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Mini Review
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Infant Consequences and Procedures in Mammary Cancer during Pregnancy

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Abstract

Breast cancer is a common type of cancer diagnosed during pregnancy, and its incidence has increased in recent years as more women choose to delay childbirth. Compared with breast cancer in the general population, pregnancy-associated breast cancer (PABC) is significantly different in terms of epidemiology, diagnosis, and treatment management, yet exhibits particularly aggressive behavior due to its unique molecular and biological profile. Although not fully understood, the pathophysiological basis of PABC may result from a combination of hormonal and immunological changes, breast regression, and gene expression changes during pregnancy. There is considerable controversy in the existing literature regarding the impact of PABC on pregnancy outcomes, both in terms of short-term and long-term effects on maternal and fetal/neonatal health. The majority of patients with PABC have advanced disease when first diagnosed, poor survival, and a significantly poor prognosis. Although the most commonly reported obstetric-fetal adverse events are prematurity and prematurity-related neonatal morbidity, other treatment-related neonatal complications are common even when safe treatment options are used during pregnancy. The aim of the current comprehensive review is to summarize current knowledge and understanding of the pathophysiological, molecular, and biological basis of PABC and its association with adverse maternal, obstetric, fetal, and neonatal outcomes.

Keywords: Breast cancer; Carcinogenesis; Pregnancy; Pregnancy-associated breast cancer; Molecular mechanisms

Introduction

Pregnancy-associated breast cancer (PABC) is defined primarily as breast cancer diagnosed during pregnancy or within the first year of life, but may be defined differently depending on the period and duration of the postpartum period [1]. As research on this topic progresses and explores potential pathophysiological links between pregnancy, childbirth, and breast cancer development, it has even been proposed to define PABC as all breast cancer diagnosed within the first two years of life. Today, it is increasingly accepted that breast cancer, which occurs during pregnancy and the postpartum period, should be recognized as a separate and distinct clinical entity, especially since there are significant differences in the diagnostic and therapeutic approaches used. Therefore, the term PABC tends to be phased out and replaced by the terms "pregnancy breast cancer (PrBC)" and "postpartum breast cancer (PPBC)" [2].

The incidence of PABC has increased rapidly since the early 2000s and now affects about 17.4-39.9 per 100,000 deliveries per year, making breast cancer her second most common cancer in pregnant women. Has become specifically, the incidence of PABC is significantly higher during the post-partum [3].

Leading to a Prof Vound delay in the diagnosis of breast cancer, as well as a more locally advanced disease at time of diagnosis. There are limitations in the use of diagnostic modalities to successfully identify breast cancer in women during pregnancy and lactation; the increased density of the breast in such patients may decrease the sensitivity of imaging methods (especially mammography), and other imaging tests necessary for accurate staging are avoided, due to the potentially harmful effects of radiation or contrast media to the fetus; even biopsies of suspicious masses are performed with caution when indicated, as they may be scarcely complicated by the formation of milk fistulas Regarding treatment, PABC requires the careful design of therapeutic strategies that can be substantially different from those applied to general population, as pregnancy poses significant restrictions to the use of some effective treatment options due to potential teratogenic effects to the fetus, especially systemic therapies such as radiation, Chemotherapy, hormone therapy, immunotherapy [4].

Differences between PABC and breast cancer in the general population are not limited to epidemiology, clinical manifestations, diagnosis and therapeutic management. PABC also display particularly aggressive biological behavior, including large tumor size, lymph node metastasis, high histologic quality, negative estrogen and progesterone status, and HER-2 overexpression. The molecular nature behind these different hallmarks of PABC remains to be elucidated, and it is clear that different biological, genetic, and pathophysiological pathways are involved in the development of PABC. Therefore, it remains the subject of research efforts. Moreover, the prognosis of PABC is of considerable scientific interest [5]. There are various reports of adverse maternal and fetal effects induced by PABC, including: B. Decreased maternal survival, obstetric complications and fetal malformations compared to the general population as a result of the treatments used. Therefore, long-term follow-up of PABC survivors and their children may reveal new short- and long-term adverse outcomes that are currently undocumented [6].

Pathophysiological, biological and molecular basis of PABC

Pathophysiology, diagnosis and treatment management. Although the molecular and biological underpinnings of PABC have not yet been fully elucidated, its pathophysiological basis is thought to result from a combination of hormonal and immunological changes that occur during pregnancy, leading to breast cancer. Regression and alterations in gene expression also contribute significantly to the pathogenesis of

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this disease. PABC exhibits particularly aggressive biological behavior, reflected in its diverse histopathological and immunohistochemical features, and is commonly associated with adverse maternal, obstetric, fetal, and neonatal outcomes. . The majority of patients with PABC have advanced-stage disease with nodal metastasis at initial diagnosis and a significantly worse prognosis in terms of survival compared with patients with non-pregnancy-associated breast cancer. In terms of obstetric and fetal outcomes, the most common adverse events are preterm birth and preterm-related neonatal morbidity. Even when safe and acceptable treatment options are used during pregnancy, short-term and long-term complications associated with neonatal care can occur. Systematic reporting of such adverse events in future prospective longitudinal studies is expected to significantly improve the management of patients with PABC and lead to lower incidences of adverse maternal and neonatal outcomes [7].

The completion of the first full-term pregnancy actually activates two potentially opposing effects on the risk of developing breast cancer, known as the dual effect of pregnancy, which can be roughly defined as pregnancy-induced activation, both of molecular mechanisms that promote cell proliferation and tumorigenesis, and of others that exert cancer-preventive properties. Apart from implicating a lifetime reduction in breast cancer risk, pregnancy is also associated with a transient increase in breast cancer risk for up to 15 years thereafter, during which time all porous women, regardless of age, , face a higher incidence. Delaying childbirth, especially after her age 35, further increases this temporary future breast cancer risk. Consequently, increasing maternal age at first birth increases the peak incidence of breast cancer in the first few years of life, leading to a gradual and steady increase in the prevalence of PABC [8].

Maternal adverse outcomes

The combination of delayed diagnosis and limited treatment options during pregnancy is a major contributor to the increased incidence of adverse outcomes that women with PABC may face compared with breast cancer in the general population, especially in terms of survival. A one month delay in diagnosis increases the risk of metastatic lymph node disease by 0.9%. There has been notable controversy regarding the impact of her PABC on survival and prognosis, and the existing literature reports conflicting results. In general, the majority of patients with PABC have advanced-stage disease with nodal involvement at the time of primary diagnosis. In a cohort of 317 patients with PABC, 55.5% and 12.6% were classified as stage II and III, respectively, whereas 50.6% and 7.2% of women without PABC had the same initial diagnosis ($p < 0.001$) [9]. A similar proportion was obtained from a retrospective multicenter clinical study of 164 women with PABC in her by Jin et al. Stage I patients are reported to be 9.1%, stage II patients 54.9%, stage III patients 24.4%, and stage IV patients make up her 2.4% of the study population. Studied a cohort of 20 of her PABC patients, 75% of whom had advanced-stage (III–IV) disease at diagnosis. Previous studies have reported even higher rates. It is estimated that 65-90% of her 192 PABC cases will be diagnosed primarily with stage II-III disease, compared with 45-66% of patients with non-pregnancy-related breast cancer [10].

Conclusions

Pregnancy-associated breast cancer is a clinical entity that needs to be distinguished from breast cancer occurring in the general population because of its specificities regarding epidemiology, pathophysiology, and diagnosis and treatment management. Although the molecular and biological underpinnings of PABC have not yet been fully elucidated, its pathophysiological basis is thought to result from a combination of hormonal and immunological changes that occur during pregnancy, leading to breast cancer. Regression and alterations in gene expression also contribute significantly to the pathogenesis of this disease. PABC exhibits particularly aggressive biological behavior, reflected in its diverse histopathological and immunohistochemical features, and is commonly associated with adverse maternal, obstetric, fetal, and neonatal outcomes. . The majority of patients with PABC have advanced-stage disease with nodal metastasis at initial diagnosis and a significantly worse prognosis in terms of survival compared with patients with non-pregnancy-associated breast cancer. In terms of obstetric and fetal outcomes, the most common adverse events are preterm birth and preterm-related neonatal morbidity. Even when safe and acceptable treatment options are used during pregnancy, short-term and long-term complications associated with neonatal care can occur. Systematic reporting of such adverse events in future prospective longitudinal studies is expected to significantly improve the management of patients with PABC and lead to lower incidences of adverse maternal and neonatal outcomes.

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