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CASE REPORT: PRIMARY EWING SARCOMA OF THE BREAST

***Sa'ed Naji Alzghool MD, Ahmad Adeeb Alkofahi MD, Muthana Yahya Ababneh MD, Majd Abdulhameed Almajali MD, Safwan Alrawabdeh MD, Ayah Ali Abuseini MD, Khaled Omar Jaradat MD and Hamza Arabiyat MD**

***Corresponding Author: Dr. Sa'ed Naji Alzghool MD**

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BACKGROUND
Primary Ewing sarcoma (ES) is very rare malignancy seen in the breast, could be a diagnostic and therapeutic challenge due to its clinical and histopathological similarity with other breast lesions· in spite ES is primarily a bone and soft tissue tumor, rare extraosseous presentations, like in the breast, have been documented· Accurate diagnosis always needs a combination of imaging, immunohistochemistry (IHC), and molecular genetic analysis·

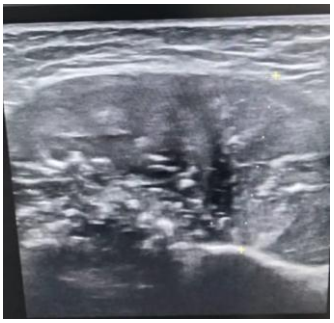
INTRODUCTION
Ewing sarcoma (ES) is a highly aggressive, small, round blue cell tumor, mainly found in the bone and soft tissues· Primary involvement of the breast is very rare, with small number of cases documented in the literature· This report discusses a case of primary Ewing sarcoma of the breast, highlighting its clinical presentation, diagnostic challenges, and management·

CASE PRESENTATION
A 28-year-old female pregnant in the 1st trimester presented with a rapidly enlarging, painless mass in the left breast over 6 weeks, presented to breast surgery clinic at King Hussein military hospital in December 2024· There was no nipple discharge, skin changes, or axillary palpable lymph nodes· Her family history was unremarkable for malignancy·

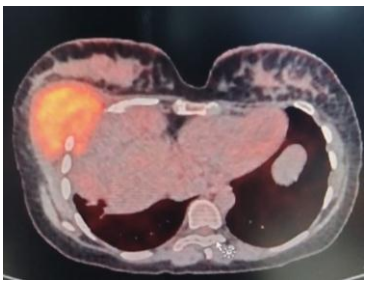
Physical Examination
A 6 cm firm, mobile, non-tender mass is found in the upper outer quadrant of the left breast· No signs found for inflammatory carcinoma·

Imaging Findings
Mammogram: A high-density irregular mass with indistinct margins· with no calcifications found.

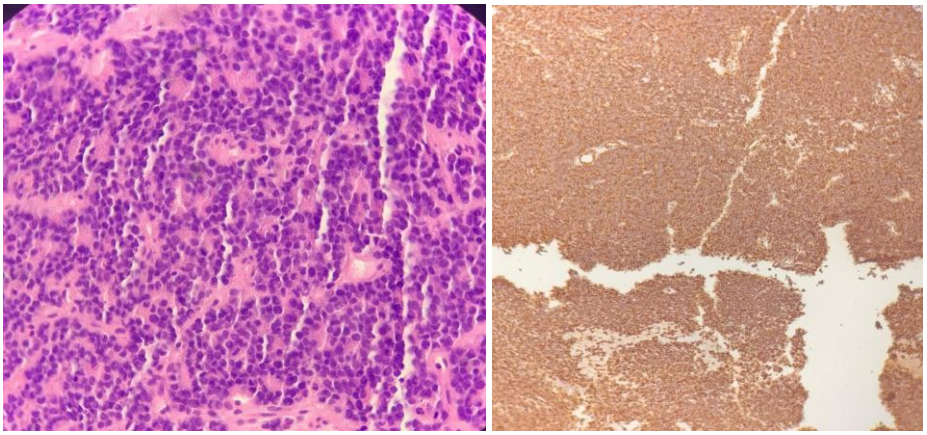
Ultrasound: Hypoechoic mass with increased vascularity and posterior acoustic enhancement, suggesting a malignant process·



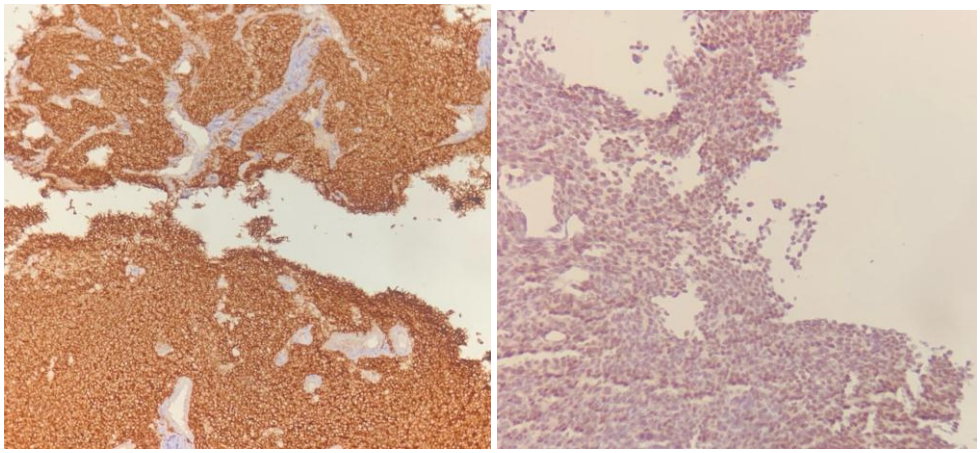
PET CT scan: Hypermetabolic malignant right antero-lateral chest wall lesion compatible with patient biopsy proven primary; Ewing sarcoma with invasion to adjacent structures.



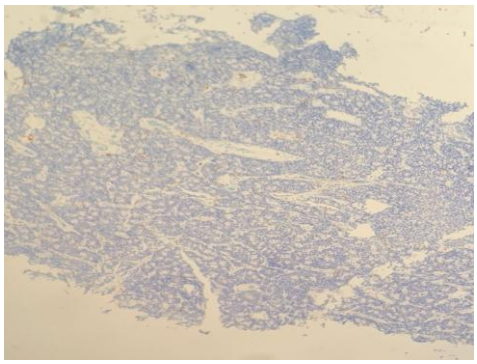
Pathological Evaluation
Core Needle Biopsy: Small, round blue cells arranged in sheets with scant cytoplasm. Immunohistochemical (IHC) staining was critical in establishing the diagnosis.



Positive: CD99 (diffuse membranous staining), FLI-1.



Negative: Pan-cytokeratin, LCA, S100, and desmin, ruling out carcinoma, lymphoma, and other sarcomas.



Imaging Findings

Mammogram: A high-density, irregular mass with indistinct margins· No calcifications were observed·

Diagnosis

Primary Ewing sarcoma of the breast·

Treatment

The patient multidisciplinary treatment plan, including After termination of pregnancy due to early stage patient started.

1· Neoadjuvant Chemotherapy: VAC/IE protocol (vincristine, doxorubicin, cyclophosphamide alternating with ifosfamide and etoposide), for achieving significant tumor shrinkage·

2· Surgical Resection: planned for Breast-conserving surgery with clear margins·

3· Adjuvant Radiotherapy: to Deliver to the breast to minimize local recurrence risk·

DISCUSSION

Primary breast Ewing sarcoma is an Ewing sarcoma subtype with an exceptional presentation· It is almost a diagnostic pitfall because of its overlapping features with other neoplasms· It requires careful diagnosis to have the correct determinants of immunohistochemistry and molecular biology done· The Ewing's sarcoma-type system is systemic chemotherapy, surgery, and radiotherapy· These patients' care has a gold standard therapies· Early diagnosis and aggressive multimodal treatment approaches have obtained good results·

CONCLUSION

This case emphasizes the need for heightened clinical suspicion in atypical breast masses, especially in young patients· In terms of science, molecular diagnostics should be integrated early to improve survival·

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