

# Metastatic breast cancer mimics – the radiological pitfalls in common lesions seen on CT

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## Background

In patients with a diagnosis of breast cancer CT imaging is an important part of the diagnostic and follow-up pathway. The presence of bone, visceral lesions or lymphadenopathy on CT raises the suspicion of metastatic disease. Although easy to presume lesions are metastatic in the context of a known cancer, the radiologist must understand the differential diagnosis of lesions that may mimic metastatic disease.

## Methods

We describe three interesting cases with coincidental pathology mimicking metastatic disease on CT.

## Results

Case 1 – A 40 year old female with large lobular breast cancer (>9cm) and axillary lymph node metastases had a staging CT performed. It demonstrated bilateral enlarged thoracic lymph nodes (fig.1), metastatic disease was suspected. A PET-CT (fig.2) identified corresponding high uptake and further high uptake in the sacrum (fig.3). Initial bone biopsy was non-diagnostic. An endobronchial ultrasound guided biopsy (EBUS) of the mediastinal nodes was performed, a tissue diagnosis of sarcoidosis was made. Sarcoidosis is a multi-system granulomatous disorder which rarely affects the musculoskeletal system. Subsequent MRI of the pelvis (fig.4) demonstrated an area of T2 high signal both sides of the sacroiliac joint in keeping with oedema from sacroilitis rather than a metastasis. *This case demonstrates the importance of biopsy at distant sites of disease when it will affect management.*

Case 2 – A 54 year old female with an invasive NST breast cancer underwent a staging CT on the basis of axillary nodal burden. No previous imaging had been performed. It demonstrated multiple sclerotic lesions within the skeleton (fig.5). The patient had no symptoms, bone scintigraphy (fig. 6) and biochemistry was normal. Benign bone conditions were considered and a diagnosis of Osteopoikilosis made, an inherited sclerosing bone dysplasia seen as numerous small bone lesions. The lesions did not change during or after her chemotherapy treatment. *This case demonstrates benign lesions can occur in cancer patients & concordance with clinical, biochemical other imaging modalities is important.*

Case 3 – A 48 year old woman with previous risk reducing mastectomy and implant reconstruction developed a 50mm primary breast cancer in the right medial breast. Staging CT identified an enlarged right internal mammary lymph node suspicious for metastasis (fig. 7). PET CT identified low tracer uptake in the node ( fig. 8). MRI was performed. The node was positive for silica and suppressed on the silica suppression sequences (fig. 9) but had restricted diffusion (fig. 10). This can occur in silica nodes. The node stayed stable throughout chemotherapy and subsequent MRI. *This case demonstrates that silica in nodes can mimic metastatic disease with low PET uptake and restricted DWI. Previous history of implants can cause nodes to enlarge with silica and is a pitfall.*

## Conclusion

Breast cancer metastasis mimics can occur and further lesions should not be presumed to be metastatic without biopsy or further investigation. Although diagnostic uncertainty is unwanted incorrect labeling of a patient with metastatic disease or missing a treatable non-malignant process can be devastating for the patient.

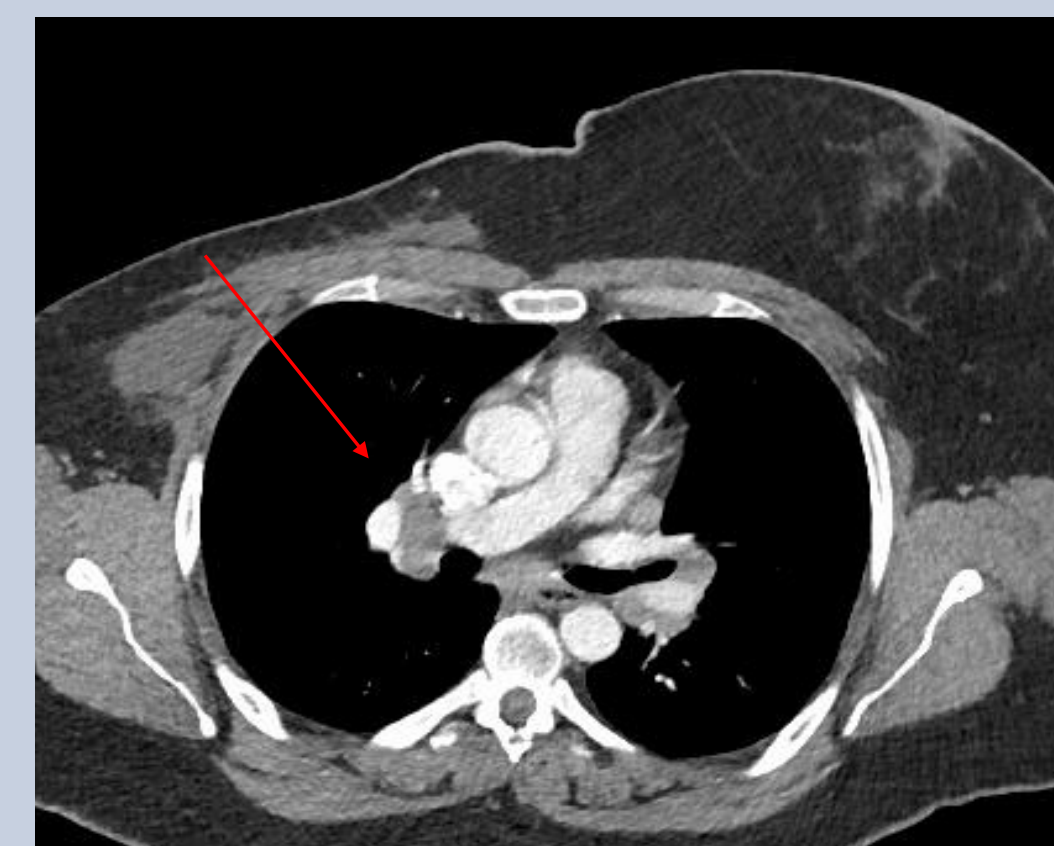


Fig.1 Axial CT demonstrating right mastectomy and right hilar lymph node



Fig. 2 PET-CT demonstrating increased uptake within the hilar lymph nodes



Fig. 3 PET-CT demonstrating increased uptake within the left sacral wing.

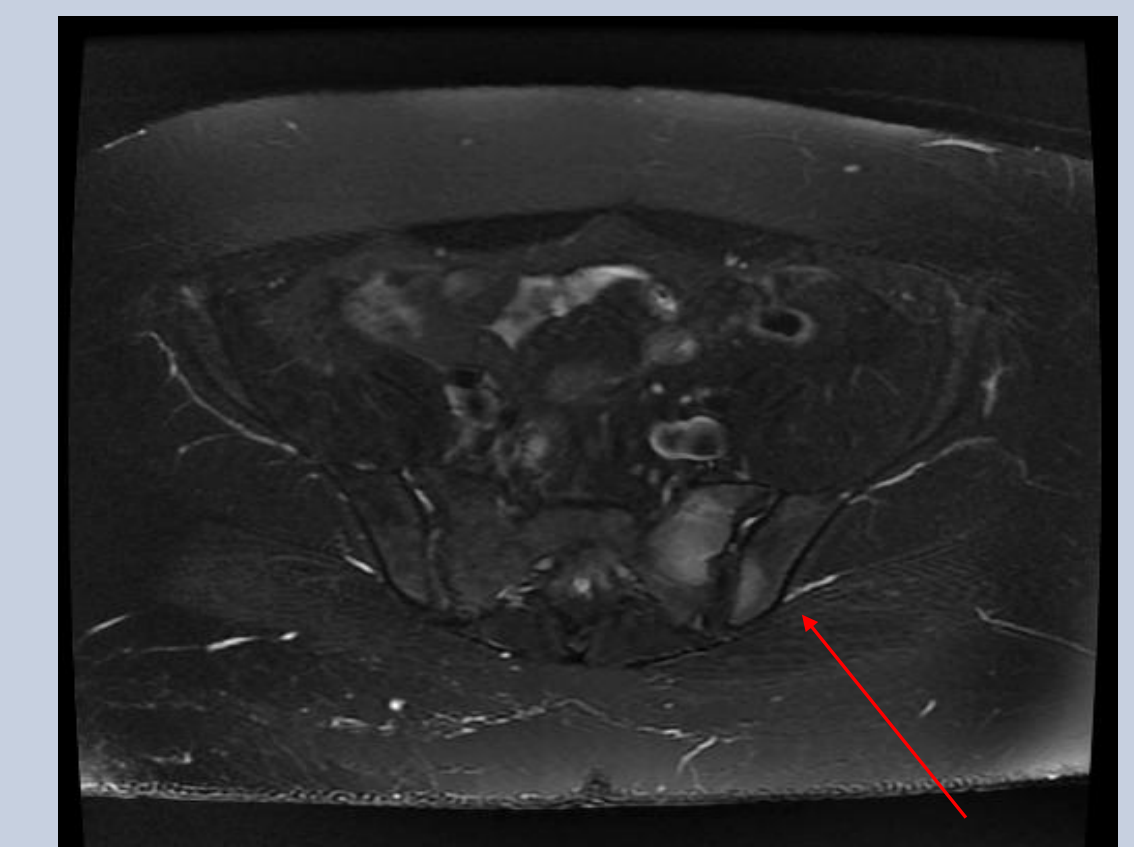


Fig. 4 Fat-saturated T2W image demonstrating high signal area within the sacrum

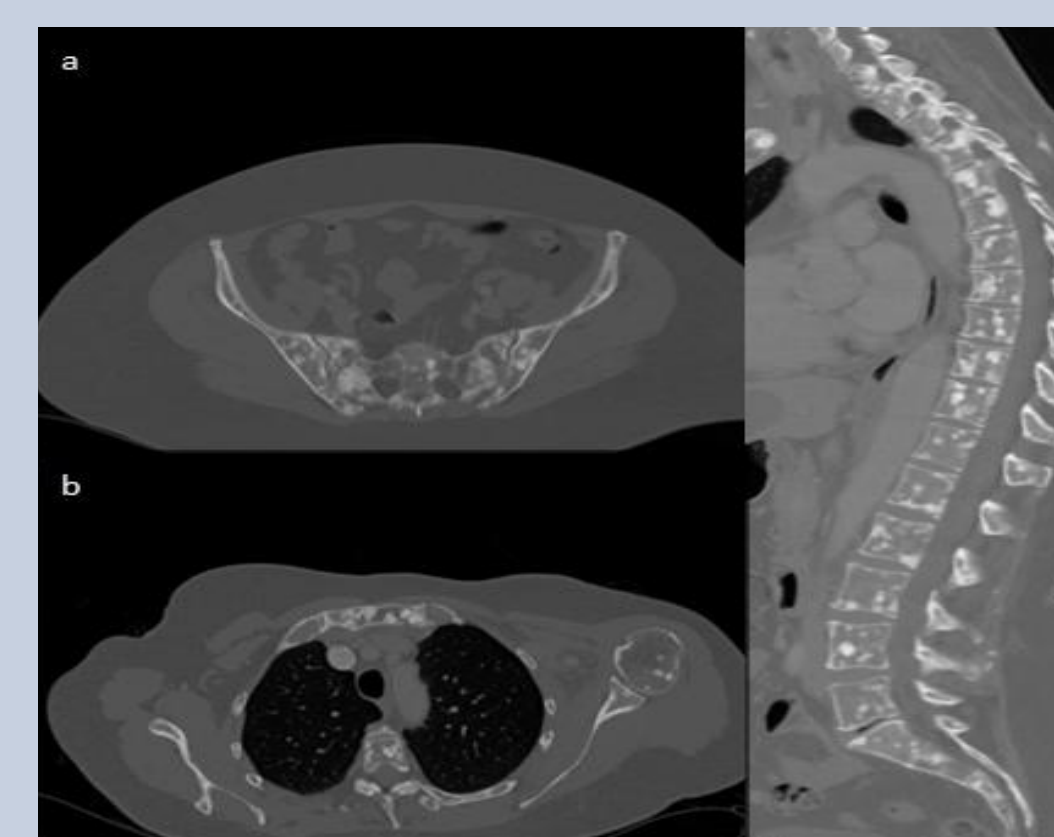


Fig. 5 Axial CT of the pelvis and sagittal CT of the spine demonstrating multiple sclerotic bone lesions.

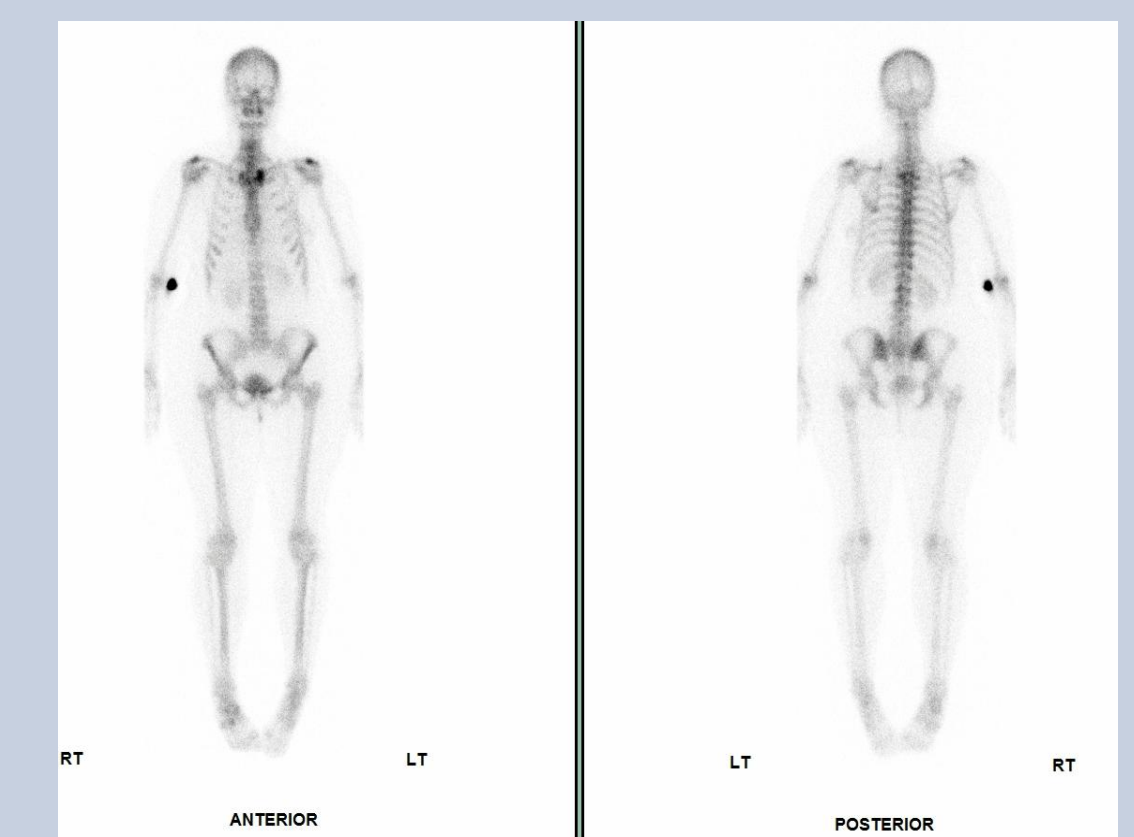


Fig. 6 Bone scintigram showing no evidence of bone metastases

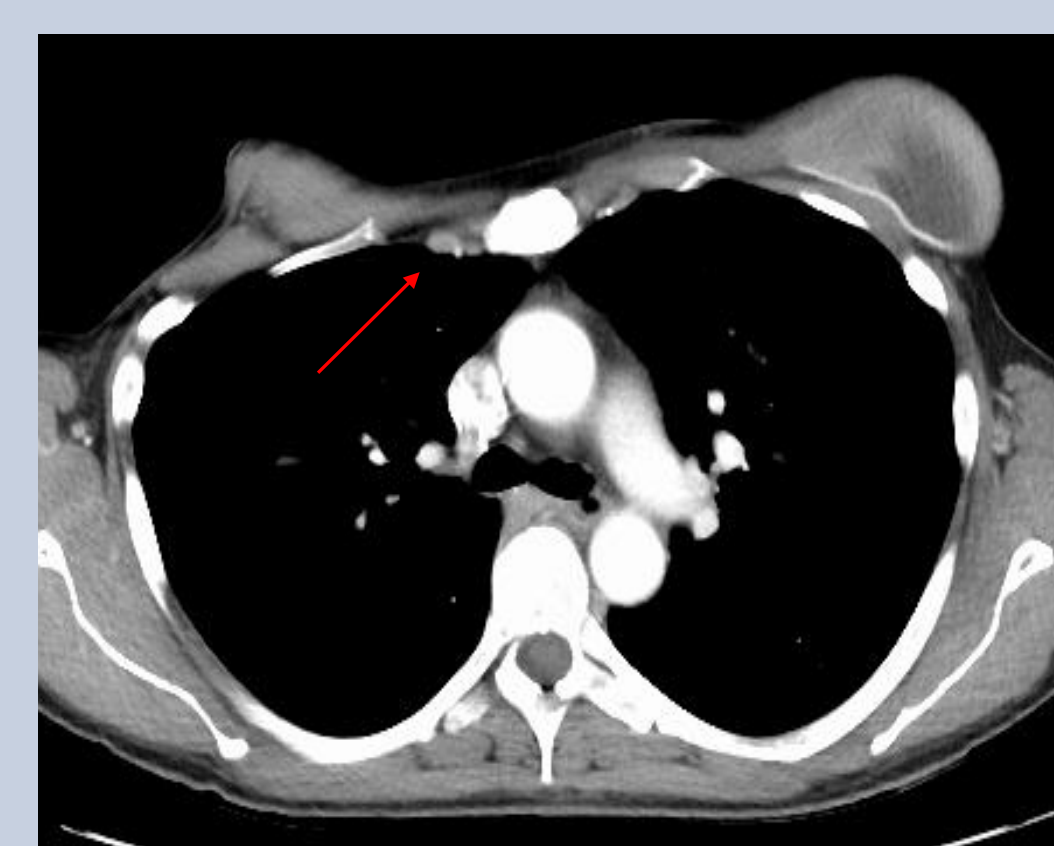


Fig. 7 Axial CT demonstrating an enlarged right internal mammary lymph node

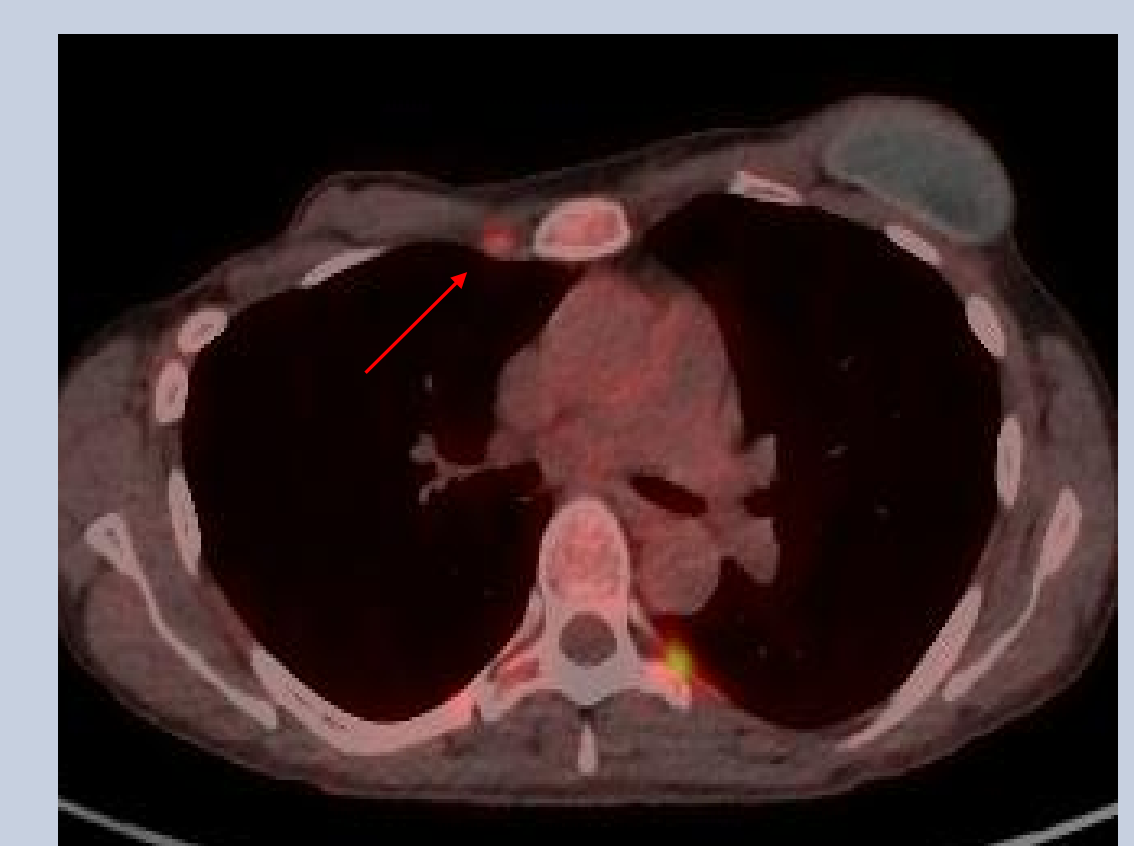


Fig. 8 PET-CT demonstrating low uptake in a right internal mammary lymph node

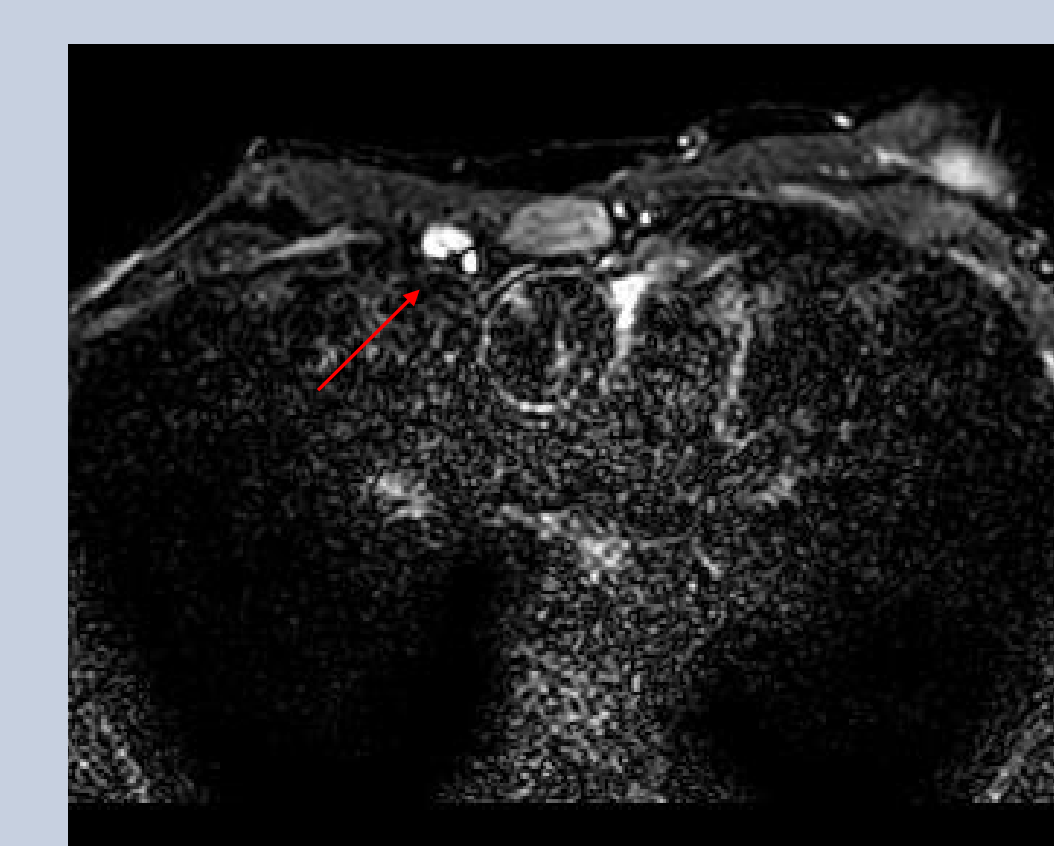


Fig. 9 Water-suppressed MRI image demonstrating silicone within the right internal mammary lymph node.



Fig. 10 DWI image demonstrating restricted diffusion within the corresponding right internal mammary lymph node.