WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 14, Issue 8, 26-33. Research Article ISSN 2277–7105

CHALLENGES IN THE DIAGNOSIS AND TREATMENT OF PREGNANCY-ASSOCIATED BREAST CANCER: A MOROCCAN PERSPECTIVE

Loubna Slama*, Hafsa Taheri, Zainab Chatbi, Ibtissam Bellajdel, Hanane Saadi and Ahmed Mimouni

Department of Obstetrics and Gynecology, Mohammed VI University Hospital Center, Faculty of Medicine, University Mohammed First, Oujda, Morocco.

Article Received on
28 February 2025,

Revised on 20 March 2025,
Accepted on 10 April 2025

DOI: 10.20959/wjpr20258-36317

***Corresponding Author**
Dr. Loubna Slama
Department of Obstetrics and Gynecology, Mohammed VI University Hospital Center, Faculty of Medicine, University Mohammed First, Oujda, Morocco.

ABSTRACT

Background: Pregnancy-associated breast cancer (PABC) is a rare condition defined as breast cancer diagnosed during pregnancy or within one year postpartum. This study aims to describe the epidemiological profile, assess clinical and diagnostic features, and evaluate therapeutic options while examining the mutual impact of pregnancy and cancer. **Methods:** A retrospective study was conducted between 2014 and 2022 at CHU Mohammed VI in Oujda, involving seven cases of PABC managed in the gynecology-obstetrics department. **Results:** Seven cases of PABC were identified. All tumors were operable. Four patients underwent radical mastectomy, while three had lumpectomy. Homolateral axillary lymph node dissection was performed in all cases. Chemotherapy was administered to five patients, three of whom received it during pregnancy. **Conclusion:** PABC tends to be diagnosed at advanced stages, leading to a poor prognosis. Prompt evaluation of any breast abnormalities during pregnancy is crucial, with early diagnosis significantly improving treatment outcomes.

KEYWORDS: Breast cancer, pregnancy, pregnancy-associated breast cancer, PABC.

INTRODUCTION

Breast cancer is a significant public health concern, ranking as the most common cancer among women in Morocco and worldwide. Its association with pregnancy, though rare,

occurs in approximately 1 in 3,000 to 1 in 10,000 pregnancies.[1] PABC is defined as breast cancer diagnosed during pregnancy or within one year postpartum. Often perceived as more aggressive, PABC is typically detected later due to physiological changes in breast tissue during pregnancy.

The simultaneous occurrence of these conditions presents various diagnostic, therapeutic, and prognostic challenges. This study aims to explore the epidemiological profile, clinical and radiological features, and management of PABC within the Moroccan context.

METHODS

Study design

This was a retrospective, single-center study conducted over an 8-year period, from 2014 to 2022, at CHU Mohammed VI in Oujda, Morocco.

Setting

The study was carried out in the Gynecology-Obstetrics Department of CHU Mohammed VI, a tertiary care referral center serving a large population in Eastern Morocco.

Participants

The study included seven patients diagnosed with breast cancer during pregnancy or within 12 months postpartum who had not received prior treatment.

- **Inclusion criteria**: Diagnosis of breast cancer during pregnancy or within one year postpartum.
- **Exclusion criteria**: Diagnosis outside the specified period, following terminated pregnancies, or after abortion.

Variables

The primary variables analyzed were.

- Demographic data (age, gestational age at diagnosis).
- Clinical presentation (symptoms, tumor size).
- Diagnostic imaging findings (mammography and ultrasound classifications).
- Histopathological characteristics (tumor type, hormone receptor status).
- Treatment modalities (surgery, chemotherapy protocols).

Data sources/measurement

Data were extracted from patients' medical records, including clinical history, imaging reports, surgical notes, and histopathology results. Breast lesions were assessed using mammography, ultrasound, and histological evaluation of biopsy specimens.

Bias

Selection bias was minimized by including all eligible patients within the study period. Information bias was addressed through the use of standardized medical records and imaging protocols.

Study size

Seven cases were included, representing all eligible PABC cases identified at the study center during the specified period.

Quantitative variables

Quantitative data included tumor size (measured in millimeters), patient age (in years), and gestational age at diagnosis (in weeks).

Statistical methods

Descriptive statistics were used to summarize the data. Frequencies and percentages were calculated for categorical variables, while means were reported for continuous variables. No inferential statistical tests were performed due to the small sample size.

RÉSULTATS

Participants

A total of seven cases of pregnancy-associated breast cancer (PABC) were identified among 364 breast cancer cases diagnosed during the same period, representing 1.9%. The average age at diagnosis was 34 years. Diagnosis occurred during pregnancy in 5 cases (71%) and postpartum in 2 cases (28.5%).

Descriptive data

Gestational age at diagnosis: The mean gestational age was 22 weeks.

Clinical presentation: Palpable breast lumps were the most common symptom, reported in 60% of cases, with an average delay of two months before consultation. Bilateral tumors were noted in 2 cases, and the mean tumor size was 38 mm.

Inflammatory signs*: Present in 2 cases.*

Axillary lymphadenopathy*: Detected in 2 cases.*

Outcome data

- **Diagnostic imaging**
  - Mammography was performed in 2 patients, showing malignancy in both.
  - Ultrasound classified lesions as ACR 5 (3 cases), ACR 4 (3 cases), and ACR 3 (1 case).

- **Histopathology**
  - Infiltrating ductal carcinoma was the predominant type (83%).
  - Hormone receptor negativity was observed in 42%, HER2 positivity in 42%, and 16% presented triple-negative tumors.
  - Metastases were observed in 2 cases (28%), affecting the meninges, liver, and bone.

Main results

All tumors were operable.

Surgical treatment: Radical mastectomy was performed in 4 cases, while 3 patients underwent lumpectomy. Axillary lymph node dissection was conducted in all cases.

Chemotherapy: Administered to 5 patients, with 3 receiving treatment during pregnancy. Protocols included AC60 (doxorubicin + cyclophosphamide) and paclitaxel.

Hormonal therapy: Three patients received tamoxifen-based therapy postpartum.

Other analyses

No severe complications were reported in patients receiving chemotherapy during pregnancy. One case of prematurity (32 weeks) was observed, but no congenital malformations were noted.

DISCUSSION

Epidemiology

Pregnancy-associated breast cancer (PABC) is defined as breast cancer diagnosed during pregnancy or within one year postpartum.[2] It is the most common malignancy encountered during pregnancy, accounting for 21% of all pregnancy-related cancers[3], with an incidence of 1 in 3000 pregnancies. According to the WHO, 10% of breast cancers occur in women under 40, often during pregnancy, prompting the recommendation of routine breast examinations during prenatal care.[4]

The increasing incidence of PABC is attributed to delayed childbearing and rising maternal age. It remains the leading cause of cancer-related deaths among pregnant and lactating women. PABC is frequently detected later, leading to more advanced disease at diagnosis, contributing to a 50% higher mortality rate compared to non-pregnant counterparts.[5]

Diagnosis

The diagnosis of PABC is often delayed due to physiological breast changes during pregnancy, masking early cancer symptoms. Breast masses persisting for more than two weeks should be thoroughly investigated. PABC is typically larger, more likely to involve lymph nodes, and presents as high-grade invasive ductal carcinoma with negative hormone receptors.[6]

In this study, 83% of patients detected a lump through self-examination, with mastodynia reported in 2 cases. Ultrasound was effective in all cases, with a 100% sensitivity rate, confirming its role as the primary diagnostic tool. Mammography, though less sensitive due to increased breast density, was informative when used with abdominal shielding. MRI, though debated during pregnancy, can guide treatment planning when conventional imaging is inconclusive.

Histopathology

Consistent with previous studies, the majority of tumors in our series were high-grade infiltrating ductal carcinomas.[7] Aggressive histological features were common, with 67% of tumors being SBR III and 22% SBR II. Hormone receptor negativity and HER2 positivity were also prevalent, correlating with poorer prognoses.

Treatment

Treatment strategies mirror those for non-pregnant patients, balancing maternal benefit and fetal safety. Surgical options, including radical mastectomy or breast-conserving surgery, depend on the gestational age and tumor stage. Sentinel lymph node biopsy using technetium-99m is considered safe, though blue dye is contraindicated.[8]

Chemotherapy, particularly anthracycline-based regimens, is feasible in the second and third trimesters. Paclitaxel is cautiously used after the first trimester, but trastuzumab and hormonal therapies remain contraindicated due to fetal risks. In our series, chemotherapy was administered during pregnancy in 3 patients without severe complications.

Impact on Pregnancy and Fetus

While long-term data on chemotherapy-exposed offspring are limited, ongoing studies highlight potential risks, particularly with anthracyclines and platinum derivatives. Regular cardiac and hearing assessments are advised for exposed infants.[9] In our series, no congenital malformations were observed, although one case of prematurity occurred at 32 weeks.

Impact of Pregnancy on Maternal Prognosis

Numerous studies suggest that PABC carries a worse prognosis, attributed more to diagnostic delays and suboptimal treatment than pregnancy itself. However, some reports refute this, showing no significant difference in survival between pregnant and non-pregnant women.[10] In our study, survival at 12 months was 60%, with no deaths at 6 months, highlighting the need for early detection and prompt management.

CONCLUSION

Pregnancy-associated breast cancer (PABC) poses significant challenges due to its aggressive nature, delayed diagnosis, and the complexity of balancing maternal and fetal health. Despite these challenges, advancements in diagnostic modalities and treatment protocols have improved maternal and fetal outcomes. However, PABC remains associated with higher mortality rates, primarily due to late-stage diagnosis and suboptimal treatment during pregnancy.

Early detection through routine breast examinations during prenatal care, timely imaging, and multidisciplinary management are critical in improving prognoses. Our study underscores the importance of raising awareness among healthcare providers and pregnant women about the risks of PABC and the need for prompt evaluation of breast abnormalities during pregnancy.

State of Current Knowledge

- **Epidemiology**: PABC is the most common malignancy during pregnancy, with an increasing incidence due to delayed childbearing.
- **Diagnosis**: Physiological breast changes during pregnancy often delay diagnosis; ultrasound is the preferred initial imaging modality.
- **Treatment**: Surgery and chemotherapy are feasible during pregnancy, especially in the second and third trimesters, though hormonal and targeted therapies remain contraindicated.

Contribution of Our Study to Knowledge

Our study provides new insights into the management and outcomes of PABC in a Moroccan context, contributing to the limited data on PABC in low- and middle-income countries. Key contributions include.

1. **Epidemiological Data:** Highlighting the incidence and presentation patterns of PABC in our region, emphasizing the need for early detection strategies.
2. **Diagnostic Insights:** Confirming the high sensitivity of ultrasound in PABC detection, even in resource-limited settings.
3. **Treatment Adaptations:** Demonstrating the feasibility and safety of chemotherapy during pregnancy in our cohort, with favorable maternal and fetal outcomes.
4. **Prognostic Indicators:** Identifying aggressive histological features and survival rates in our series, contributing to the global understanding of PABC prognosis.

This study advocates for increased awareness, early detection, and a tailored multidisciplinary approach to improve PABC outcomes in similar settings.

Conflicts of interest

The authors declare no conflict of interest.

Contribution of the authors

All authors contributed to the conduct of this work. They also declare having read and approved the final version of the manuscript.

ACKNOWLEDGMENTS

The authors have no acknowledgments to declare.

REFERENCES

1. Kalogerakos K, Sofoudis C, Tzonis P, Koutsouradis P, Katsoulis G. Breast cancer and pregnancy; overview of international bibliography. J BUON, 2013; 18(2): 308-13.
2. Amant F, Lefrere H, Borges VF, Cardonick E, Lambertini M, Loibl S, et al. The definition of pregnancy-associated breast cancer is outdated and should no longer be used. Lancet Oncol, 2021; 22(6): 753-4. doi: 10.1016/S1470-2045(21)00183-2.
3. Callihan EB, Gao D, Jindal S, et al. Postpartum diagnosis demonstrates a high risk for metastasis and merits an expanded definition of pregnancy-associated breast cancer. Breast Cancer Res Treat, 2013; 138(2): 549-59. doi: 10.1007/S10549-013-2437-X.

4. Sung H, Ferlay J, Siegel RL, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin, 2021; 71(3): 209-49. doi: 10.3322/caac.21660.
5. SEER. Surveillance, epidemiology, and end results program. Cancer stat facts: cancer among adolescents and young adults (AYAs). Available from: https: //seer.cancer.gov/statfacts/html/aya.html.
6. Yang WT, Dryden MJ, Gwyn K, et al. Imaging of breast cancer diagnosed and treated with chemotherapy during pregnancy. Radiology, 2006; 239(1): 52-60. doi: 10.1148/radiol.2391050083.
7. Collins JC, Liao S, Wile AG. Surgical management of breast masses in pregnant women. J Reprod Med, 1995; 40(11): 785-8.
8. Loibl S, von Minckwitz G, Gwyn K, et al. Breast carcinoma during pregnancy. International recommendations from an expert meeting. Cancer, 2006; 106(2): 237-46.
9. Bock K, Hadji P, Ramaswamy A, et al. Rationale for a diagnostic chain in gestational breast tumor diagnosis. Arch Gynecol Obstet, 2006; 273: 337-45.
10. Woo JC, Yu T, Hurd TC. Breast cancer in pregnancy: a literature review. Arch Surg, 2003; 138(1): 91-8; discussion 99.