

Department of Radiology – Case of the Month #3

Part 1 – Identifying Abnormalities

71-year-old male patient with persistent right-sided chest pain. 30 -pack-year smoking history. Weight loss. You order PA and Lateral chest X-rays (Figures 1 and 2).

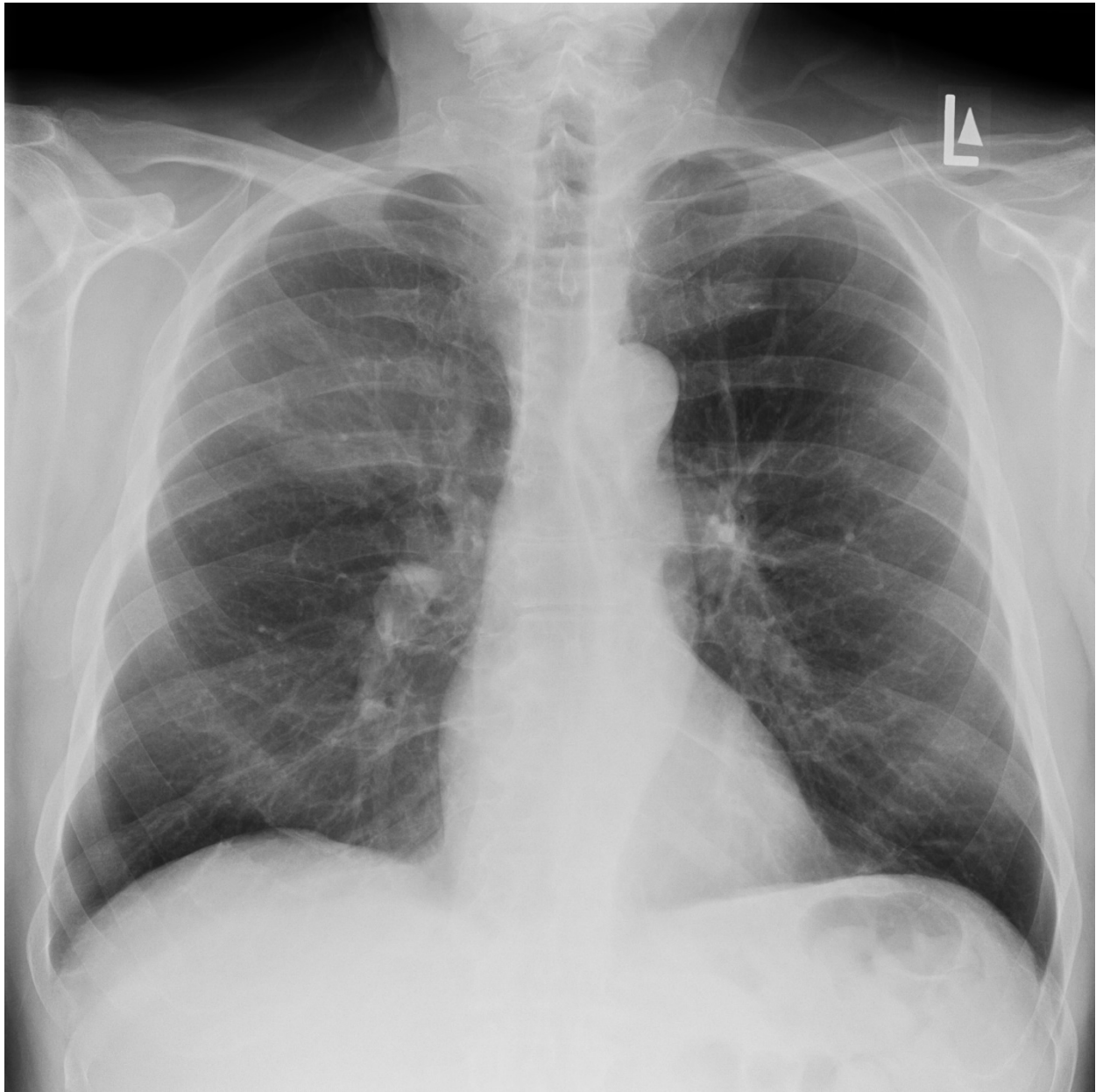


Figure 1: PA View

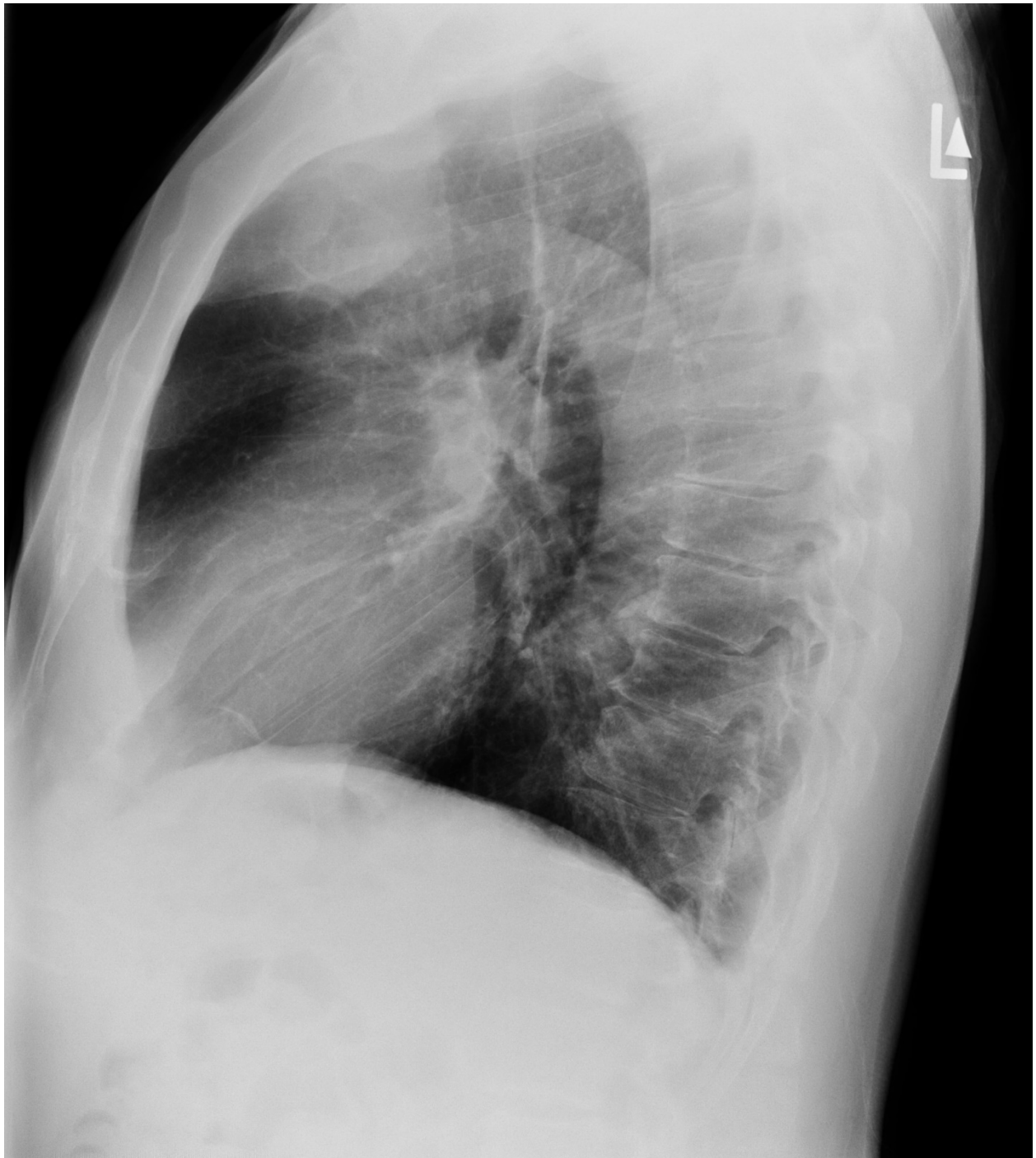


Figure 2: Lateral View

Prompting Questions:

- 1) Can you identify any abnormalities in the above scans?
- 2) How would you characterize the abnormality/abnormalities?
-too white or too black? Shape? Borders?
- 3) Can you localize the abnormality?
-what are the possible locations?
-is a definitive localization possible with these two scans?

Part 2 – Characterization and Localization

Examination reveals the following principal finding, outlined below:

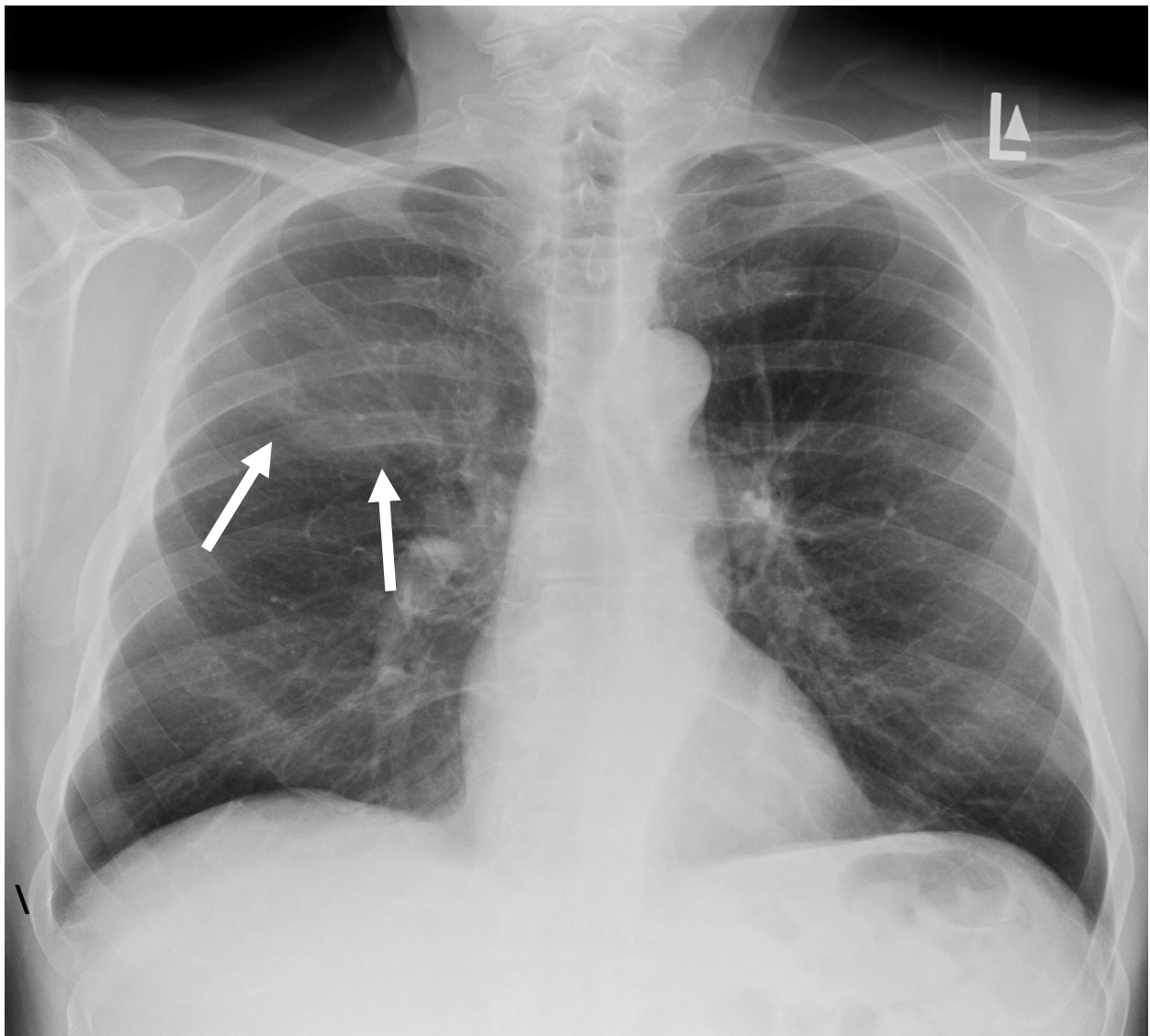


Figure 3: Irregularly-shaped opacity with ill-defined borders over right, superior lung field



Figure 4: Irregularly-shaped opacity with ill-defined borders located superiorly and anteriorly

As with our previous cases, try to localize the opacities utilizing the concept of radiologic zones:

- Hilar
- Mediastinal
- Cardiac
- Pleural
- Lung
- Peripheral (chest wall)

Each of these zones can be divided into right and left, and anterior and posterior.

Prompting Questions:

- 1) What is on your differential diagnosis at this point?**
 - how does the clinical history inform our differential?
 - how does the shape / character / potential location of the abnormality help us refine our differential?
 - what pertinent positive/negative findings provide clues as to the location/nature of the abnormality?

- 2) Can we definitively localize the abnormality?**

- 3) Can we definitively diagnose this patient?**

- 4) What are the next steps?**

Part 3 – CT Correlation

To determine definitive location and character, a CT was performed:



Figure 5: Coronal CT scan. Large chest wall mass (arrows) extending into the chest cavity and displacing the lung. There is associated rib destruction. This corresponds with the PA Chest X-ray finding.



Figure 6: Sagittal CT scan. Large chest wall mass (arrow) anterior and superior, correlating accurately with changes on lateral X-ray.

Prompting Questions:

- 1) Why was the CT ordered?
- 2) What new information has it given us?
- 3) What is the definitive location of the abnormality and what is your diagnosis?
- 4) Next steps for diagnosis and management?

Commentary:

The initial radiographs show a nonspecific, irregularly shaped, opacity with ill-defined borders located superiorly, anteriorly, and on the right side of the patient. Our initial tendency may be to assume that the abnormality lies within the lung, but to be certain of this some additional features such as air bronchograms or distinct borders should be present. Additionally, there are no apparent calcifications to suggest pleural pathology and no air-fluid level abnormalities.

Without these pertinent positives, we need to suspect that the origin may be outside of the lungs. A CT helps us to definitively determine that the opacity originated from the chest wall. It should be noted that no rib abnormality can be seen on the PA X-ray but can be observed on the CT.

Diagnosis:

Chest wall mass. Biopsy confirmed metastatic adenocarcinoma. Primary unknown.