ONCOLOGIC EMERGENCIES

SUPERIOR VENA CAVA (SVC) OBSTRUCTION

(Last updated: 01/16/2020; Reviewer: Bibek Karki, M.B.B.S)

PRESENTING COMPLAINTS: Swelling of the face and upper extremities, SOB, chest pain

FINDINGS

- **A** Check airway
- **B** ↑/N RR, stridor
- **C** N BP
- **D** Variable altered (V,P,U,D)*
- **E** Swelling over the extremities, cyanosis, facial plethora
- **Lpc** PT, aPTT
- **U_{PC}** Venous congestion and thrombus in the subclavian, axillary, and brachiocephalic veins

***V** (verbal), **P (**pain), **U** (unconsciousness), **D** (delirious)

U_{PC} (point of care ultrasound) **L_{PC}** (point of care labs)

DEFINITION

Superior venacava (SVC) syndrome is a constellation of signs and symptoms due to partial or complete obstruction of blood flow through the SVC.

PATHOPHYSIOLOGY

Obstruction occurs either by a thrombus inside the SVC or more commonly compression or direct invasion from outside. The obstruction leads to increase venous pressure proximal to the vessel and edema in areas drained by the SVC. There is an initial transient decrease in cardiac output due reduced venous return from the upper body; however, this is usually dampened by development of collateral flow. Thus, persistent drop in cardiac output is likely related to direct compression of the heart by the mass causing the SVC obstruction.

OTHER HISTORY

Signs and Symptoms: Distended neck veins, difficulty swallowing, hoarseness, cough, facial swelling or fullness often exacerbated by leaning forward; If cerebral edema is present: headache, confusion, coma

ETIOLOGY AND DIFFERENTIAL DIAGNOSIS

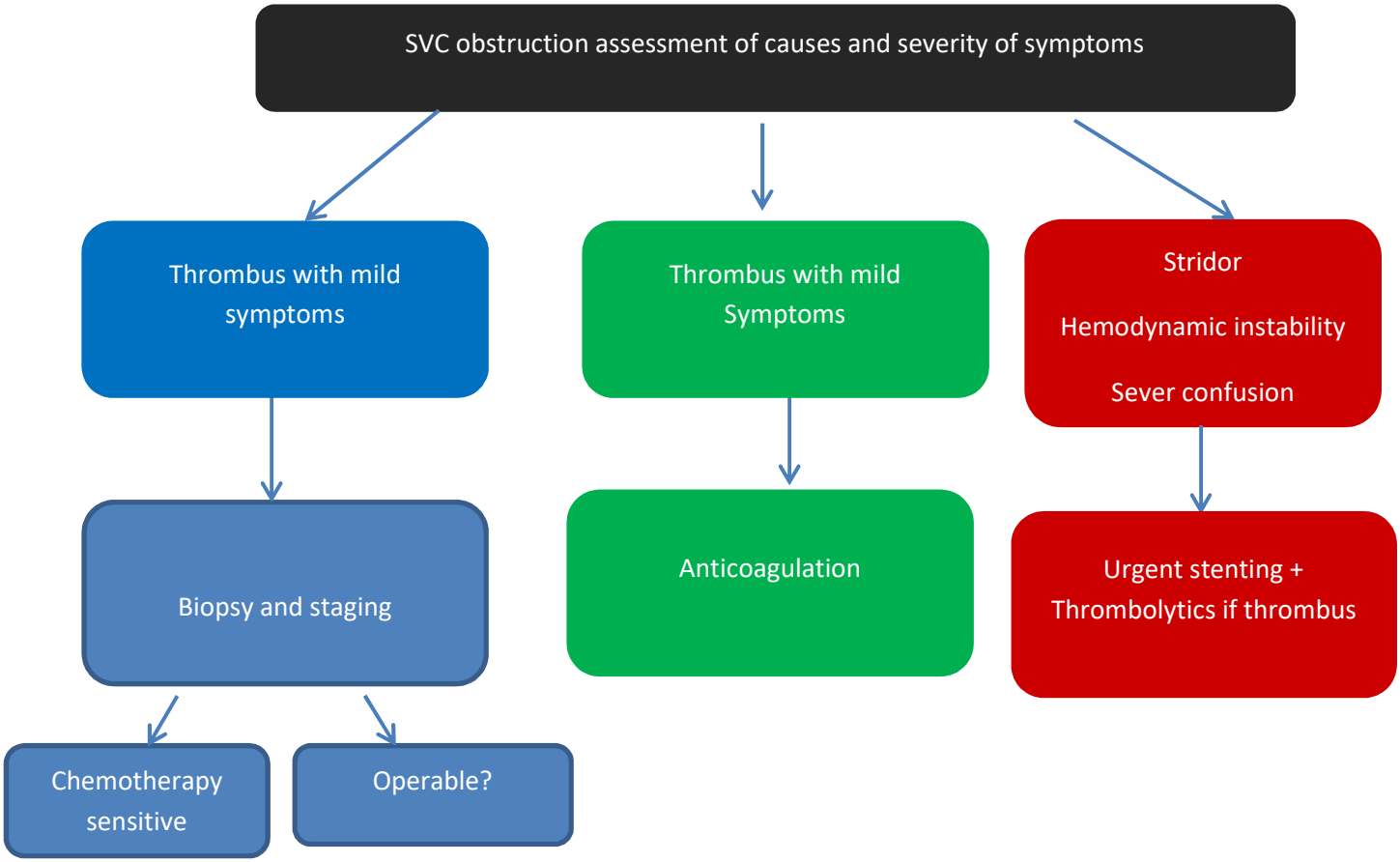
Lung cancer (high incidence in SCLC), Non-Hodgkin's lymphoma, thymoma, primary mediastinal germ cell tumors, thrombosis, fibrosing mediastinitis, radiation induced fibrosis

OTHER INVESTIGATIONS

- Labs: Tumor markers (eg, HCG, AFP for patients with germ cell tumors), ↓Hb, ↓WBC, ↓Platelets, ↑ Ca, ↑Uric acid ↑ serum LDH
- Coagulation study: Prothrombin time (PT), activated partial thromboplastin time (aPTT)
- Imaging:
  - Chest x-ray can show the underlying cause and widened mediastinum.
  - CT scan with contrast: more sensitive and specific than chest x-ray.
  - Duplex ultrasonography of upper extremity indirectly shows findings suggestive of SVC obstruction.
  - MRI venography in patients allergic to contrast.
  - Superior vena cavogram (Gold standard)

THERAPEUTIC INTERVENTIONS

- Depends on the underlying symptoms, etiology, extent of disease and prognosis.
- Emergent therapy is required in patients who presents with respiratory failure due to airway obstruction, laryngeal edema and cerebral edema. This usually involves stenting of the vessel.
- Immediate radiation therapy used to be the modality of choice because SVC obstruction was dealt with as a medical emergency. However, the obstruction most of the time develops over weeks; moreover, the radiation will negatively impact any biopsy results and affect diagnosis. For this reason, it is not recommended as an emergent therapy.
- Endovenous stenting has replaced radiation therapy for the most part in patient who are severely symptomatic and require immediate treatment.
- Anticoagulation is indicated in patients who have a thrombus as the etiology of the obstruction.
- Thrombolytic therapy is used in certain occasions but comes with a high risk of bleeding.
- Chemotherapy is the treatment of choice in symptomatic patients with small cell lung cancer, Non-Hopkins lymphoma and thymoma.
- Steroids can be used to reduce swelling and to treat steroid responsive malignancies like lymphoma and thymoma.



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