

Introduction

Azygos vein thrombosis is an extremely rare finding. Comprehensive literature search reveals most cases secondary to underlying aneurysms, infections, IV drug use, underlying malignancy or abnormal azygous / inferior vena cava. However, spontaneous cases of azygous vein thrombosis have not yet been documented in literature.

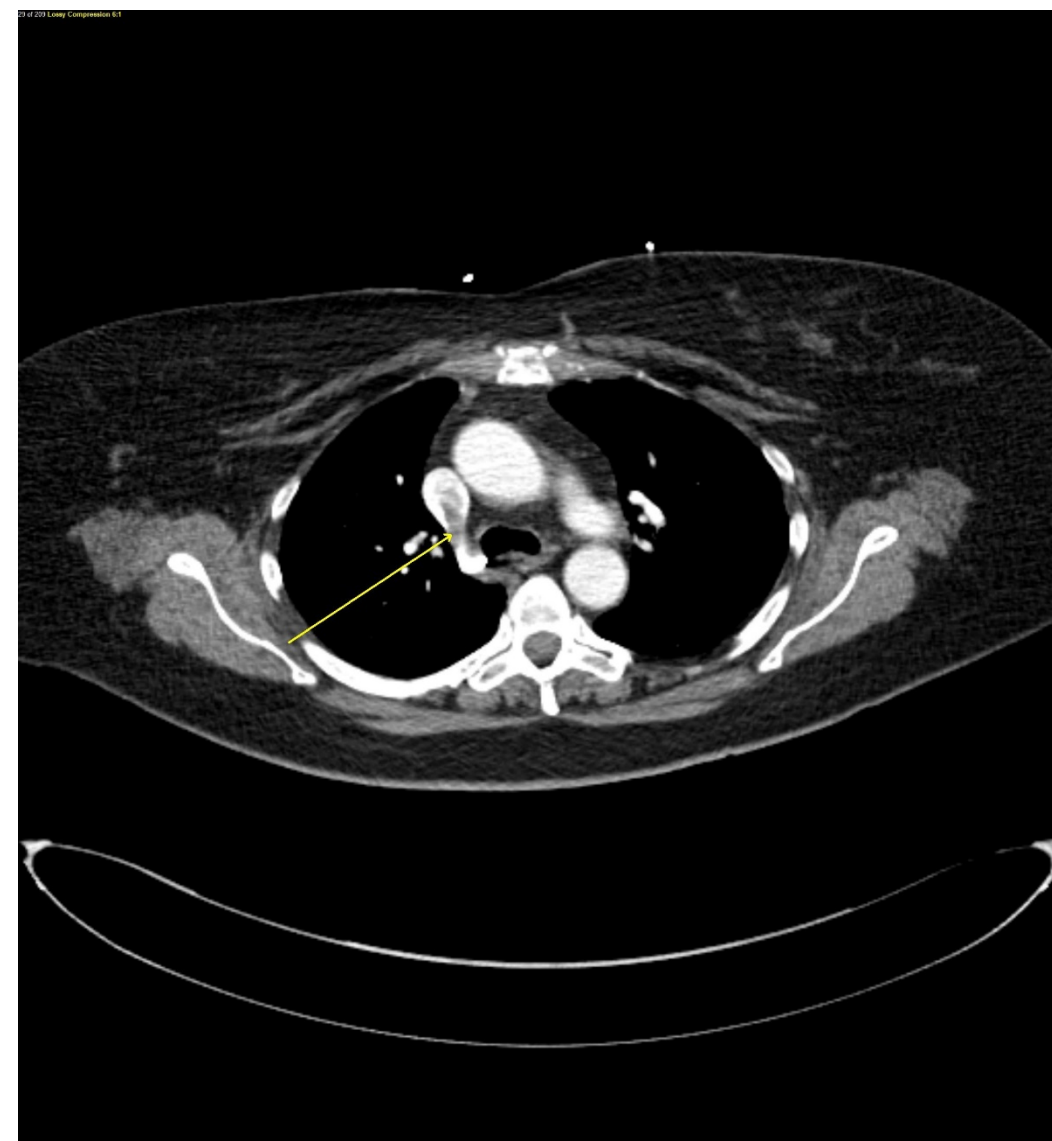
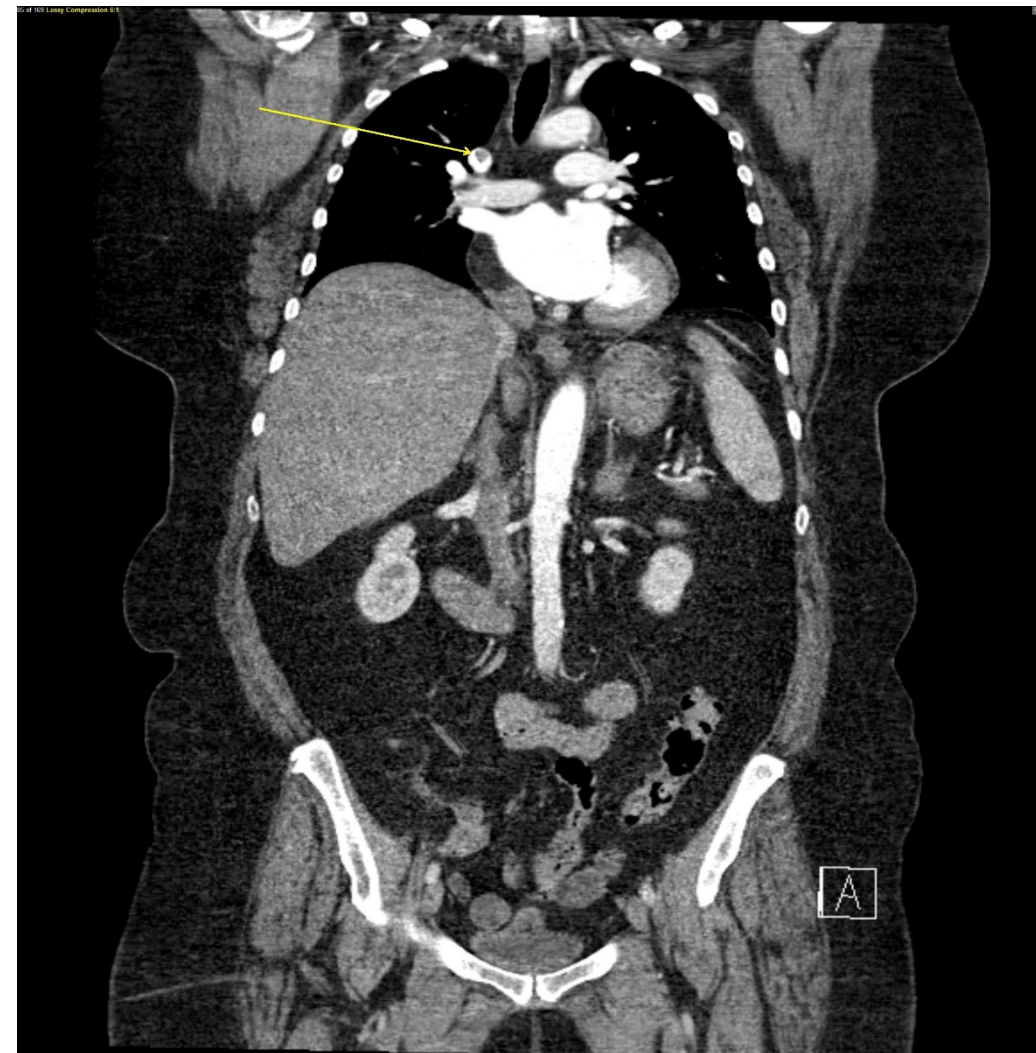
Case Presentation

We present the case of a 64-year-old obese female of BMI 35 with no past medical history of malignancy or family history of any hypercoagulable diseases. She presented with interscapular back pain, in the T2-T3 region, with radiation towards the right scapula for 4 days. Concurrently, she had pain in the back of her thighs, which had spontaneously resolved after taking Tylenol. However, pain between her shoulder blades persisted.

On presentation in the emergency department, patient's blood pressure was elevated in the 190s systolic and 100 diastolic. Her initial high-sensitivity troponin at 5, peaked to 55. EKG disclosed some nonspecific ST wave changes. Her CBC, CMP, PT, INR, and APTT were all within normal limits.

CT chest with contrast disclosed a tubular filling defect involving the azygos vein extending into the superior vena cava, raising suspicion for venous thrombosis. CT of the abdomen and pelvis disclosed right hepatic lobe hypodense regions suggestive of multiple versus large hemangiomas. MRI of the liver with hemangioma protocol disclosed a 5.1 x 6.9 x 3.4 cm right hepatic lobe lesion compatible with large hepatic hemangioma. Echocardiogram with bubble study was negative for atrial shunting at baseline or with agitated saline provocation.

Treatment was immediately started with heparin drip after consultation with interventional radiology. Her symptoms soon subsided after initiation of anticoagulation and troponin resolved to a 6. Patient was discharged on Eliquis with recommendation for coagulopathy workup in the outpatient setting, age-appropriate cancer screening, and follow up for monitoring of hemangioma.



Figures 1 & 2: Coronal and axial views of tubular filling defect involving the azygos vein extending into the SVC suspicious for venous thrombosis.

Discussion

- In this patient, azygos vein thrombosis may have certainly been the cause of her upper back pain considering its anatomic location. The azygos vein originates from the ascending lumbar veins and right subcostal vein, the posterior aspect of the inferior vena cava at the level of the renal veins, or as a continuation of the right subcostal vein. It then ascends through the aortic hiatus coursing along posterior thoracic vertebral column at the right side of T4 to drain into the superior vena cava. The azygos vein is most often known for its collaterality to drain blood from the brachiocephalic vein to the inferior vena cava in the setting of a superior vena cava obstruction secondary to most commonly a lung mass, lymphoma or intravascular thrombosis. Azygos vein dilatation can also be associated with congestive heart failure, pericardial effusion, portal hypertension, and pulmonary embolism. These conditions can predispose to thrombosis.
- Thrombosis of the azygous vein is a rare finding in medical literature. Reported cases of azygos vein thrombosis were associated with risk factors commonly associated with thrombosis including PICC line insertions, hypercoagulable conditions such as antiphospholipid syndrome and COVID19 infection, bacterial infections/abscesses. This patient was obese however did not have other predisposing risk factors that could lead to thrombosis, such as prolonged immobility, known malignancy, recent surgery or infection, hormonal therapy, personal or family history of hypercoagulable disease, and catheter insertions. A predisposing factor of AV thrombosis also includes aneurysm, which can be due to hemodynamic pathophysiology such as congestive heart failure, or obstructive lesions compressing the azygos vein.
- The etiology of her thrombosis is unprovoked. Patient did have an incidental finding of a hypodense area in the liver, for which further work up with contrasted MRI revealed hepatic hemangioma. There has been few case reports of DVT/PE suspected to be secondary to inferior vena cava compression by hepatic hemangiomas. However, this pathophysiology was not appreciated on this patient's CT, and so the etiology of her thrombosis remains unknown.

References

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