

## Research Article

# Pregnancy Associated Breast Cancer: An Institutional Review from a Dedicated Cancer Hospital of Pakistan

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Received: 01 September 2021; Accepted: 08 September 2021; Published: 17 September 2021

Citation: Sidra Afzal, Nida Javed, Bushra Rehman, Warda Jabeen, Osama Shakeel, Umer Farooq Muhammad Asad Parvaiz, Mohammad Zulqarnain Chaudhary. Pregnancy Associated Breast Cancer: An Institutional Review from a Dedicated Cancer Hospital of Pakistan. Journal of Surgery and Research 4 (2021): 473-477.

## Abstract

### Introduction

Breast cancer during pregnancy or diagnosed during lactation or 1 year after delivery comes under Pregnancy associated breast cancer (PABC). PABC are diagnosed in age ranging from 32-38 years. It has been noted that PABC is associated with larger tumors and higher incidence of lymph nodes metastases at presentation.

### Methodology

It is a retrospective analysis of PABC patients presented at our hospital in year 2020. All patients with PABC are included while Non-PABC and male breast cancer are excluded. Calculations were performed with Statistical Package for the Social

Sciences (SPSS Ver20) for Windows. The study is in compliance with the SKMCH&RC guidelines on research involving human subjects.

### Results

A total of 899 patients presented with breast cancer at SKMCH in the year 2020. Of these patients, 41 patients (4.56%) had PABC. Mean age at presentation was 33.76 (range 24-41). Except for one patient, all the patients presented with palpable lump in breast. Seven patients (17%) had metastases at the time of presentation. Triple negative disease was observed in 16 patients (39%). We identified only one histological subtype among all patients i.e. invasive ductal carcinoma (IDC), however, five patients (12.2%) had a

component of ductal carcinoma in situ along with IDC. More than half of the patient had advanced T stage i.e. 56.1%. Neo-adjuvant chemotherapy was offered in 31 patients (75.6%). 18 patients underwent breast conservation surgery, and 14 patients had mastectomy for the management of disease.

### **Conclusion**

PABC is not very common tumor but it is an aggressive one with unfavorable histological and immunophenotypic characteristics. If any abnormality is noted for more than 2 months, patient should consult a specialist breast surgeon.

**Keywords:** Pregnancy associated breast cancer (PABC); Neo-adjuvant chemotherapy; Histological subtypes; Palliative treatment

### **1. Introduction**

Breast cancer is the second most common malignancy worldwide and the most common cancer among women [1]. Breast cancer during pregnancy or diagnosed during lactation or 1 year after delivery comes under Pregnancy associated breast cancer (PABC) (2). Also, this is the second most common cancer affecting pregnant women [2]. Average age in which breast cancer patients are diagnosed is 62 years according to SEER data [3]. But PABC are diagnosed in age ranging from 32-38 years [4]. Prognosis of PABC has been addressed in many studies with inconsistent results [3,4]. However, it carries worse prognosis than non-PABC associated breast cancer [5]. It has been noted that PABC is associated with larger tumors and higher incidence of lymph nodes metastases at presentation. The rationale is the delay due to physiological hypertrophy and engorgement of breast making the diagnosis of breast cancer difficult in this cohort. Recently, increasing number of PABC

are seen who presented at Shaukat Khanum Memorial Cancer Hospital (SKMCH) Lahore. The aim of this study is to determine the percentage of PABC presented at SKMCH Lahore and to examine their clinicopathological characteristics.

### **2. Materials and Methods**

It is a retrospective analysis of PABC patients presented at our hospital in year 2020. All patients with PABC are included while Non-PABC and male breast cancer are excluded. Patient's factor including age at diagnosis, parity, breast feeding and family history are noted. Pathological characteristics including T stage, grade, hormone receptor status, multifocality and type of surgery performed also noted. The ethical approval was sought from Institutional Review Board (IRB) of SKMCH. Calculations were performed with Statistical Package for the Social Sciences (SPSS Ver20) for Windows. Data was described using median with minimum and maximum value for skewly distributed quantitative variables. For categorical variables, number of observations and percentages were reported. For survival analyses Kaplan-Miere Curve was applied. The study is in compliance with the SKMCH&RC guidelines on research involving human subjects. We are a paperless hospital and all patient data is put real time into a computerised Hospital Information System (HIS) by all cadres including nurses, allied health professionals and doctors. The hospital has a unique in-house developed computerised patient management system (HIS) that collects all patient information in real time including patient demographics, investigations, Multi-Disciplinary Team discussions, Nursing assessments, outpatient, operative notes and post-operative outcomes. As the data is collected in real time and stored, it allows for accurate retrospective review of

the data. Patients that are referred to our hospital must have history and physical examination in the walk-in-clinic. Each case is then sent to the breast surgery clinic. Extensive staging of the disease is performed which includes radiological interventions and histological analyses. Then all of the patients are discussed in the multi-disciplinary team (MDT) meeting.

**3. Results**

A total of 899 patients presented with breast cancer at SKMCH in the year 2020. Of these patients, 41 patients (4.56%) had PABC. Mean age at presentation was 33.76 (range 24-41). All of them presented with lump in breast, however one patient had no palpable lump in the breast. It was diagnosed with the help of ultrasound. Almost 66 % had more than 2 children and all breast fed with 22% being diagnosed of having PABC during first pregnancy. Seven patients (17.1%) had a family history of mammary carcinoma. 35 patients (85.36%) had unifocal disease, while 6 patients (14.6%) had multifocal breast cancer. Seven patients (17%) had metastases at the time of

presentation. Immunohistochemical analyses showed positive staining of estrogen receptors and progesterone receptors among 19 (46.3%) and 15 patients (36.6%) respectively. 10 patients (24.4%) had Her 2 Neu positive disease. Triple negative disease was observed in 16 patients (39%). 18 patients (43.9%) had Ki 67 of more than 40 while it is not done in 15 patients (36.5%). 28 patients (68.3%) had positive lymph nodes. We identified only one histological subtype among all patients i.e. invasive ductal carcinoma (IDC), however, five patients (12.2%) had a component of ductal carcinoma in situ along with IDC. More than half of the patient had advanced T stage i.e. 56.1%. Among 8 patients (19.5%), the intention of treatment was palliative in nature. 18 patients underwent breast conservation surgery, and 14 patients had mastectomy for the management of disease. Eight patients did not undergo any surgical intervention because of the metastatic nature of the disease. One patient was lost to follow up during the course of management. Neo-adjuvant chemotherapy was offered in 31 patients (75.6%).

	<b>Frequency</b>	<b>Percentage</b>
T1	1	2.40%
T2	17	41.50%
T3	11	26.80%
T4	12	29.30%

**Table 1:** T stage of the disease

**4. Discussion**

Making a diagnosis of breast cancer among pregnant women and lactating women is difficult. It has been observed in the last few decades, the rate of PABC has increased significantly. The rationale behind this increment is higher number of women delaying pregnancy [6]. Hence, the palpable masses which

remains for more than two weeks should be investigated [7]. In our society, women married in their early ages. However, this trend has changed, resulting in the rise of rate of breast cancers. The reported rate of PABC is 1 in 10,000 to 1 in 30,000 pregnancies [8,9]. Among women younger than 45 years of age, the rate of PABC ranges from 2.6% to 6.9% [10-12]. In

our case series from Pakistan, the reported rate was 4.56% which is comparable to the published literature. The age of affected patients ranges from 32 to 38 years [12,13] however, we have found different range of affected population 24 to 41 years. The most common presentation in our data was a palpable mass (2.4%) which is also seen in the published literature as well [14,15]. In one of our patients, no palpable mass was noticed. Imaging was performed for that patient that confirmed our diagnosis of breast cancer. Many authors reported that patient presents late with large tumor size and lymph node involvement [16,17]. In our study, 56.1% of the patients had advanced T-stage which showed the late presentation and aggressive nature of PABC. As per the literature, invasive ductal carcinoma is the most common histological subtype [18]. We have all the patients with histological diagnosis of IDC in our case series. PABC is thought to express adverse biological features such as high negative rates of ER and PR status, and over-expression of Her 2 Neu receptors [19,20]. Likewise, there is high Ki-67 are also noticed in patients with PABC. We also observed same pattern of immunohistochemistry in our patients. Triple negative disease was the most common immunohistochemical subtype as seen in other reports [21]. Most of the patients (75.6%) received neo-adjuvant chemotherapy in our study as it's a disease with poorer prognosis than non-pregnancy associated breast cancer. This is also noticed in other case series as well [13]. Though we performed mastectomy in 34% of the patient but the rate of BCS was high in our study. Almost 20% of the patients presented with metastases, it points towards the aggressive nature of the carcinoma. In these patients, the treatment was given for palliation. The major limitation is that it is a retrospective study. Study duration is of one year having small sample size.

We did not study the risk factors of PABC. Detail discussion of chemotherapy regimens and outcomes not done. However, this is the first study from the northern and the eastern part of the country. In future, long duration retrospective studies with better sample size and prospective studies are required to further investigate PABC from this part of the world.

## **5. Conclusion**

PABC is not very common tumor but it is an aggressive one with unfavorable histological and immunophenotypic characteristics. The presentation is late as most of the symptoms are usually like the physiological changes in the pregnancy period. However, if any abnormality is noticed for more than 2 weeks, it has to be dealt with multi-modality approach.

## **Conflict of Interest**

Authors declare no conflict of interest.

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