesity (BMI 38), CAD, pHTN
- Sx: prophylactic intramedullary nail fixation with cement augmentation for impending pathological fracture of L femur causing significant pain and functional limitation
- TTE: EF 65%, enlarged RV with borderline reduced systolic function, septal flattening, small pericardial effusion. Prior PASP≥50mmHg
- CT thorax: bilateral pulmonary metastases, centrilobular emphysema, near-complete left upper lobe collapse with apical effusion, increasing loculated L pleural effusion
- **Anesthetic:** Lumbar epidural + iv sedation (dexmedetomidine, low-dose propofol, intermittent ketamine/ midazolam); spontaneous ventilation; supine with L arm across chest; pre-induction A-line; 4-hour case,
- Downtrending systolic pressures towards case end, acute hypotension after transfer from OR table to stretcher. Good response to epinephrine bolus and vasopressin infusion. Pressors weaned prior to exiting OR
- POCUS minutes after unchanged from baseline. Suspected transient acute RV dysfunction

FIGURES



CT thorax c+ approximately 3 weeks prior



Pre-, intra-, and post-operative risk factors for perioperative right ventricular dysfunction. Adapted from (1)

DISCUSSION

- Elevated risk for perioperative morbidity (2) factored heavily into the anesthetic plan, and mechanical ventilation was avoided due to high likelihood of weaning failure
- Oxygenation was initially supported with nasal CPAP, later face mask and BiPAP, however intermittent apnea and airway obstruction remained a recurring issue
- Lumbar epidural was sufficient for blocking surgical pain, but patient cooperation was difficult due to increasing non-surgical site pain and position intolerance over the prolonged case duration
- Opioid avoidance required deeper sedation, contributing to hypoventilation and hypercarbia. Bone cement use may have contributed to hypotension and acidosis
- Presence of a confluence of risk factors for RV dysfunction towards case end

CONCLUSIONS

- Underlying comorbidities, patient positioning and possibly bone cement use (3) contributed to RV dysfunction and transient acute RV decompensation
- Literature on the incidence of perioperative RV failure in non-cardiac surgery is limited, likely because of the difficulty in assessing its prevalence (4)

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