



Case Report

Superior vena cava syndrome masquerading as an allergic reaction ☆,☆☆

Abstract

Patients are often referred to the emergency department for further evaluation, yet the astute physician will maintain a broad differential to avoid anchoring on prior diagnoses. In this case, a 56-year-old man was referred to our emergency department from the radiology suite secondary to concerns for an “allergic reaction” to prior magnetic resonance imaging contrast. Upon presentation, he was noted to have facial swelling with ruddy appearance and vascular congestion extending to the midchest region; no airway compromise or dyspnea was noted. He had a smoking history and recent diagnosis of brain mass, which, combined with his current appearance, was concerning for superior vena cava syndrome. A chest x-ray that demonstrated right mediastinal mass was ordered, and a computed tomographic scan confirmed compression of the superior vena cava. A brief discussion on the history, etiologies, presentation, and evaluation of superior vena cava syndrome is discussed.

Patients are frequently referred to the emergency department (ED) by outside physicians for further evaluation and treatment. A broad differential is required during the initial patient assessment to avoid anchoring on any prior diagnosis. In this case, we report a 56-year-old man who was referred from the radiology suite secondary to concerns for an “allergic reaction” to magnetic resonance imaging (MRI) contrast that was ultimately diagnosed as superior vena cava syndrome (SVCS) secondary to lung cancer. A brief discussion on the history, etiologies, presentation, and evaluation of SVCS follows.

A 56-year-old male smoker presented to the ED from the radiology suite with rash concerning for allergic reaction to previous MRI contrast a week earlier. The patient had sustained a fall 2 weeks prior, with workup significant for left cerebellar mass on computed tomographic (CT) scan. Magnetic resonance imaging revealed a cystic-appearing mass in the lateral aspect of the left cerebellar hemisphere. Shortly thereafter, the patient developed a chest rash sus-

pected to be an allergic reaction to the MRI contrast. Evaluation by the neurosurgeon revealed concern for metastatic disease secondary to patient’s smoking history and referred the patient for CT of the chest, abdomen, and pelvis. He was premedicated with diphenhydramine and prednisone; however, he took the medication sooner than instructed. Upon his presentation to the CT scanner, it was noted that he had facial swelling without airway compromise and chest rash. The CT was not performed secondary to concerns for allergic reaction to contrast and the incorrect timing of prophylactic medication. The patient was sent to the ED for evaluation.

Upon presentation to the ED, the patient was a well-appearing man in no distress. His vital signs were as follows: a temperature of 36.6°C (97.9°F), a blood pressure of 128/83 mm Hg, a pulse rate of 114 beats/min, a respiratory rate of 18 breaths/min, and an oxygen saturation of 100% on room air. Physical examination was notable for diffuse facial swelling with ruddy appearance and raspy voice. The rash was nonpruritic and blanching. Some areas appeared as violaceous plaques on the upper chest, which we interpreted as dilated cutaneous vessels with vascular congestion extending from the face down to the midchest region (Fig. 1). Examination of the heart, lungs, and abdomen were otherwise unremarkable. Based on smoking history, recent findings of brain mass, and current appearance, we had a strong suspicion for SVCS. Chest x-ray was ordered revealing a right mediastinal mass (Fig. 2). After reassuring the radiology personnel that the rash was *not* an allergic reaction, a CT of the chest, abdomen, and pelvis with contrast was obtained, which revealed a large mass of the right mediastinum compressing the superior vena cava and right pulmonary artery plus multiple left upper lobe nodules and left adrenal mass (Fig. 3). The patient was admitted for further evaluation and palliative chemotherapy.

Superior vena cava syndrome is a constellation of signs and symptoms resulting from obstruction of the superior vena cava that occurs in approximately 15 000 people annually in the United States [1]. It was originally described in 1757 by a Scottish physician, William Hunter, in a man afflicted with a syphilitic aortic aneurysm [2]. Historic causes of SVCS were usually of an infectious etiology, such as tuberculosis or syphilis. Currently, 60% to 90% of cases are attributable to malignant causes, most commonly lung cancers or lymphoma [3,5]. Other emerging etiologies include thrombosis secondary to indwelling central venous devices or pacemaker leads and hypercoagulable states [3–5].

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Fig. 1 Photograph of patient's "rash" revealing vascular congestion of the neck and chest.

From an anatomical perspective, blood return from the head, arms, and upper torso is carried by the superior vena cava to the heart. Superior vena cava syndrome occurs when this blood flow is impeded, as with extrinsic compression by masses of the middle or anterior mediastinum or via intraluminal occlusion secondary to thrombosis stemming from intravascular devices or a hypercoagulable state. As a result, blood is diverted to collateral vasculature, which may take weeks to develop. Thus, symptom severity depends up the rapidity of onset and site of the obstruction. Symptoms of SVCS include facial or neck plethora, arm swelling, dilated chest veins, chest pain, dyspnea, lightheadedness, dizziness, or syncope; orthopnea is typically present, and facial plethora may be exacerbated when supine [1,3-5]. Although the physical appearance may be startling, SVCS is not considered a medical emergency, unless symptoms suggestive of

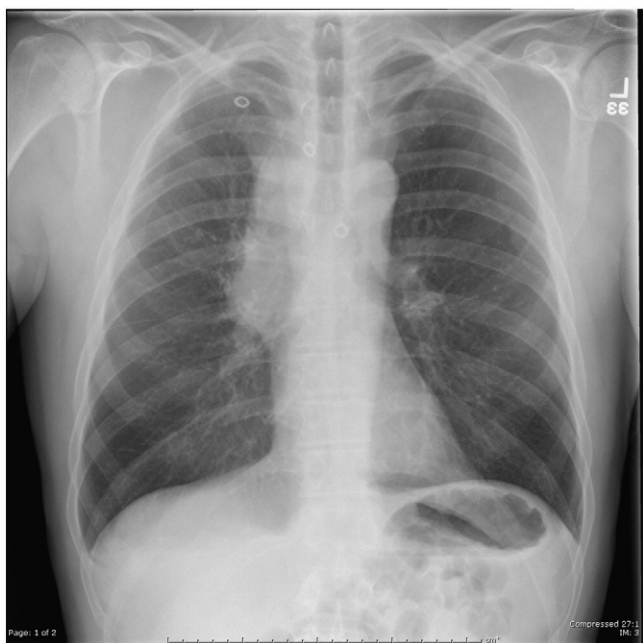


Fig. 2 Chest x-ray with the presence of a right mediastinal mass.

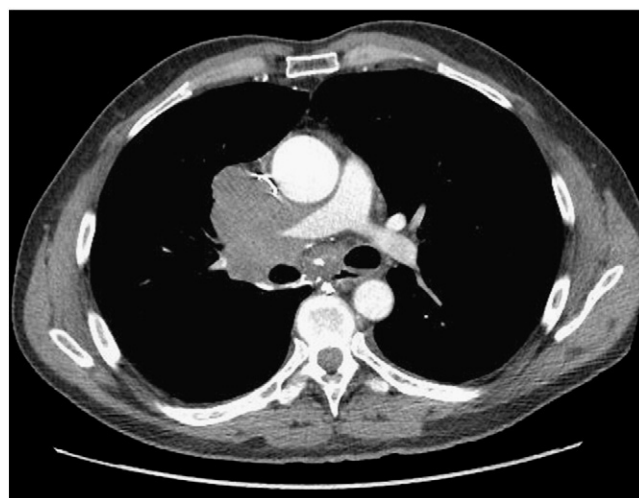


Fig. 3 Computed tomographic axial image demonstrating a large right hilar mass.

laryngeal edema (eg, stridor, hoarseness, cough, dysphagia, and dyspnea) or cerebral edema (eg, headache and confusion) are present and require rapid intervention [1,5].

When a patient presents with SVCS, a thorough history should be obtained. Information related to the duration of symptoms, medical history including malignant conditions or hypercoagulable states, current medications, and previous intravascular procedures should be elicited. A chest x-ray should be obtained to evaluate mediastinal masses, followed by a CT scan of the chest with contrast to better evaluate the superior vena cava, such as the level and cause of obstruction. If the mass is malignant in nature, a tissue biopsy is necessary. Diagnostic studies should be initiated before treatment, except in those cases with neurologic or respiratory compromise. Treatment is aimed at the underlying condition. Palliative therapy for SVCS may include elevating the head of the bed, oxygen, steroids, or diuretics; however, controlled studies are lacking [1,5].

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