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Gestational Breast Cancer: Report of A Case and Literature Review

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ABSTRACT

Background: Gestational or pregnancy-associated breast cancer is defined as breast cancer diagnosed during pregnancy, within the first postpartum year, or during lactation. Breast cancer is one of the most common cancers in nonpregnant and pregnant women.

Case presentation: A 29-year-old pregnant woman presented at eight weeks gestational age with a palpable breast nodule. On breast ultrasound evaluation, only probably benign findings were detected. The pregnancy was uneventful until the third trimester when she started to have a severe back pain which became gradually resistant to medical therapy. Therefore, at 33 weeks, she was assisted at an emergency care facility and a highly suspicious breast mass was detected. A core biopsy was performed that revealed an invasive ductal carcinoma grade 3 with lymph node metastasis.

After several imaging studies, it was diagnosed as a stage 4 breast cancer with bone, liver, and pulmonary metastasis. At thirty four weeks gestation, the pregnancy was terminated by C-section and she started to receive palliative radiation therapy one week later. She also received several cycles of palliative chemotherapy. Nineteenth months after C-section, progression of the disease was observed and a cerebellar metastasis was found. Unfortunately, two months later, her clinical condition deteriorated and the patient died.

Conclusion: Gestational breast cancer represents a clinical situation of utmost important in which the health of both the mother and the fetus should be taken into account. Diagnosis is difficult due to the physiological changes of the mammary glands during pregnancy and lactation, and it usually occurs at an advanced stage.

Introduction

Gestational breast cancer (GBC) is defined as breast cancer diagnosed during pregnancy, in the first postpartum year, or during lactation.

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Although breast cancer is one of the most common cancers related with pregnancy, GBC is a rather uncommon event. The incidence of GBC is approximately 15 to 35 per 100,000 deliveries and accounts for about 2% of all newly diagnosed breast cancers.[1, 2] It increases with the age of the pregnant woman and appears to have an increasing trend due to older age of women at the time of the first childbirth. The age of the patients in the majority of the case series ranges from 26–49 years, with most of them diagnosed at 30–40 years of age.[3]

A diagnosis of GBC is more difficult than its diagnosis in nonpregnant woman; moreover, it

usually occurs at an advanced stage, requiring a high level of suspicion. Treatment methods and the treatment onset, as well as the eventual need for pregnancy termination, are not consensual, requiring a multidisciplinary approach.

GBC can potentially have a deleterious effect on both mother and child, presenting a challenging clinical situation that requires a balance between the health of both the mother and the unborn child.

Case Presentation

A 29-year-old multiparous pregnant woman, with no family history of malignancy, presented at eight weeks gestation with a palpable nodule in her left breast detected on breast self-examination. It was a painless movable lump approximately 1.5 cm in size. No associated breast tenderness or skin changes were noted.

On evaluation by breast ultrasound, only probably benign findings (Bi-RADS 3) were detected in the left breast. Nevertheless, two months later, she underwent another ultrasound which only revealed benign findings.

The pregnancy was uneventful until the third trimester when she started to have a severe back pain. Therefore, at 28 and 31 weeks gestation, she went to an emergency care facility and received analgesics. Her pain ameliorated until 33 weeks gestation, when she was assisted because of an incapacitating back pain resistant to medical therapy. At that time, she had a solid mass in her left breast which was about 5cm in diameter and highly suspicious, and had multiple ipsilateral lymph nodes.

A core biopsy was performed that showed an invasive ductal carcinoma G3 (Fig. 1) with positive lymph nodes. Estrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor 2 (HER2) were positive.

Spinal radiography showed pathological collapses of D8, D12, and L4 (Fig. 2) and the abdominal ultrasound reported liver metastasis (Fig. 3). Chest radiography revealed pulmonary metastasis.

She was then hospitalized with a stage 4 breast cancer and received fetal lung maturation and analgesic therapy. An obstetric ultrasound examination revealed a cephalic fetus (50th percentile) with oligohydramnios.

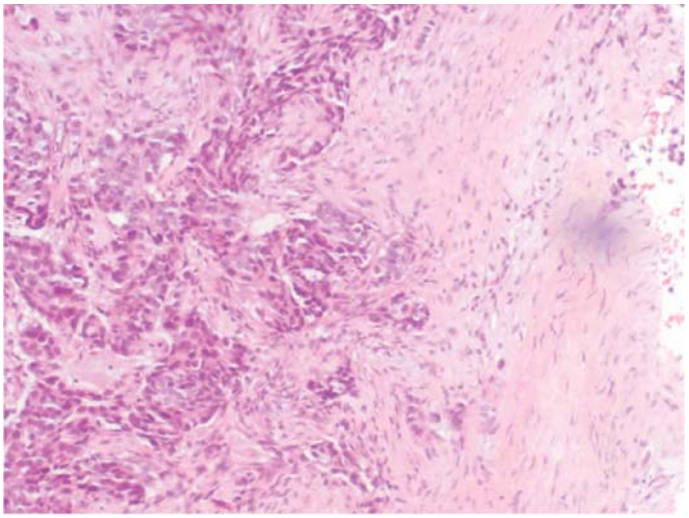

Figure 1. The Core biopsy was performed at 33 gestational age, revealing an Invasive ductal carcinoma grade 3.

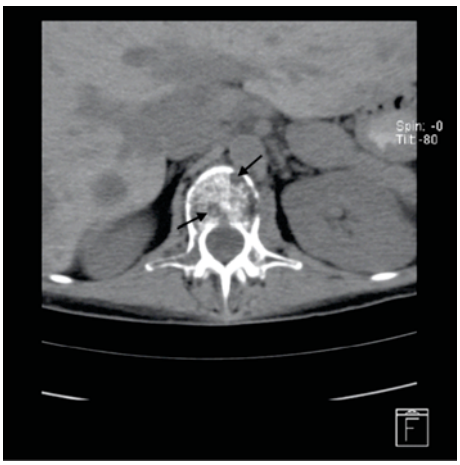

Figure 2. Spinal computed tomography showing diffuse vertebral metastasis (arrow) at D8, D12 and L4.

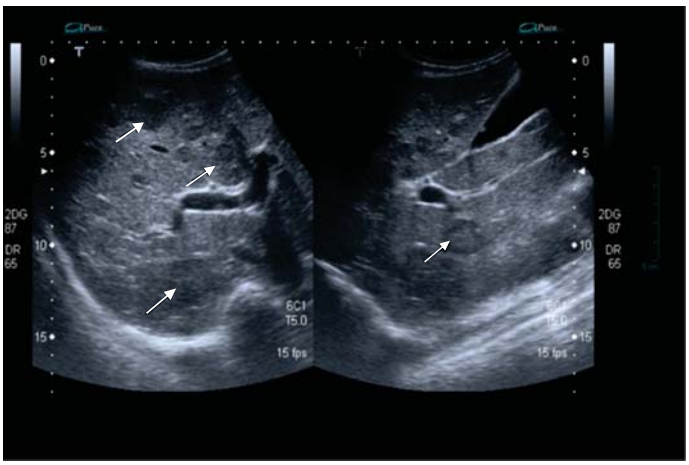

Figure 3. Abdominal ultrasound with an enlarged liver filled of metastasis (see arrows).

At 34 weeks gestation, a healthy neonate (female, 4.8 pounds) was delivered by C-section. No placental metastasis was noted.

One week after C-section, she started the first of ten cycles of palliative radiation therapy with a poor response. Then, she received six cycles of palliative chemotherapy (FEC - Fluorouracil, Epirubicin, and Cyclophosphamide) with a better response, starting an accompanied gait six months after C-section. Later, she also received three cycles of Docetaxel chemotherapy. Then, she underwent treatment with Letrozole, Trastuzumab, and Zoledronate for several months. Finally, she also tried Lapatinib plus Capecitabine.

Nineteenth months after C-section, progression of the disease was observed and a cerebellar metastasis was found (Fig. 4). She underwent surgery. Liver function tests worsened one month later and an abdominal ultrasound showed bigger liver metastases (Fig. 5). She was then admitted with tension ascites (Fig. 6). Unfortunately, two months later (1 year and 10 months after GBC diagnosis), her clinical condition deteriorated and the patient died.

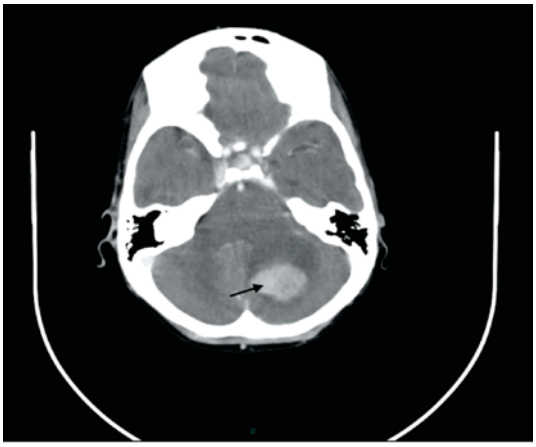

Figure 4. Nineteenth months after C-section, Computed tomography imaging of cerebellar metastasis (see arrow).

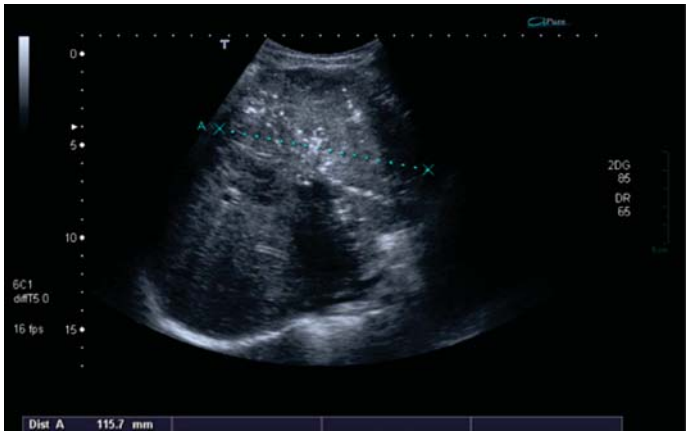

Figure 5. Abdominal ultrasound showing larger liver metastasis.

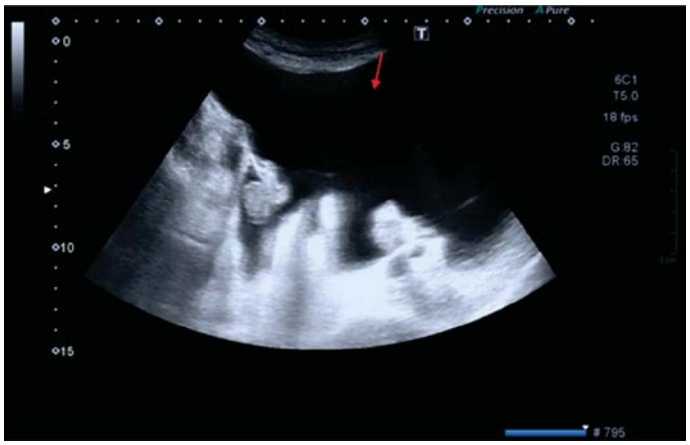

Figure 6. Ascites detected by abdominal ultrasound.

Discussion

Breast cancer can be more successfully treated in case of timely diagnosis; therefore, avoiding a delay in diagnosis is vital. Unfortunately, GBC is more probable to be diagnosed late mainly due to the physiological changes (enlargement, angiogenesis) in the breast during the pregnancy, which makes physical examinations less sensitive. Other factors may also contribute, like the absence of self-examinations on pregnant women as well as low attention to proper breast examination by gynecologists who mainly focus on the developing fetus and pregnancy surveillance.[4]

The protocol to investigate a breast mass in pregnant women is the same as the protocol in nonpregnant women. An ultrasound is the first step to assess a mass in pregnant women since its sensitivity and specificity are not changed by pregnancy.[5] On the other hand, although the results of mammography can be affected by physiological breast changes in pregnancy, it is still recommended. It has a sensitivity of about 86% during pregnancy and the exposure of the fetus to the radiation (with abdominal shielding) rather low (0.004 Gy). However, a negative mammogram in the setting of a palpable mass should not prohibit the physician from performing a biopsy.[3]

Regarding biopsy procedures, a core biopsy is preferred in pregnancy. Fine needle aspiration may be more technically difficult to perform due to the engorgement during pregnancy and it is unreliable due to hyperproliferative cellularity.[6]

Therefore, the index of suspicion for cancer must be higher in pregnant women. A clinically suspicious breast mass requires a biopsy for a definitive diagnosis, despite negative mammographic or ultrasound findings.

The majority of breast cancers in pregnant women are invasive ductal carcinomas (IDC), as in nonpregnant women, and the steroid receptor content (estrogen and progesterone receptor), HER-2 status, proliferation rate, and the presence of the p53 mutation do not differ remarkably from those of age-matched nonpregnant patients.[7]

GBC has many similar histologic and prognostic features with breast cancer in young women. The age of the patients with GBC is probably the factor that affects the biologic characteristics of the tumor, not the pregnancy itself.

According to the guidelines, management of breast cancer in pregnant women is generally similar to nonpregnant patients, with some modifications in order to protect the unborn child. Termination of pregnancy might be sometimes considered during treatment planning, it has not been shown to have a survival benefit and it is a decision that should be individualized.[3]

Consequently, the treatment of choice is surgery. During any trimester of pregnancy, surgery of breast and lymph nodes seems to harbor a minimal risk to the fetus.[1] Chemotherapy in the treatment of GBC is possible after the first trimester of pregnancy and should be administered according to the same principles applied in non-pregnant patients. Radiation therapy should be avoided and delayed whenever possible until after delivery because of its toxic impact on the fetus.[4]

All patients with gestational breast cancer should be assessed for distant metastases according to guidelines developed for non-pregnant patients.[6] A mammogram (with abdominal shielding) of the unbiopsied breast is recommended to exclude contralateral involvement.[3] Systemic staging can include a chest radiograph with fetal shielding (0.0001 Gy) and a liver ultrasound. To evaluate bone metastases, an MRI of the spine without contrast can be done, particularly if the patient is symptomatic.

In our case, the initial presentation of the GBC was missed. The index of suspicion should have been higher, and a biopsy could have been performed immediately, even if the mass did not appear suspicious on imaging. Unfortunately, there was no further evaluation about it. However, given her tumor type and size at diagnosis plus her poor response to initial treatment, she did exceptionally well to survive nearly two years post diagnosis.

We conclude that GBC presents a clinical situation of utmost important which requires a multidisciplinary approach to ensure optimal care for both the mother and the baby. While protecting the interests of mother and the unborn child, breast cancer can be best diagnosed, staged and managed within pregnancy with favorable outcomes for both. The prognosis in GBC, similar to breast cancer in other women, depends mainly on the stage of the disease as soon as the diagnosis was made.

Conflicts of Interest

None

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