MAYO CLINIC

SVC SYNDROME: INDUCTION AND INTUBATION IN THE ICU FOR URGENT STENT PLACEMENT

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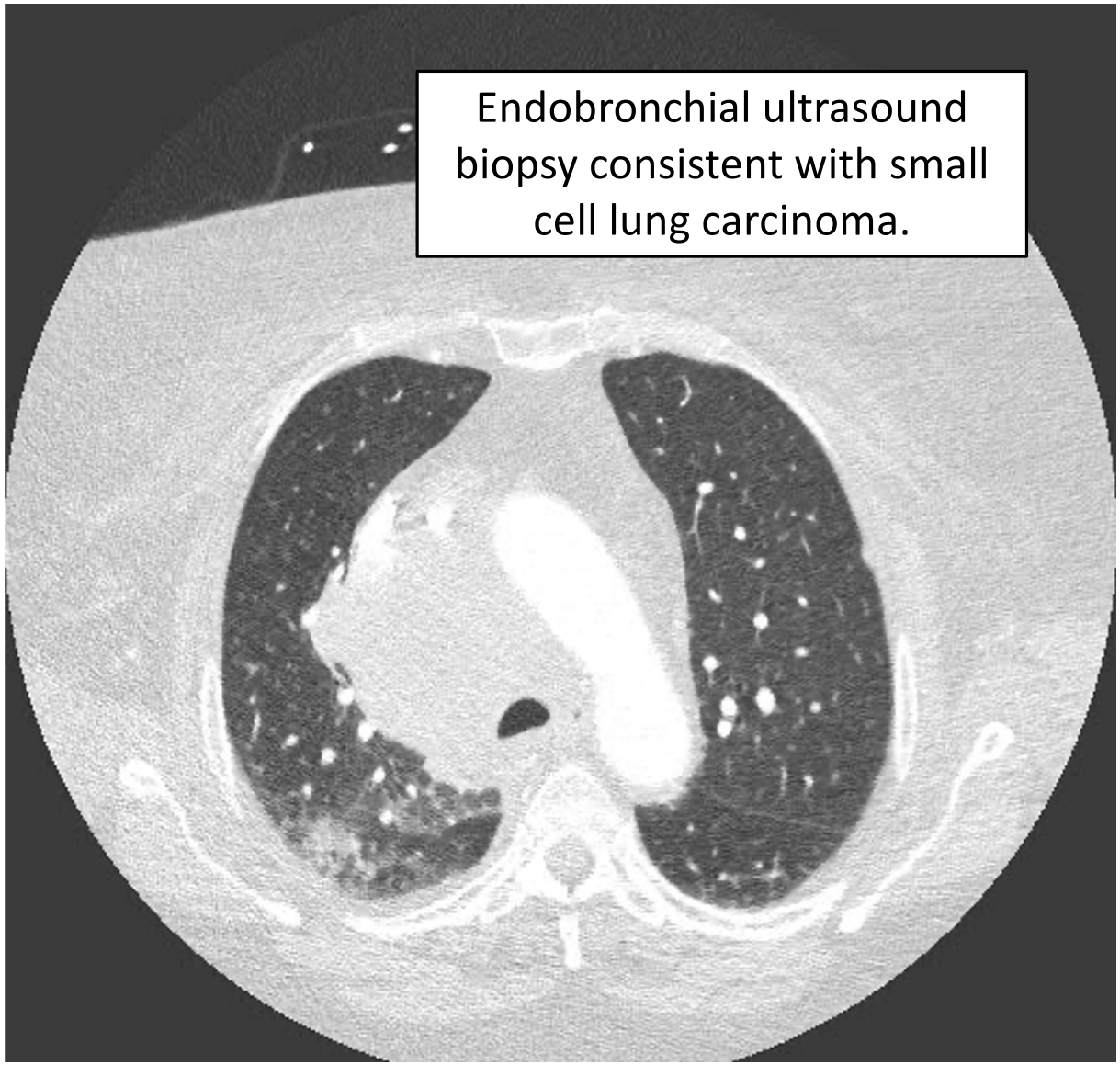
66 yo female, PMHx of COPD, asthma, 40 pack-years, HLD, ADHD, depression, and BMI 37 presented with two weeks of **progressive dyspnea with activity, fatigue, and facial and upper extremity swelling**.

Physical exam:

- Bilateral upper extremity edema, radial pulses intact, face and neck erythema, scattered ecchymosis of upper extremities.
- SpO2 in the low 90s.
- Awake and mentating appropriately.

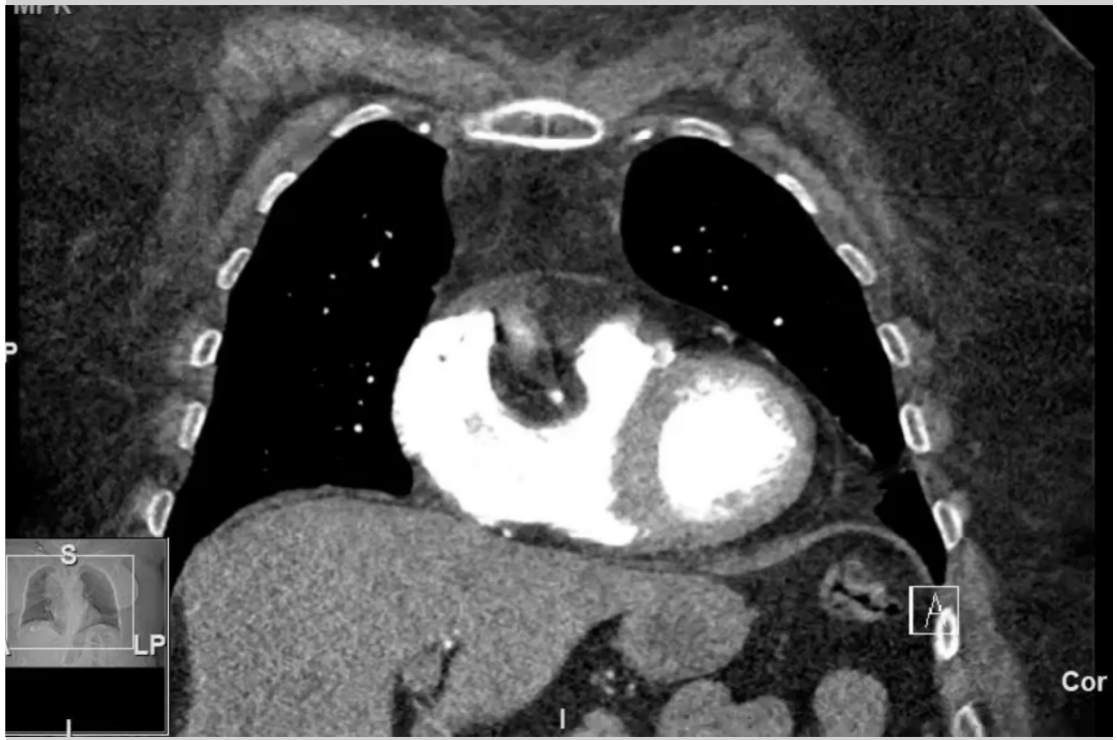
CT chest angiogram in the ED:

- "Purple" laying flat in CT with SpO2 in 60s
- 9.5 x 6.2 x 7.2 cm soft tissue mass
- Invasion of the SVC without complete occlusion
- No definite invasion of the trachea



SVC SYNDROME

- Obstruction to blood flow through the SVC → SVC syndrome
- Causes: mediastinal tumor, thrombus, stenosis
- Presentation:
  - Upper extremity, face, neck, and oropharyngeal swelling, conjunctival edema
  - Dilation of collateral veins in the thorax and neck
  - Dyspnea, cough, orthopnea
  - Severe symptoms: confusion, somnolence, hypotension, stridor



Initially admitted to ICU given small pressor requirement, but transferred to general medicine the following day.

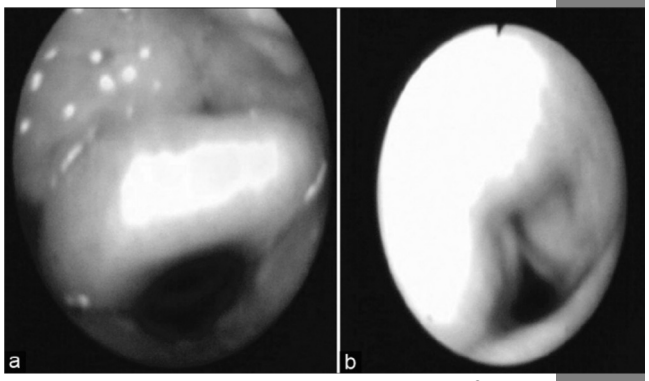
- SVC venography & stenting deferred (inability to lay flat or hold breath)…
- Urgent transfer to ICU with increased work of breathing, cyanosis, hypoxia to the 70s, somnolence

INTUBATION IN THE ICU

- Goal: Fiberoptic intubation with conscious sedation + topicalization with 4% lidocaine nebulizer
- First attempt: Significant pharyngeal edema. Passage of scope through the vocal cords complicated by laryngospasm and desaturation requiring two-handed bag mask ventilation.
- Second attempt (with more sedation and topicalization): uncomplicated, tube positioned 4 cm above the carina
- Total sedatives used: midazolam 5 mg, fentanyl 200 mcg, ketamine 140 mg (through IO line)
- After intubation, sedation with propofol and fentanyl
- Paralyzed with vecuronium 10 mg for ventilator synchronization and to assist with SVC stent procedure (breath holds)

ANESTHESIA CONCERNS FOR SVC SYNDROME

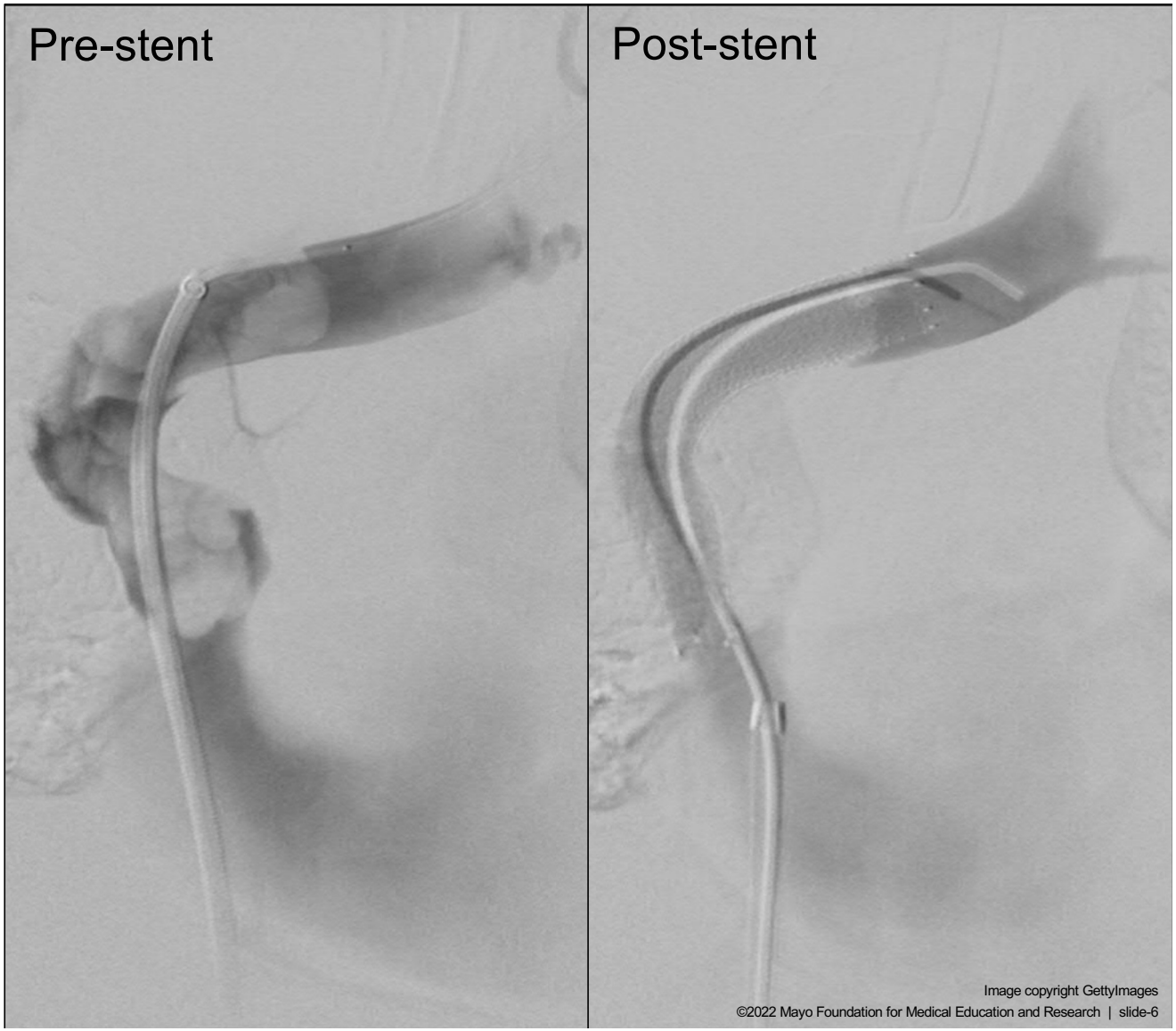
- Maintain spontaneous ventilation:
  - Sedatives and muscle relaxants → risk loss of airway patency
    - Oropharyngeal edema, obstruction from mass = difficulty visualizing glottis during DL
  - PPV → high intrathoracic pressures → reduced preload
- Awake fiberoptic intubation:
  - Ensure tube is placed beyond tracheal obstruction
  - Avoid airway trauma (↑ risk of airway bleeding given venous engorgement)
- Have the patient sitting up:
  - Reduce airway edema
  - Supine → mass shifting can compress airway and great vessels
    - Try laying the patient flat during your pre-op exam to assess
- Ensure reliable IV access:
  - Upper extremity edema and sluggish circulation proximal to SVC obstruction
  - Place IVs in lower extremities
- Femoro-femoral CPB established under local anesthesia
  - Mediastinal mass may distort airway such that successful fiberoptic intubation is unlikely



Chaudhary et al., Anesthetic management of superior vena cava syndrome due to anterior mediastinal mass. *J Anaesthesiol Clin Pharmacol*. 2012;28(2):242-246.

VENOGRAM AND STENTING

“Malignant obstruction of the SVC extending into the innominate veins treated with a 13 mm x 10 cm Viabahn self-expanding covered stent from the large caliber left innominate vein to the upper right atrium. Pressure gradient decreased from 19 mmHg to 3 mmHg.”



SOURCES

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Q&A