



UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
MICHIGAN MEDICINE

AMSER Case of the Month

August 2023

60-year-old male patient with a 1-month
history of shortness of breath, fatigue, and
facial swelling

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Patient Presentation

- **HPI:** 60-year-old patient presented to cardiology clinic with a 1-month history of dyspnea, fatigue, facial swelling and redness, and occasional dizziness. The cardiologist ordered an in-office echocardiogram. Based on those results the cardiologist informed the patient to present to a local emergency department immediately.
- **PMHx:** Atrial fibrillation, Basal Cell Carcinoma s/p Mohs procedure, Type II Diabetes, Hypertension, Hyperlipidemia
- **Pertinent Medications:** Rivaroxaban (misses occasional doses)

On arrival to the ED

Vitals:

- Blood Pressure: 117/73
- Pulse: 86
- Temp: 98.4 F
- Resp: 12
- SpO2: 93% on arrival, 97% on remeasurement

PE:

- (+) Erythema to face
- (+) Trace edema bilaterally
- Otherwise, unremarkable

Labs:

- **WBC: 10.3**

What Imaging Should We Order?

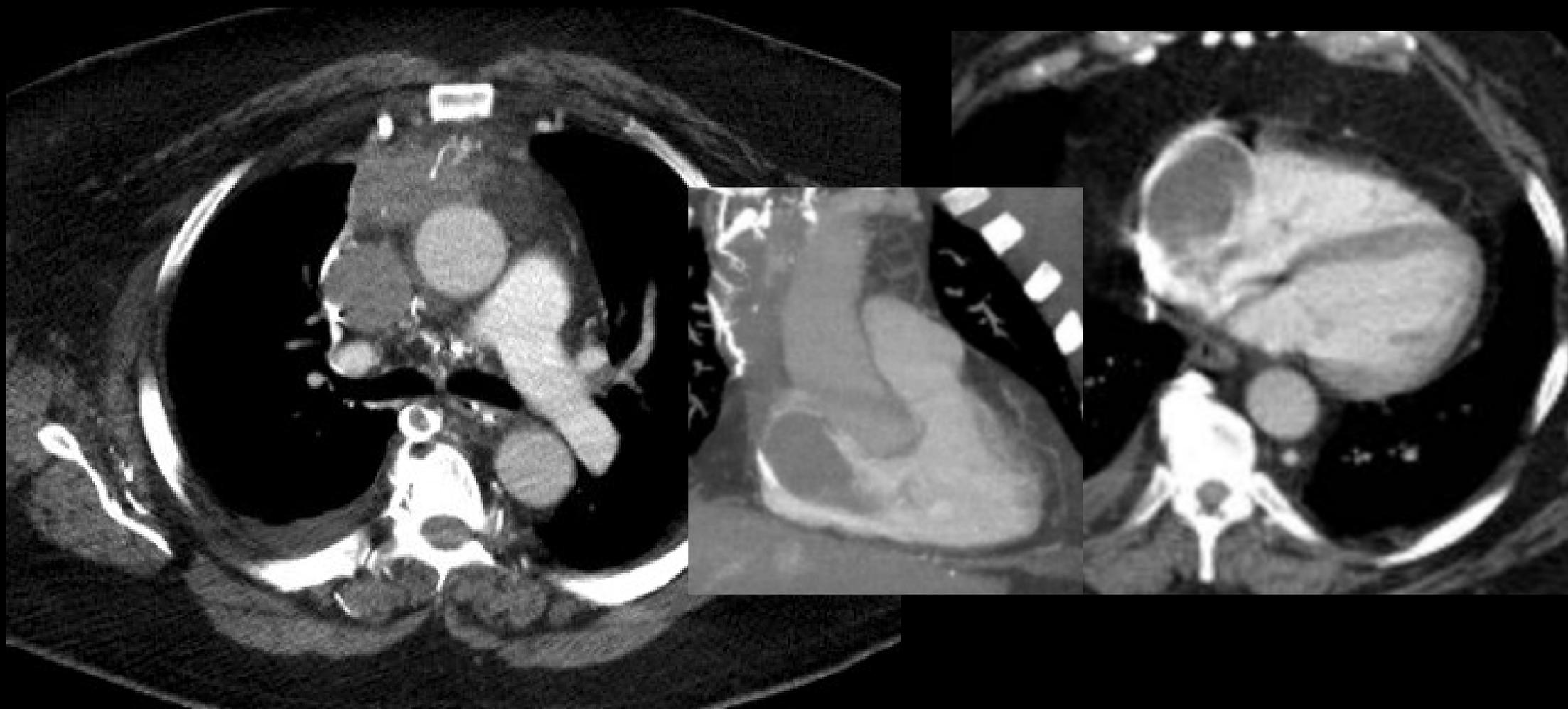
Select the applicable ACR Appropriateness Criteria

Variant 3: Suspected pulmonary embolism. High pretest probability. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CTA pulmonary arteries with IV contrast	Usually Appropriate	⊕⊕⊕
V/Q scan lung	Usually Appropriate	⊕⊕⊕
US duplex Doppler lower extremity	May Be Appropriate (Disagreement)	○
US echocardiography transthoracic resting	May Be Appropriate	○
MRA pulmonary arteries without and with IV contrast	May Be Appropriate	○
US echocardiography transesophageal	Usually Not Appropriate	○
Arteriography pulmonary with right heart catheterization	Usually Not Appropriate	⊕⊕⊕⊕
MRA pulmonary arteries without IV contrast	Usually Not Appropriate	○
CT chest with IV contrast	Usually Not Appropriate	⊕⊕⊕
CT chest without and with IV contrast	Usually Not Appropriate	⊕⊕⊕
CT chest without IV contrast	Usually Not Appropriate	⊕⊕⊕
CTA chest with IV contrast with CTV lower extremities	Usually Not Appropriate	⊕⊕⊕
CTA triple rule out	Usually Not Appropriate	⊕⊕⊕

This imaging modality was ordered by the ER physician due to suspected PE

Findings (unlabeled)



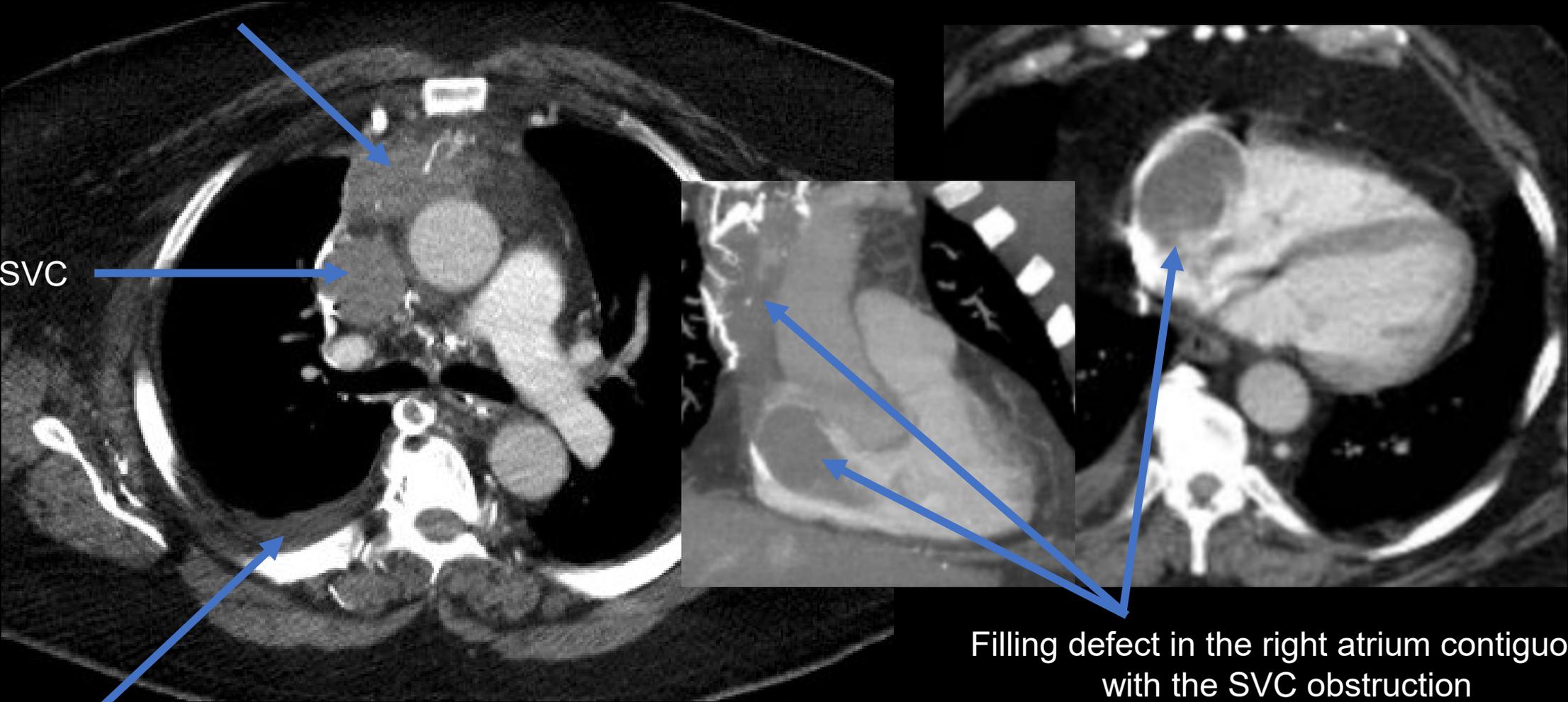
Findings (labeled)

Anterior mediastinal mass

Occluded SVC

Small right pleural effusion

Filling defect in the right atrium contiguous with the SVC obstruction



Final Dx:

Superior Vena Cava Syndrome due to a
Thymoma

Causes of SVC Syndrome

Malignant

- Non-Small Cell Lung Cancer (most common)
- Small Cell Lung Cancer
- Non-Hodgkin Lymphoma
- Thymoma
- Primary Mediastinal Germ Cell Tumor
- Metastatic

Non-Malignant

- Thrombosis (including central venous catheter induced)
- Post Radiation Fibrosis
- Infection
- Fibrosing Mediastinitis

Treatment For Our Patient

Radical thymectomy was performed with pathology showing positive margins and involvement of local structures.

Right atrial and SVC thrombectomy was also performed and the patient discharged on anticoagulants.

Given positive margins and findings concerning for distant metastatic disease (images not shown) chemoradiation versus radiation followed by systemic therapy is being considered.

Thymoma

Approximately 400 people per year are diagnosed with thymoma. These tumors are generally considered slow growing.

Associated with paraneoplastic disorders (5 most common are: myasthenia gravis, pure red cell aplasia, good syndrome, lichen planus and limbic encephalitis)

Imaging Findings:

Well defined, round/oval, lobulated soft tissue mass

May contain calcifications or areas of necrosis

Can invade into adjacent vascular structures and the lungs

Metastatic disease most commonly occurs to the pleura

Imaging Differential Diagnosis for anterior/prevascular mediastinal mass:

- Thymic in origin (thymoma, cyst, carcinoma, hyperplasia)
- Lymphoma
- Germ Cell Tumor
- Related to thyroid or parathyroid glands (retrosternal extension of thyroid, neoplasms)
- Other (neuroendocrine tumor, sarcomas)

References

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- [Murad V, Kim EE. 18F-FDG PET/CT Evaluation of Thymomas: a Pictorial Review. Nucl Med Mol Imaging. 2021 Aug;55\(4\):186-193. doi: 10.1007/s13139-021-00705-7. Epub 2021 Jun 22. PMID: 34422129; PMCID: PMC8322217.](#)
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