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Profile of gestational breast cancer patients at RSUD Dr. Soetomo Surabaya from January 2022 – December 2024

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Abstract: Gestational breast cancer is defined as breast cancer diagnosed during pregnancy or within one year after childbirth. Breast cancer is one of the most frequently diagnosed malignancies during pregnancy. This research aims to describe the profile of patients with gestational breast cancer undergoing treatment at RSUD dr. Soetomo Surabaya during the period from January 2022 to December 2024. This study is a descriptive research with a retrospective design to determine the characteristics of patients with gestational breast cancer from January 2022 to December 2024. During this period, four patients underwent treatment at RSUD dr. Soetomo Surabaya, with an age range of 31-40 years for three individuals (75%) and 41-50 years for one individual (25%). Among the four patients, only one (25%) was nulliparous, while three (75%) were multiparous. One (25%) patient was diagnosed in the first trimester, and three (75%) patients were diagnosed in the third trimester. One (25%) patient was diagnosed at stage 1, one (25%) patient was diagnosed at stage 3, and two (50%) patients were diagnosed at stage 4. Two (50%) patients had the luminal A subtype, one (25%) patient had the luminal B Her2 positive subtype, and one (25%) patient had the luminal B Her2 overexpression subtype. Three (75%) patients underwent delivery by caesarean section, and one (25%) patient underwent laparotomy for fetal evacuation. According to gestational age, there were four (100%) cases of premature delivery. Among the four deliveries, all babies (100%) were born with low birth weight (<2,500 grams). The characteristics of the four patients in this study were that all were over 35 years of age, and all babies were born with low birth weight. Timely detection allows for early treatment, which can improve outcomes for both the mother and the developing fetus.

Keywords: *Gestational breast cancer.*

1. Introduction

Gestational breast cancer or Pregnancy Associated Breast Cancer (PABC) is a type of breast cancer that is diagnosed during pregnancy or within one year after childbirth. PABC is one of the most frequently found cancers in pregnant women, although generally, the cases are relatively rare, about 1 in 10,000 to 1 in 3,000 pregnancies [1].

The most common symptom of PABC is the appearance of a painless lump or thickening of the breast tissue. Sometimes, this symptom is also accompanied by discharge from the nipple. In breastfeeding mothers with PABC, their babies often refuse to nurse from the affected breast [2].

Although PABC cases are considered rare, PABC diagnoses have increased in recent decades. This increase is thought to be related to the growing number of women who choose to postpone pregnancy until a later age. Some studies suggest that pregnancy can worsen the prognosis of breast cancer, but other studies have not found a link between pregnancy and the death rate from breast cancer [2].

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PABC presents significant challenges for patients, families, and medical personnel. The management of PABC requires careful consideration between maintaining the health of the fetus and the effectiveness of cancer treatment. The issue of patient fertility is also an important concern. Therefore, PABC management should ideally be carried out in a specialized health center with a multidisciplinary team consisting of various medical experts.

The main goal of PABC treatment is to achieve optimal oncological outcomes for pregnant women. The treatment strategy will be tailored to the patient's and tumor's characteristics, the cancer stage, the gestational age, and the preferences of the patient and their partner regarding the pregnancy. The multidisciplinary team will consider various medical aspects, such as obstetrics, oncology, radiotherapy, pediatrics, genetics, ethics, and psychology in determining the most appropriate treatment plan.

2. Method

This study was descriptive research with a retrospective study design. Data was collected from the medical records of patients treated at Dr. Soetomo General Hospital during January 2020 – December 2024 period. The study sample consists of patients diagnosed with gestational breast cancer who have been treated at Dr. Soetomo General Hospital during the same period. Analysis was conducted to describe the patient profiles including maternal characteristics, obstetric managements (mode and timing of birth), timing of diagnosis and stage of cancer

3. Results

The following presents a detailed profile of the research sample analyzed in this study. The sample consisted of four (100%) female patients. The age of the participants ranged from 31 to 50 years. Specifically, three patients (75%) were within the 31-40 age range, while one patient (25%) was within the 41-50 age range. Notably, this age range coincides with the productive age group (Table 1). Regarding parity, one patient (25%) was nulliparous, whereas three patients (75%) were multiparous (Table 2).

Table 1.
Demographics of the Study Sample.

Variables	n	Percentage (%)
Sex		
Female	4	100
Total	4	100
Age		
31-40	3	75
41-50	1	25
Total	4	100

Table 2.
Number of prior deliveries.

Number of deliveries	n	Percentage (%)
Nulliparous	1	25
Multiparous	3	75
Total	4	100

Among the four patients diagnosed with gestational breast cancer, the timing of diagnosis varied. One patient (25%) received their diagnosis during the first trimester of pregnancy, while the majority, specifically three patients (75%), were diagnosed in the third trimester (Table 3). A further analysis of the patients based on the stage of their cancer at diagnosis revealed the following distribution: one patient (25%) was diagnosed at stage 1, one patient (25%) was diagnosed at stage 3, and two patients (50%) were diagnosed at the more advanced stage 4 (Table 4). When classifying the patients according to tumor subtype, two patients (50%) were identified as having the luminal A subtype. The remaining

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two patients presented with luminal B subtypes: one patient (25%) with the luminal B Her2 positive subtype, and the other patient (25%) with the luminal B Her2 overexpression subtype (Table 5).

Table 3.
Timing diagnosis.

Trimester	n	Percentage (%)
1	1	25
2	0	0
3	3	75
Total	20	100

Table 4.
Breast cancer stage.

Stage	n	Percentage (%)
1	1	25
2	0	0
3	1	25
4	2	50
Total	4	100

Table 5.
Tumor subtype.

Subtype	n	Percentage (%)
Luminal A	2	50
Luminal B Her2 positif	1	25
Luminal B Her2 *overexpression*	1	25
Total	4	100

Table 6 details the methods of delivery employed for the four patients. The majority of the patients, specifically three (75%) patients, underwent cesarean section, while one patient (25%) required a laparotomy for fetal evacuation. An analysis of the gestational age at delivery, presented in Table 7, revealed that all four cases (100%) resulted in premature births. Furthermore, as shown in Table 8, all four infants (100%) were born with low birth weight, defined as less than 2,500 grams. Unfortunately, the outcomes for these infants varied significantly. One infant tragically died just five minutes after delivery, another succumbed two days after birth, and a third infant passed away at the age of two months. The fourth infant, however, survived and was still living at the age of three months.

Table 6.
Delivery method.

Delivery method	n	Percentage (%)
Caesarian section	3	75
Laparotomy fetal evacuation	1	25
Total	4	100

Table 7.
Gestasional age.

Gestasional age	n	Percentage (%)
Aterm	0	0
Preterm	4	100
Total	4	100

Table 8.
Baby's birth weight.

Low birth weight (<2.500 gram)	n	Percentage (%)
Yes	4	100
No	0	0
Total	4	100

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4. Discussions

Gestational breast cancer, defined as breast cancer diagnosed during pregnancy or within one year postpartum, presents a complex and relatively rare clinical challenge. This condition demands specialized attention from healthcare professionals due to the unique diagnostic and therapeutic hurdles it poses. The physiological and hormonal shifts inherent in pregnancy can often obscure the typical signs and symptoms of breast cancer, potentially leading to delays in diagnosis and impacting prognosis. Furthermore, the presence of a pregnancy significantly complicates the administration of standard cancer therapies, necessitating a more nuanced and cautious treatment strategy to minimize risks to both mother and fetus.

Despite these challenges, advancements in medical technology, diagnostic techniques, and treatment protocols have led to improved outcomes for women facing gestational breast cancer. However, significant knowledge gaps persist regarding this condition, underscoring the critical need for continued research to enhance our understanding of its underlying mechanisms, optimal treatment strategies, and long-term effects. This study is designed to provide a comprehensive review of gestational breast cancer, encompassing a wide range of critical aspects, including its epidemiology, clinical presentation (signs and symptoms), diagnostic modalities, therapeutic approaches, and patient outcomes. Ultimately, this research aims to contribute to increased awareness and a deeper understanding of this challenging condition among healthcare providers and the public, with the goal of improving the quality of life for women diagnosed with gestational breast cancer and their families.

While female sex remains the most prominent and unmodifiable risk factor for the development of breast cancer, advancing age, particularly beyond 35 years, also plays a significant role in increasing a woman's susceptibility to the disease. This age-related risk is further highlighted in the context of gestational breast cancer. The 2019 study conducted by Monteiro, et al. [3] revealed a notable trend: the majority of patients diagnosed with gestational breast cancer were over the age of 35. This observation suggests a potential correlation between the increasing trend of delayed pregnancies in developing countries and the subsequent rise in the age at which women are diagnosed with gestational breast cancer. It is plausible that as women in these regions postpone childbearing, they are more likely to conceive at an older age, thereby potentially increasing their risk of developing breast cancer during pregnancy or the postpartum period. This connection warrants further investigation to fully elucidate the complex interplay between delayed childbearing, age, and the incidence of gestational breast cancer [3].

The observation of an elevated risk of breast cancer associated with increased parity, particularly among women younger than 45, aligns with the hypothesis proposing a transient increase in breast cancer risk following each pregnancy. This hypothesized increase is potentially attributable to the cumulative exposure to heightened levels of various hormones during pregnancy. These hormonal fluctuations, while essential for supporting the pregnancy, may also play a role in influencing breast cell proliferation and differentiation, potentially contributing to an increased risk of malignancy in susceptible individuals. Considering this proposed link between hormonal exposure during pregnancy and subsequent breast cancer risk, it is logical to anticipate a correlation between the time elapsed since the most recent birth and the risk of developing breast cancer. Specifically, one might expect to see a gradual decrease in breast cancer risk as the time since the last childbirth increases, reflecting the body's return to pre-pregnancy hormonal levels and the resolution of any pregnancy-related cellular changes within the breast tissue. Further research is needed to fully explore this temporal relationship and to identify the specific hormonal mechanisms involved in this observed association [4].

The findings of this study reveal a concerningly high prevalence of late-stage breast cancer diagnoses among the studied population. This observation underscores the critical and urgent need for significant improvements in early breast cancer detection strategies. The predominance of late-stage diagnoses suggests potential shortcomings in current screening practices, access to healthcare resources, and, importantly, patient awareness and education regarding breast cancer. As demonstrated by the research conducted by Lopes, et al. [5] significant knowledge gaps and prevalent negative

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perceptions surrounding breast cancer, including fear, stigma, and misconceptions about risk factors and symptoms, can act as substantial obstacles to early detection. These factors can deter women from seeking timely medical attention, adhering to recommended screening guidelines, and performing regular self-examination. Therefore, targeted interventions focusing on comprehensive patient education, community outreach programs, and improved access to affordable and high-quality healthcare services are crucial to address this issue and promote earlier diagnosis of breast cancer, ultimately leading to improved patient outcomes and survival rates. Further research is needed to investigate the specific barriers to early detection within this population and to develop culturally sensitive and effective strategies to overcome these challenges.[6] Diagnosing breast cancer late in pregnancy presents a particularly formidable challenge due to a confluence of factors. These include a generally reduced awareness of breast cancer risk among younger women, which can lead to a delay in recognizing potential symptoms. Furthermore, some pregnant women may hesitate to seek medical attention for perceived breast changes, attributing them to normal physiological changes associated with pregnancy and lactation. This reluctance to consult healthcare professionals can further contribute to diagnostic delays. Adding to these challenges is the limited experience some clinicians may have with diagnosing and managing breast cancer during pregnancy, potentially leading to misinterpretations of symptoms or a lack of urgency in pursuing further investigation. Finally, the physiological changes inherent in pregnancy and lactation, such as increased breast density and hormonal fluctuations, can significantly hinder accurate detection through physical examination and imaging techniques like mammography, making it more difficult to distinguish between benign changes and malignant lesions. This complex interplay of factors underscores the need for increased education and awareness campaigns targeting young women, enhanced training for healthcare providers on recognizing and managing breast cancer during pregnancy, and the development of more sensitive and specific diagnostic tools that can effectively differentiate cancerous changes from normal pregnancy-related alterations in breast tissue [6]. The consequences of a late breast cancer diagnosis are substantial, negatively impacting patient outcomes and significantly increasing the complexity of treatment. Late-stage diagnoses are often associated with a poorer prognosis, reduced treatment options, and a greater likelihood of disease recurrence or metastasis. Therefore, it is absolutely crucial that women take an active and informed role in early breast cancer detection. This proactive approach should include the regular performance of breast self-exams, ideally on a monthly basis, to become familiar with the normal texture and appearance of their breasts. Equally important is a heightened awareness of any changes or abnormalities, such as new lumps, thickening, skin dimpling, nipple discharge, or changes in breast size or shape. Should any such changes be detected, it is imperative that women promptly seek medical advice from a qualified healthcare professional. Timely consultation with a physician will allow for appropriate evaluation, including clinical breast exams and potentially further diagnostic testing such as mammography or ultrasound, if deemed necessary. Early detection of breast cancer significantly improves the chances of successful treatment and enhances the likelihood of a positive long-term outcome. Empowering women with knowledge about breast health, encouraging open communication with their healthcare providers, and promoting a proactive approach to early detection are essential strategies in the fight against breast cancer.

The existing research exploring the complex relationship between breast cancer and pregnancy has yielded a range of findings, some of which appear to be conflicting. For instance, a study conducted by Yang, et al. [7] suggested a link between certain reproductive factors—specifically early menarche (early onset of menstruation), nulliparity (never having given birth), and older age at first birth—and an increased risk of luminal A breast cancer, but not triple-negative breast cancer (TNBC). However, other research investigations have proposed that these same reproductive factors may, in fact, contribute to an elevated risk of developing TNBC. Adding another layer of complexity, race appears to play a significant role, with studies indicating that African-American women under the age of 45 face a disproportionately higher risk of being diagnosed with TNBC compared to other racial groups. Conversely, breastfeeding has been identified as a potentially protective factor against TNBC.

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Pregnancy-associated breast cancers, as a general rule, tend to be high-grade and can maintain this aggressive characteristic for up to a decade postpartum. Interestingly, these cancers are more frequently presented as TNBC than cancers diagnosed in nulliparous women. TNBC constitutes a substantial proportion of pregnancy-related breast cancers, typically manifesting within a couple of years following pregnancy. However, some studies have suggested that the increased risk of TNBC associated with pregnancy can emerge later, potentially contributing to the poorer prognoses often observed in these cases. This variability in the timing of TNBC diagnosis following pregnancy underscores the need for continued research to better understand the underlying mechanisms and to develop more effective strategies for early detection and intervention.[8]

This study's findings, which reveal a high rate of preterm cesarean sections among women diagnosed with gestational breast cancer, are consistent with observations made in previous research, such as the studies conducted by Shechter Maor, et al. [8] and Simoes, et al. [9]. This elevated rate of preterm deliveries in this population is likely related to the complexities of managing the concurrent challenges of breast cancer treatment and ongoing pregnancy. Inducing earlier delivery allows for a more rapid initiation of cancer treatment without the added concerns and potential risks associated with fetal development and well-being. While the timing of delivery in these circumstances is a critical decision, as explored by Kuo and Caughey [10] clear and universally accepted guidelines for optimal delivery timing in the context of gestational breast cancer remain somewhat lacking. For patients with early-stage, hormone-receptor-positive breast cancer, it may be possible to delay definitive treatment until closer to term, typically around weeks 36-37 of gestation. However, it is important to acknowledge that even this slight delay in treatment initiation has been associated with a marginally increased risk of mortality within the first five years following diagnosis. Ultimately, the decision regarding the most appropriate delivery method, whether it be cesarean section or vaginal delivery, depends on a complex interplay of factors, including the specific stage and type of breast cancer, the overall health of the mother, the gestational age of the fetus, and, importantly, the individual preferences and values of the patient herself. A thorough and collaborative discussion between the patient, her oncologist, and her obstetrician is essential to determine the best course of action for both mother and child [8-10].

Premature birth, whether in mothers with or without gestational breast cancer, increases the risk of negative outcomes for newborns Platt [11]. Safi, et al. [12] found that premature infants of mothers with gestational breast cancer were more likely to have low birth weight, require resuscitation, and need NICU care [12]. Gestational breast cancer patients already experience significant fatigue and sleep problems from chemotherapy and other factors [13]. The occurrence of premature birth, with its inherent risks and potential complications, places a tremendous and often overwhelming burden on women already grappling with the significant challenges of a cancer diagnosis and its associated treatment. These mothers face the dual stressors of fighting a life-threatening illness while simultaneously navigating the anxieties and uncertainties of a premature delivery. Therefore, the decision to induce early labor or perform a cesarean section in these patients requires exceptionally careful and nuanced consideration. This decision-making process must involve a delicate balancing act, weighing the mother's urgent need for timely and effective cancer treatment against the potential risks of prematurity for both the mother's long-term health and the immediate and long-term well-being of the child. Premature birth is associated with a range of potential complications for the infant, including respiratory distress syndrome, infections, developmental delays, and other health issues. For the mother, premature delivery can also carry certain risks. Therefore, this complex decision necessitates a collaborative and informed approach, involving close communication and shared decision-making between the patient, her oncologist, her obstetrician, and potentially a neonatologist. All relevant factors, including the stage and type of cancer, the gestational age of the fetus, the mother's overall health status, and the potential risks and benefits of various treatment options, must be carefully evaluated and discussed to arrive at the most appropriate and individualized plan of care [14].

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5. Conclusion

Gestational breast cancer is a rare condition that occurs during pregnancy or after childbirth. Early detection is crucial because breast changes during pregnancy can mask symptoms. Breast exams and mammograms are important for rapid diagnosis. Treatment options include surgery, chemotherapy, radiation therapy, or hormone therapy. Patients should be involved in decision-making with a full explanation from the doctor. This study found that all gestational breast cancer patients studied were over 35 years of age and diagnosed at an advanced stage, with one stage 4 case resulting in death for both mother and fetus. Further research is needed to understand the factors of delayed diagnosis and improve care. Gestational breast cancer patients also need emotional and psychological support, such as counseling and support groups. Personalized and multidisciplinary care is essential for women with gestational breast cancer. The medical team should collaborate to create a treatment plan tailored to the needs and risks of the mother and fetus, covering all aspects from diagnosis to treatment and follow-up.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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