Pregnancy-associated breast cancer: a case report and literature review

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Background

- Pregnancy-associated breast cancer (PABC) is defined as breast cancer diagnosed during pregnancy or within one year postpartum.
- PABC affects **one in 3000** pregnancies[1].
- In 10% of women diagnosed with breast cancer under the age of 40, the disease is linked to pregnancy, making PABC the **second most prevalent** pregnancy-associated malignancy following cervical cancer[1].
- The frequency of PABC is expected to **increase** due to women delaying childbirth and a surge in breast cancer incidence, particularly amongst younger women of reproductive age[2].

Case Report

- A 33-year-old primiparous patient discovered a mass in her left breast while antenatally expressing at 35 weeks gestation.
- She attended her local general practitioner, who requested a breast ultrasound, which revealed an ill-defined mass (*Figure 1*).
- At 38 weeks gestation, she was diagnosed with mesenchymal metaplastic breast cancer with no axillary lymph node involvement via fine needle aspiration (FNA) (*Figure 2*).
- The patient had no relevant past medical history, no family history of cancer, and her pregnancy was otherwise uncomplicated.
- Delivery planning was prioritised and therefore staging investigations were not performed antenatally.
- Initially the patient declined early labour induction in favour of a minimal medical intervention birth. The risk to prognosis led the patient to agree to induction with artificial rupture of membranes at 40+0 weeks without Syntocinon.
- Post-delivery, the patient underwent a CT chest-abdomen-pelvis and bone scan, which confirmed there was no evidence of distant metastasis or osteoblastic skeletal metastasis.
- She was scheduled for a nipple-sparing left breast mastectomy with axillary lymph node removal three weeks post-partum. Although some milk ducts were present in the breast at time of surgery, it was overall uncomplicated.
- Histopathological analysis revealed metaplastic grade 3 invasive ductal carcinoma with heterogeneous mesenchymal differentiation and focal ductal carcinoma in situ. The tumour was ER/PR and HER2 negative.
- Her chemotherapy regime consisted of doxorubicin cyclophosphamide (DD-AC) followed by carbo paclitaxel. She used Zoladex during chemotherapy for ovarian preservation.

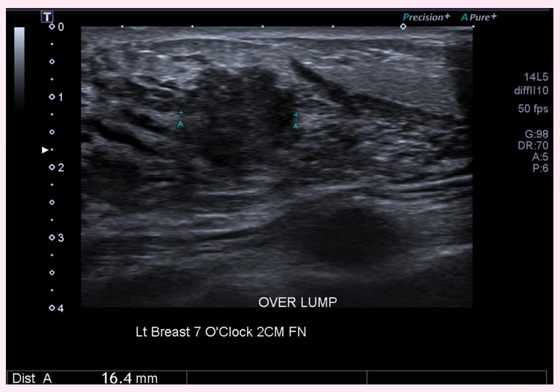

Figure 1: Initial ultrasound of the left breast showing a heterogeneously hypoechoic, ill-defined mass with suggestion of angular margins, measuring 16 x 19 x 15mm, taller than wide and probable internal calcifications.

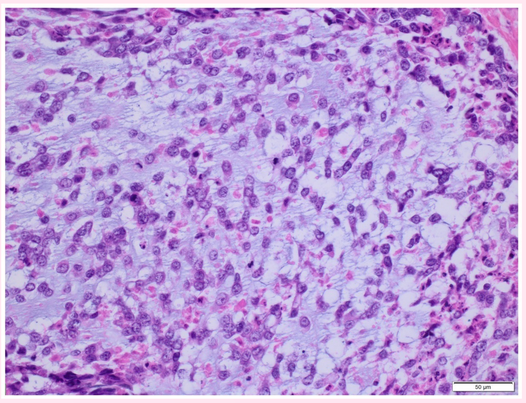

Figure 2: High power view demonstrating mesenchymal differentiation of malignant cells.

Discussion

- This case report highlights the **diagnostic delay** associated with **various masking factors** during pregnancy and lactation, including increased volume and density of breasts → previous studies demonstrate a diagnostic delay ranging from **5 - 10 months** is observed, as compared with 1- 4 months in non-pregnant patients[1].
- The late presentation of PABC addresses the need for **regular screening**, given standard breast cancer screening programs do not begin until 50 years of age in Australia.
- A **standard breast examination** should be performed at the first obstetric visit, followed by regular breast self-examinations during pregnancy and in the postpartum period.
- If a breast mass is detected and lasts **more than 2 weeks**, a breast ultrasound +/- fine needle aspiration should be requested **without delay**, given its high metastatic potential[3].
- Currently, there is **no standard evidence-based systemic therapy regimen,** and it is highly dependent on the patient's gestation.

Conclusion

- This case report underscores the importance of maintaining a high level of clinical suspicion when evaluating breast symptoms in pregnant or postpartum women.
- Every step in managing PABC calls for a fine balance between effectively treating the cancer and ensuring the safety and wellbeing of both mother and baby.

References

1 - Martínez MT, Bermejo B, Hernando C, Gambardella V, Cejalvo JM, Lluch A: Breast cancer in pregnant patients: A review of the literature. European Journal of Obstetrics & Gynecology and Reproductive Biology 2018;230: 222-227.
2 - Asgeirsson KS. Pregnancy-associated breast cancer. Acta obstetricia et gynecologica Scandinavica. 2011 Feb;90(2):158-66.
3 - Shachar SS, Gallagher K, McGuire K, Zagar TM, Faso A, Muss HB, et al.: Multidisciplinary management of breast cancer during pregnancy. The oncologist 2017;22(3): 324-334.