

Superior Vena Cava Syndrome Due to Catheter-Associated Thrombus

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CASE PRESENTATION

A 56-year-old woman with past medical history of recurrent diffuse gastric adenocarcinoma, hypertension, gastroesophageal reflux disease (GERD), and anxiety presented to the emergency department with a chief complaint of dizziness and nausea for 12 hours. Upon arrival, she reported additional dyspnea, blurry vision, and a sore throat. On examination, the patient's skin was discolored with a blanching purplish appearance that extended from the face to the nipple line [Figure 1]. The patient had not noticed this prior to her visit, but upon showing her a photo of her face, she was surprised by the marked discoloration and swelling of her face and neck. In addition to her facial and neck plethora, periorbital edema and supraclavicular fullness were noted.

At the time of presentation, the patient was undergoing a FOLFOX (leucovorin, fluorouracil, and oxaliplatin) and nivolumab chemotherapy regimen for recurrent diffuse gastric adenocarcinoma via a right chest port catheter.

Computed axial tomography (CT) revealed a peri-catheter thrombus in the superior vena cava (SVC) as well as pre-occlusive stenosis at the cavoatrial junction. CT and venogram of the brain were clear with no anastomoses or intracranial abnormalities.

The patient was diagnosed with SVC syndrome, caused by a catheter-associated thrombus in the SVC. Heparin was started for anticoagulation, and intravenous dexamethasone was administered to reduce inflammation. The patient's head was elevated to 45 degrees to facilitate draining of fluid from her face and neck. The patient was admitted to the internal medicine service and the following day, the interventional radiology team performed mechanical thrombectomy with tissue plasminogen activator (tPA) pulse dose infusions [Figure 2].

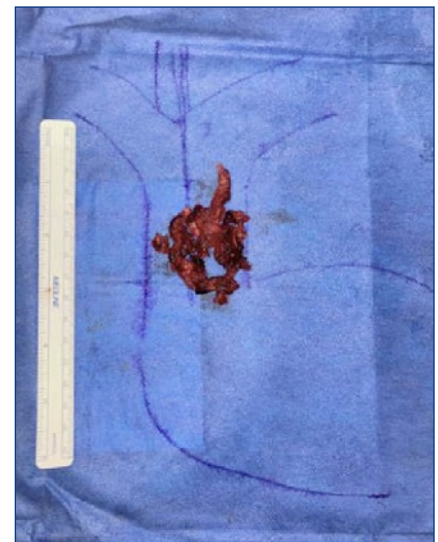
Figure 1. Upper Extremity and Facial Plethora

Facial, neck, and upper extremity plethora and purplish discoloration noted upon presentation to the ED. Note the color difference between the patient's face and abdomen.



Figure 2. Venous Clot

SVC venous clot removed by Vascular and Interventional Radiology (VIR) via venography and mechanical thrombectomy with tPA pulse dose infusion.



After the thrombectomy, the patient reported marked improvements in her dizziness, headache, and blurred vision, and her face, neck, and upper chest returned to her typical coloration. She was discharged home on apixaban. Her right chest port was determined ready for immediate use and she continued her FOLFOX chemotherapy infusion cycles.

SUPERIOR VENA CAVA SYNDROME

SVC Syndrome occurs when blockage of the vein occurs due to compromised vessel anatomy, diminished vessel wall integrity, or impaired venous flow, often due to a thrombus. In the US alone, about 15,000 estimated cases of SVC syndrome occur each year.¹

Approximately 70% of cases of SVC syndrome are associated with malignancy.² Device-related SVC syndrome comprise almost 30% of cases and occurs when fibrin deposits build up on the surface of the intravascular device,

embedding the device into the vessel wall and leading to inflammation, fibrosis, stenosis of the vessel, and eventual thrombus formation.² Device-associated thrombosis is the most common noninfectious complication of implantable venous access devices.³

SVC syndrome most commonly presents with swelling of the face, neck, and upper extremities, facial plethora, dyspnea, dizziness, cough, and distension of collateral neck and chest veins. CT imaging with venous phase contrast is the most practical and accessible method for diagnosis, with venography as the gold standard.² Once a diagnosis has been made, treatment options include anticoagulation via heparin infusion followed by oral medications, surgical bypass grafting, endovascular interventions (angioplasty, stenting, thrombus removal), and chemotherapy, depending on the etiology of the SVC obstruction.⁴ Initial management also commonly includes elevation of the patient's head to facilitate venous draining, as well as glucocorticoids or diuretic agents to help reduce inflammation.² For device-associated thrombosis, device removal is recommended (unless the device is required and well-functioning), followed by anticoagulation and catheter-directed thrombolysis or thrombectomy.³

References

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