

# AMSER Case of the Month

## September 2020

### Chest Mass

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# Patient Presentation

- **HPI:** 57 y/o F presented with chest pain and weight loss
- **PMH:** emphysema, chronic bronchitis, osteopenia, myocardial infarction, hypercholesterolemia, dysmenorrhea, duplication of cervix
- **PSH:** Cardiac catheterization (2006)
- **Social Hx:** 40 pack-years
- **Medications:** aspirin, atorvastatin, furosemide, potassium chloride, lorazepam, albuterol, prochlorperazine, ondansetron, ibuprofen, acetaminophen, cyclobenzaprine, gabapentin, oxycodone, dexamethasone
- **Vitals:** BP 102/82, HR 105, Temp 98°F (36.6 °C), RR 18, SpO2 100%
- **PE:** respiratory effort normal and breath sounds normal


# Pertinent Labs

- CBC
  - WBC 9.38
  - RBC 3.63 ↓
  - Hgb 10.1 ↓
  - Hct 30.8 ↓
  - MCHC 32.8 ↓
  - Platelets 455 ↑
- PFT Interpretation
  - **Spirometry:** moderate air flow obstruction
  - **Flow Volume Loop:** suboptimal but suggestive of obstruction
  - **Lung Volumes by Body Plethysmography:** mild-moderate hyperinflation and significant air trapping by RV
  - **Diffusion Capacity by Single Breath Carbon Monoxide:** severely decreased

		Ref	Pre	% Ref
<b>Spirometry</b>				
FVC	Liters	2.68	2.63	98
FEV1	Liters	1.98	1.42	72
FEV1/FVC	%	74	54	
FEF25-75%	L/sec	2.44	0.53	22
FEF50%	L/sec	3.07	0.84	27
FEF75%	L/sec	1.01	0.18	18
PEF	L/sec	5.30	2.57	48
FET100%	Sec		11.06	
FIVC	Liters	2.68	2.14	80
FIF50%	L/sec		0.89	
MVV	L/min	94	51	54
<b>Lung Volumes</b>				
TLC	Liters	4.11	5.48	133
VC	Liters	2.68	2.63	98
IC	Liters	1.74	1.42	81
FRC PL	Liters	2.61	3.96	152
ERV	Liters	0.87	1.12	128
RV	Liters	1.49	2.85	191
RV/TLC	%	37	52	
<b>Diffusing Capacity</b>				
DLCO	mL/mmHg/min	20.3	8.2	40
DL Adj	mL/mmHg/min	20.3	8.2	40
DLCOVA	mL/mHg/min/L	4.67	2.28	49
VA	Liters		3.60	
IVC	Liters		1.97	

What Imaging Should We Order?

# Select the applicable ACR Appropriateness Criteria

Imaging modality  
ordered 

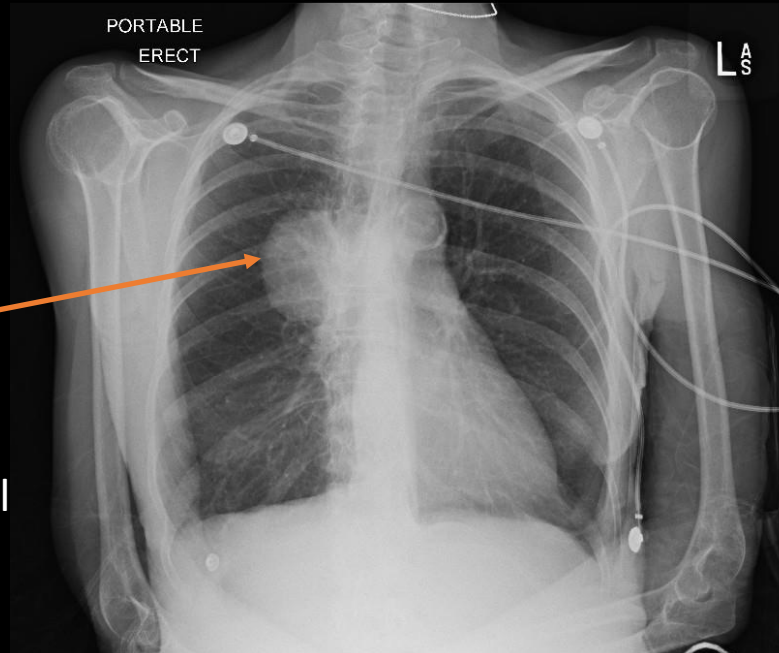
American College of Radiology ACR Appropriateness Criteria® Acute Nonspecific Chest Pain-Low Probability of Coronary Artery Disease		
Variant 1: Acute nonspecific chest pain; low probability of coronary artery disease. Initial imaging.		
Procedure	Appropriateness Category	Relative Radiation Level
Radiography chest	Usually Appropriate	⊕
CTA coronary arteries with IV contrast	Usually Appropriate	⊕⊕⊕
US echocardiography transthoracic resting	May Be Appropriate (Disagreement)	○
Radiography ribs and thoracic spine	May Be Appropriate	⊕⊕
CT chest with IV contrast	May Be Appropriate	⊕⊕⊕
CT chest without and with IV contrast	May Be Appropriate	⊕⊕⊕
CT chest without IV contrast	May Be Appropriate	⊕⊕⊕
CTA chest with IV contrast	May Be Appropriate	⊕⊕⊕
V/Q scan lung	May Be Appropriate	⊕⊕⊕
US echocardiography transesophageal	Usually Not Appropriate	○
US echocardiography transthoracic stress	Usually Not Appropriate	○
Arteriography coronary	Usually Not Appropriate	⊕⊕⊕
Fluoroscopy barium swallow and upper GI series	Usually Not Appropriate	⊕⊕⊕
MRA chest without and with IV contrast	Usually Not Appropriate	○
MRA chest without IV contrast	Usually Not Appropriate	○
MRA coronary arteries without and with IV contrast	Usually Not Appropriate	○
MRA coronary arteries without IV contrast	Usually Not Appropriate	○
MRI heart function and morphology without and with IV contrast	Usually Not Appropriate	○
MRI heart function and morphology without IV contrast	Usually Not Appropriate	○
MRI heart with function and inotropic stress without and with IV contrast	Usually Not Appropriate	○
MRI heart with function and inotropic stress without IV contrast	Usually Not Appropriate	○
MRI heart with function and vasodilator stress perfusion without and with IV contrast	Usually Not Appropriate	○
Nuclear medicine scan gallbladder	Usually Not Appropriate	⊕⊕
CT heart function and morphology with IV contrast	Usually Not Appropriate	⊕⊕⊕⊕
SPECT or SPECT/CT MPI rest and stress	Usually Not Appropriate	⊕⊕⊕⊕

# Findings (unlabeled)

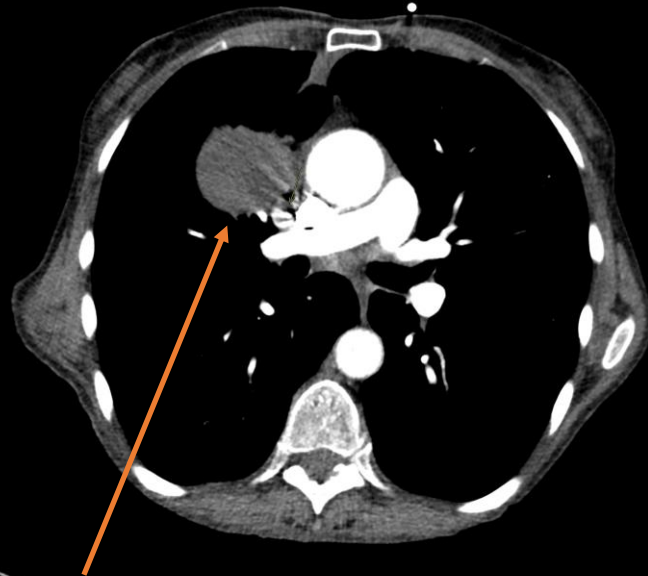


# Findings (labeled)

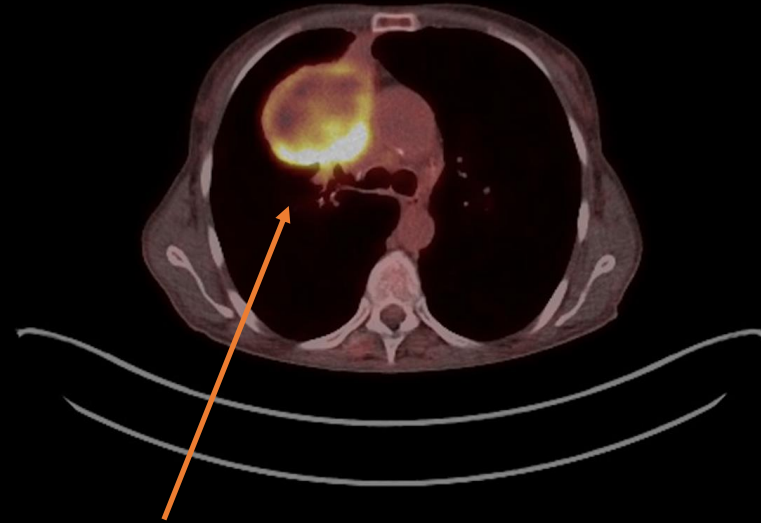
6 cm ovoid mildly spiculated right hilar/paramediastinal mass with partially obscured borders



# Findings



Contrast enhanced axial CT image reveals a 6.2 x 5.9 cm circumscribed centrally low density mass in the right upper lobe abutting the mediastinal border



Axial FDG-PET/CT fused image demonstrates peripherally hypermetabolic RUL mass with centrally photopenic component, compatible with necrosis. No additional areas of abnormal FDG uptake were seen.



Final Dx: Pulmonary pleomorphic  
(sarcomatoid) carcinoma

# Discussion: Pt status post-op; Histology and Presentation

- **Surgical Care:** Patient underwent anterolateral open thoracotomy with right upper lobectomy and mediastinal lymph node dissection. All lymph nodes were negative for metastatic involvement.
- **Post-surgical course:** pt had no fevers, chills, incisional problems, chest pain, cough or shortness of breath; pain controlled w/ tylenol, gabapentin, and flexeril
- **Histology:** rare subtype of non-small cell lung cancer, representing less than 1% of all lung cancers<sup>1</sup>
- 5 subgroups of pulmonary sarcomatoid carcinoma: pleomorphic carcinoma, spindle cell carcinoma, giant cell carcinoma, carcinosarcoma, and pulmonary blastoma<sup>2</sup>
- May contain a component of true sarcoma or be composed partly or completely of sarcoma-like elements<sup>3</sup>
- **Clinical presentation:** varies; symptoms include chest pain, dyspnea, cough, and hemoptysis<sup>3</sup>

# Discussion: Treatment and Prognosis

## **Treatment:**

- in addition to surgical resection, recommended to consider neoadjuvant or adjuvant chemotherapy<sup>4</sup>

## **Prognosis:**

- 1-, 2-, and 5-year survival rates are 42%, 23%, and 15%, respectively<sup>4</sup>
- overall survival for PSC significantly worse than adenocarcinoma and squamous cell carcinoma<sup>4</sup>

# References

1. Yendamuri S, Caty L, Pine M, et al. Outcomes of sarcomatoid carcinoma of the lung: a Surveillance, Epidemiology, and End Results Database analysis. *Surgery*. 2012;152(3):397-402. doi:10.1016/j.surg.2012.05.007
2. Huang SY, Shen SJ, Li XY. Pulmonary sarcomatoid carcinoma: a clinicopathologic study and prognostic analysis of 51 cases. *World J Surg Oncol*. 2013;11:252. Published 2013 Oct 2. doi:10.1186/1477-7819-11-252
3. Arshad HS, Dudekula RA, Niazi M, Malik S, Khaja M. A Rare Case of Sarcomatoid Carcinoma of the Lung with Spine Metastasis, Including a Literature Review. *Am J Case Rep*. 2017;18:760-765. Published 2017 Jul 7. doi:10.12659/ajcr.904584
4. Maneenil K, Xue Z, Liu M, et al. Sarcomatoid Carcinoma of the Lung: The Mayo Clinic Experience in 127 Patients. *Clin Lung Cancer*. 2018;19(3):e323-e333. doi:10.1016/j.clcc.2017.12.008