



Symptomatic Bone Marrow and Leptomeningeal Metastasis in Invasive Lobular Carcinoma: A Case Report

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Introduction

- Breast cancer is the most commonly diagnosed cancer worldwide and is the leading cause of cancer death in women
- Approximately 20% of those with operable breast cancer experience relapse following treatment and, of that, approximately 70% occurs as distant metastasis
- The most common site of first distant metastasis in early-stage breast cancer is bone (41.1%), followed by lung (22.4%), liver (7.3%), and brain (7.3%)
- Multiple studies note the close association of bone marrow and bone parenchyma metastases, as shown by the presence of lesions on x-rays or scintigraphy as well as bone marrow biopsies

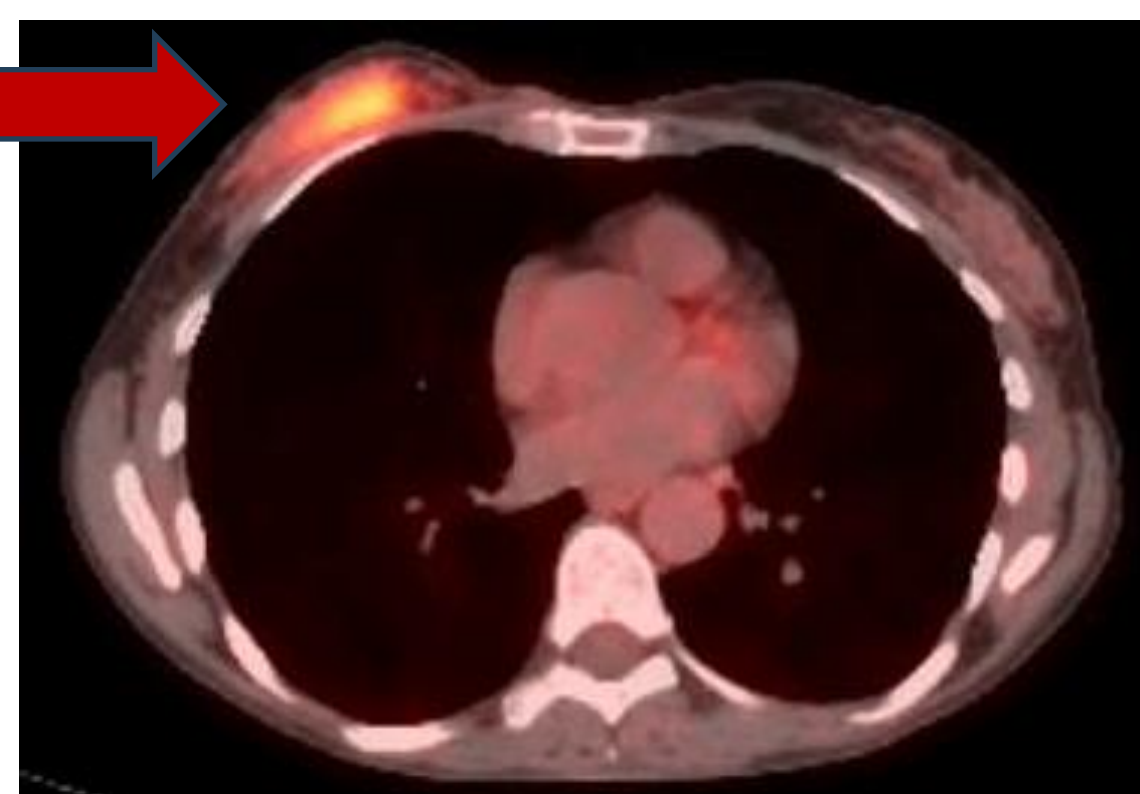


Figure 1. Initial PET scan showing increased radiotracer uptake in the right breast

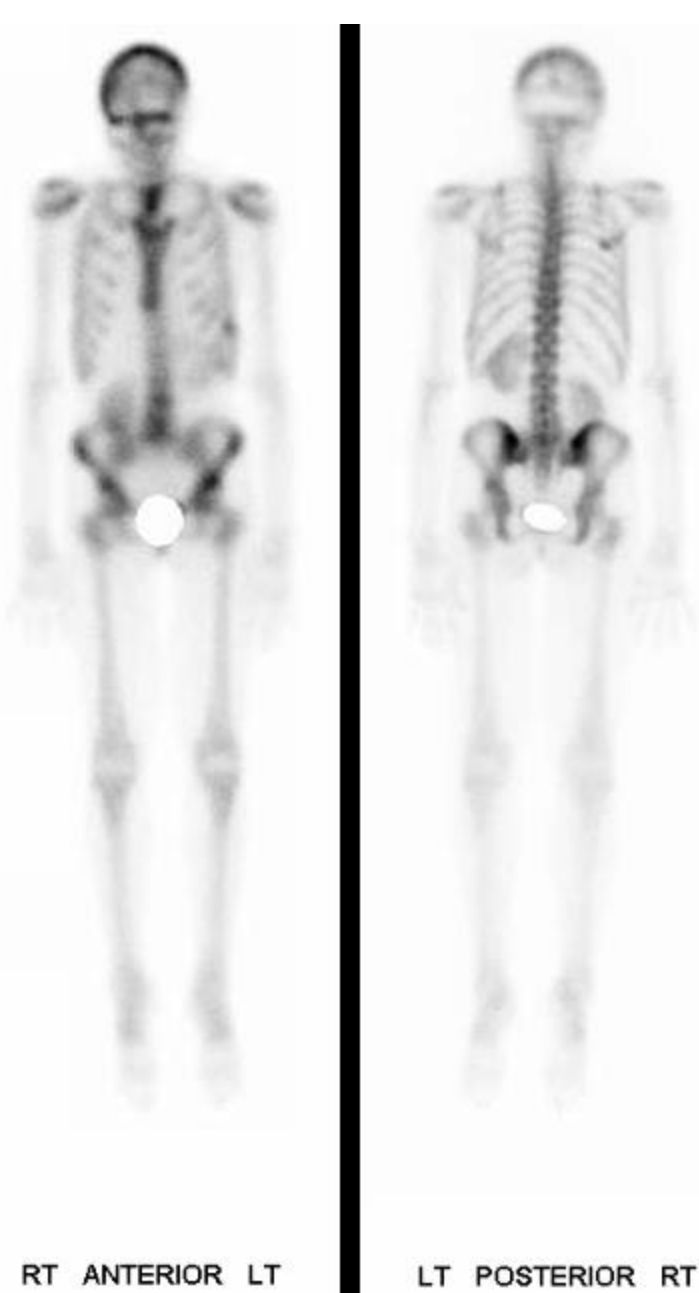


Figure 2. Negative bone scan of the patient

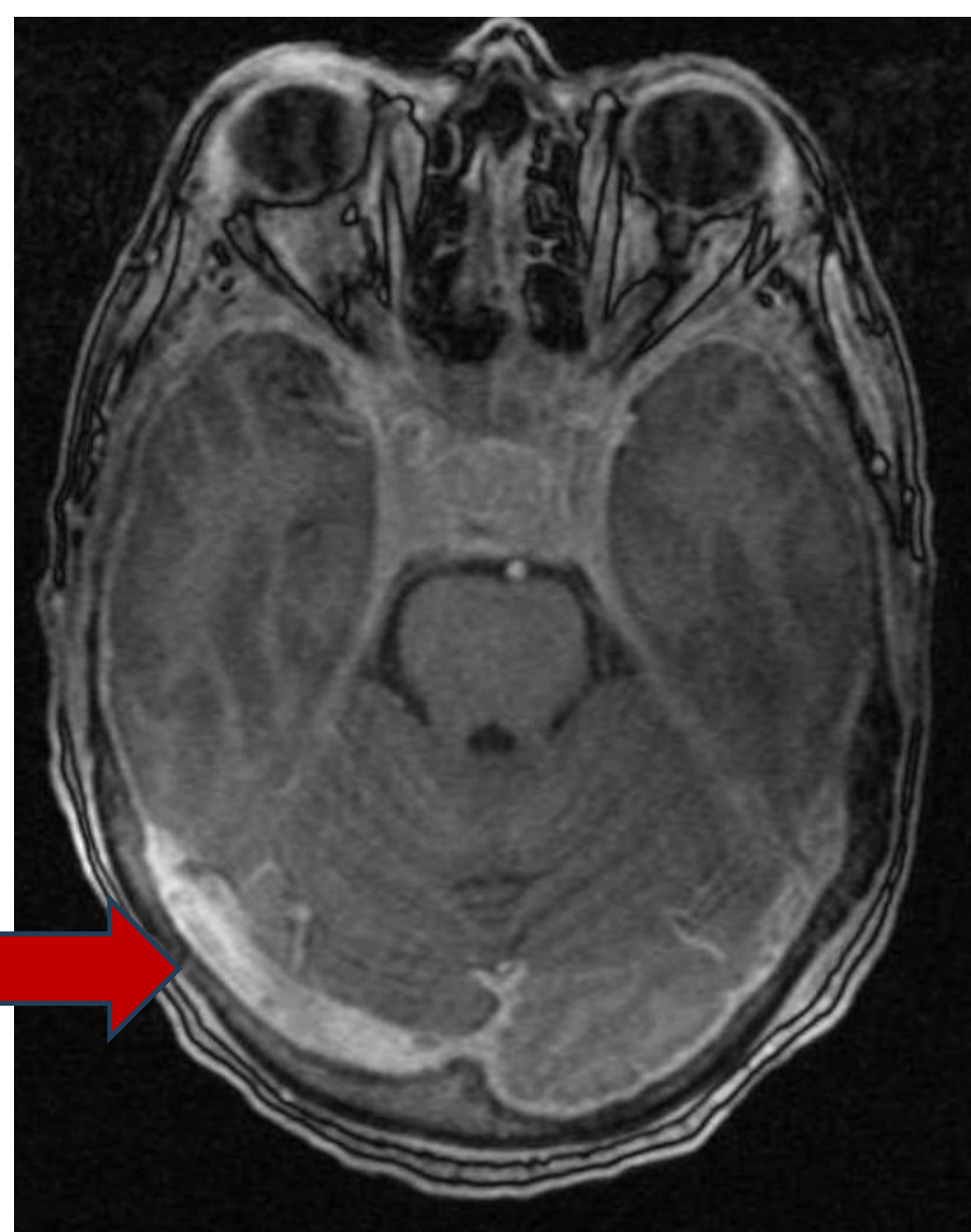
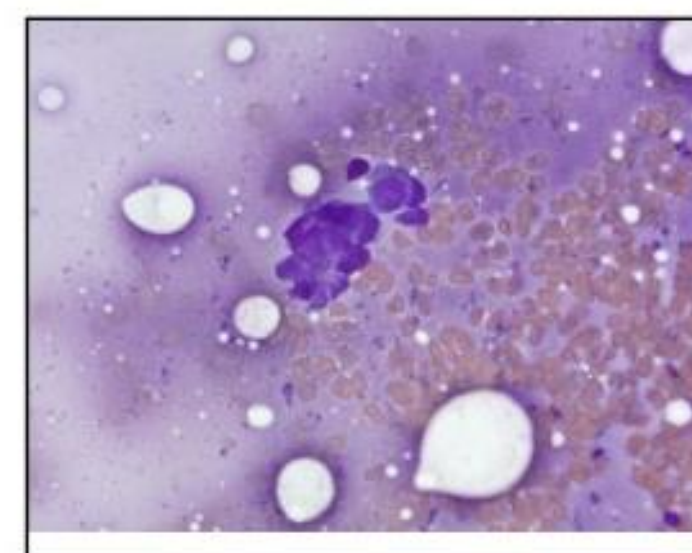


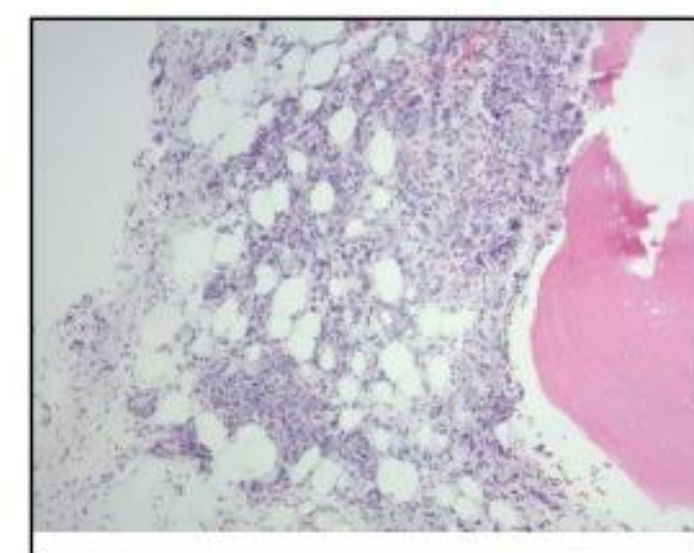
Figure 3. MRI with contrast showing Leptomeningeal metastasis

Case Description

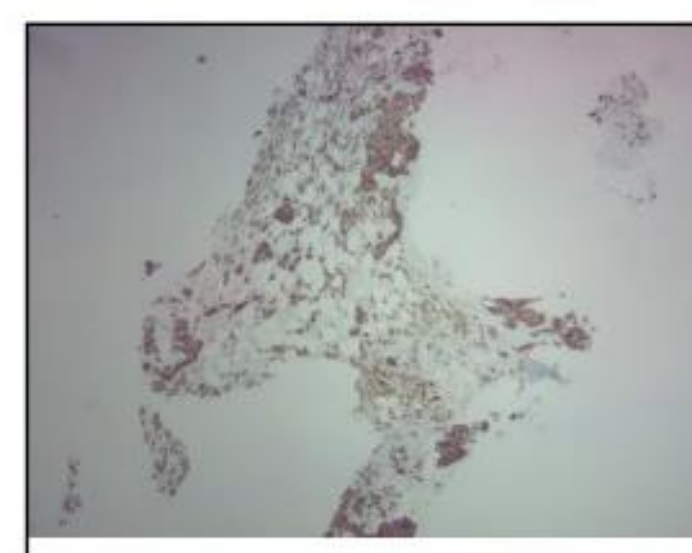
- A 54-year-old female presented with a two-year history of a progressively enlarging right breast mass
- She underwent biopsies and imaging, showing metastatic stage 4 invasive lobular carcinoma with an ER+/PR+/HER2- profile (Figure 1)
- The patient underwent several cycles of palliative chemotherapy to completion with good tolerance, but became noncompliant with Anastrozole treatment a few months later
- Two years following initial diagnosis, CT scans showed metastasis to her liver, necessitating further chemotherapy. After this treatment, the patient developed progressive anemia and thrombocytopenia prompting further workup
- She underwent multiple bone scans following her initial presentation that showed no evidence of metastasis to her bones, however, bone marrow biopsy revealed metastatic carcinoma consistent with a primary breast carcinoma (Figures 2 & 4)
- A few months later, the patient began experiencing headaches with photophobia and blurry vision
- She was admitted and a brain MRI showed evidence of leptomeningeal metastasis (Figure 3)
- The patient passed soon after



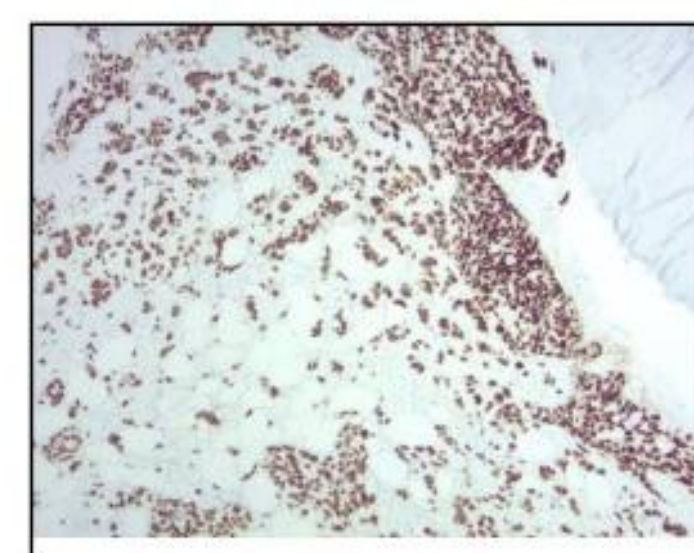
Touch imprints with clusters of metastatic epithelial cells.



Core biopsy with hypercellular marrow replaced by sheets of metastatic epithelial carcinoma cells.



AE1/AE3 positive metastatic carcinoma.



GATA3+ carcinoma cells.

Figure 4. Blood smear revealed normocytic normochromic anemia with anisopoikilocytosis and circulating nucleated RBC and thrombocytopenia. Bone marrow biopsy and aspiration revealed metastatic cancer consistent with primary breast carcinoma, hypercellular marrow, decreased trilineage hematopoiesis, marrow replacement with metastatic carcinoma, reticulin fibrosis associated with metastatic carcinoma

Discussion

- While breast cancer commonly metastasizes to the bone and brain in general, bone marrow and leptomeningeal metastases are very rare, especially in combination
- As these malignancies are often occult in their presentation, a high level of suspicion is necessary to provide adequate care for afflicted patients
- A consideration of these rare pathologies is crucial in the management of breast cancer patients who present with CBC abnormalities and neurological symptoms
- Currently, no standard of care exists for the management of leptomeningeal or bone marrow metastasis, making prompt diagnosis even more crucial

Conclusion

- Cancer is very unpredictable - There are documented differences in metastatic patterns between metastasis to bone parenchyma vs bone marrow, with bone parenchyma metastasis being more common
- There are no recommended treatments available for bone marrow or leptomeningeal metastatic cancer - Further treatment strategies should be developed for these rare metastatic patterns
- When a patient with a history of cancer presents with anemia, thrombocytopenia, and other symptoms of bone marrow failure, bone marrow metastasis should be considered

References

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