

Superior Vena Cava Syndrome

Superior vena cava syndrome is a collection of symptoms resulting from an obstructed superior vena cava. It can result from extraluminal compression by tumors or intraluminal obstruction by thrombosis. It may present with upper extremity and facial edema as well as venous engorgement of the upper extremity, face, and chest. Increased intracranial pressure is a severe finding. The diagnosis is clinical and management is based on treating the underlying etiology.



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Characteristics

Obstruction of Superior Vena Cava

Obstruction-by-rocks Super Vine Cave

The superior vena cava transports blood from the head, neck, upper extremities, and upper chest to the right atrium. Obstruction in this large vessel can result in several symptoms and may constitute a medical emergency. It should be treated immediately if airway obstruction or cerebral edema are present.

Tumor

Tumor-guy

SVC syndrome most commonly occurs because of compression due to a mediastinal mass. Malignancies are frequently found (60-70%) but benign tumors have also been reported, too.

Thrombosis

Trombones

Thrombus formation in the superior vena cava can result in blockage of blood flow that can lead to superior vena cava syndrome. This etiology is mostly associated with the usage of indwelling intravascular devices including catheters, pacemakers, and implantable cardioverter-defibrillators (ICDs). Other factors may also contribute to thromboses such as inflammation and hypercoagulability.

Clinical Features

Upper Extremity and Facial Edema

Upper Extremity and Face Edamame

The superior vena cava is connected to the left and right brachiocephalic veins which collect blood from the head, neck, and upper extremities. By obstructing the superior vena cava, blood can build up back to the head causing edema of the face (facial plethora) and edema of upper extremities. Jugular venous distention (JVD) can also occur because of the connection between jugular veins and brachiocephalic veins.

Venous Engorgement over Upper Extremity, Face, and Chest

Vines Engorged Over Upper Extremities, Face and Chest

A large buildup of blood in the superior vena cava can result in massive engorgement of the veins of the upper extremity, face, and chest. These may show visible dilation and tortuosity in the skin.

Increased Intracranial Pressure

Up-arrow Pressure-cooker Cranium

Excess collection of blood in the head can increase intracranial pressure (ICP) which can increase the risk of aneurysms and their rupture. This can also lead to venous stroke. This condition is rare, but headache, cerebral edema and papilledema should be considered a medical emergency.

Management

Treat Underlying Disorders

Treating the Underlying Disorders

Based on clinical diagnosis, management should begin by elevating the patient's head to reduce the amount of congestion at the top of the body. Further management is to treat the underlying disorder of SVC syndrome. If it is caused by a thrombus due to an indwelling intravascular device, removal should be the choice. Anticoagulation therapy and catheter-directed thrombolysis should be considered during the removal. If it is due to a malignancy, chemotherapy and radiotherapy should be given as indicated. Endovascular stenting is widely considered to be useful.