

Successful pregnancy after breast cancer treatment in a Sudanese patient

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Abstract

Breast cancer survivors, usually, suffer many side-effects from cancer treatments such as premature menopausal symptoms, osteoporosis, and infertility. We report a case of a pregnancy in a Sudanese patient after amenorrhea as a result of breast cancer chemotherapy treatment. A 34-year-old female with a history of right breast lumpectomy presented to the National Cancer Institute, Gezira University, Sudan with reoccurred malignant breast tumor. The patient underwent treatment that included the mastectomy, axillary clearance, followed by anthracycline-based chemotherapy for 4 months and then tamoxifen. However, whereas, on treatment, the patient developed amenorrhea as a side-effect of chemotherapy treatment. Despite this, the patient became pregnant and delivered full-term twin babies with no congenital abnormalities. Temporary chemotherapy treatment-related menopause may occur in younger women and factors such as chemotherapy drug type, dosage, and the patient's age may play a role.

Key words: Amenorrhea, breast cancer, chemotherapy, fertility

INTRODUCTION

In the United States, the probability of a woman to develop invasive breast cancer is low from birth to 39 years, accounting to only 0.49%.^[1] However, in African women, the diagnosis is often made between 35 and 45 years of age, which is 15 years earlier than women in Europe and North America.^[2-4] In Tanzania, 8% of women diagnosed with breast cancer were below 30 years of age and the majority of Tanzanian and Sudanese women diagnosed with breast cancer between 35 and 44 years of age.^[5,6] The mortality rate among women in sub-Saharan Africa is high because the tumors tend to be very aggressive with bad prognosis at presentation.

However, recently in the United States and to some extent in Sub-Saharan Africa, more women survive their cancer due to awareness programs, early detection and availability of effective treatments. However, despite its benefit, breast cancer treatments cause women to suffer many side effects. These may include premature menopausal symptoms, osteoporosis, and infertility.^[7] The following is a case report of successful pregnancy after secondary amenorrhea induced by breast cancer treatment with cyclophosphamide 600 mg/m², Adriamycin 60 mg/m² and 5 fluorouracil 600 mg/m² (CAF) regime of chemotherapy in a middle aged Sudanese patient.

CASE REPORT

A 34-year-old female with a history of right breast lumpectomy presented to National Cancer Institute, Gezira University, Sudan with reoccurred malignant breast tumor. Histopathology showed infiltrating moderately differentiated Nottingham grade I ductal carcinoma with area of cribriform pattern; five out of nine axillary lymph nodes were involved with cancer. Chest X-ray, US abdomen

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and bone scan were normal, and the patient's final stage diagnosis was T₂N₁M₀ (IIB). The patient was treated with local radiotherapy to chest wall and six cycles of adjuvant chemotherapy CAF. Estrogen and progesterone receptors were not tested; however, the patient was prescribed empirical tamoxifen. During chemotherapy, the patient complained of amenorrhea and pregnancy was excluded.

Two years later the patient presented with symptoms and signs of pregnancy. Urine pregnancy test was positive and abdominal ultrasound showed viable active twins with gestational age of 21 weeks. Tamoxifen was discontinued, and regular antenatal care was provided. Upon completion of gestation period, healthy twin girls were delivered. During the 4-month checkup after giving birth, the patient was examined again for cancer and no local or distant relapse were seen.

DISCUSSION

In this report, we present a case of a 34-year-old young woman that developed amenorrhea as a result of breast cancer treatment with six cycles of CAF. After 2 years on tamoxifen, the patient became pregnant and gave birth to healthy twin babies.

In general, breast cancer treatment consists of surgery, followed by radiotherapy, chemotherapy and hormonal therapy. Chemotherapy can cause many adverse effects, which may include temporary or permanent amenorrhea and infertility resulting from direct toxicity to the ovaries.^[8] These effects are of a major concern for premenopausal women as they may result in loss of childbearing potential. This is of importance in the case of sub-Saharan African women. These women develop breast cancer at an early age compared with women living in the developed world. The case report presented may offer hope to some women diagnosed with breast cancer that administered adjuvant chemotherapy.

The risk of amenorrhea associated with adjuvant chemotherapy ranged from 21% to 71% in younger women and 49-100% in women older than 40 years in age.^[8] However, that depends on the chemotherapy regimen prescribed; the cumulative dose (particularly the dose of alkylating agents such as cyclophosphamide) administered, and age of the patient. Older women have a much greater risk of developing amenorrhea compared with younger women. About 33% of women 40 years and younger and 81% of women older than 40 years of age became menopausal during adjuvant, classic CMF with oral cyclophosphamide for 6 months.^[9,10]

Not known when the Sudanese patient resumed menstruation, but the patient became pregnant, 2 years

after chemotherapy treatment. It has been reported that patients younger than 35 years recovered more quickly from amenorrhea (median of 184 days) compared with older patients (median 366 days).^[11] Furthermore, patients showed no sign of the disease upon examination and seemed in good health. Despite theoretical concerns, neither the experience at major institutions nor studies from population-based data registries have found that women who become pregnant after a diagnosis of breast cancer have a worse outcome than those who do not become pregnant.^[12,13] Opinion on the best timing of pregnancy after breast cancer treatment is divided. Only one study analyzed the effect of timing and found no difference in the outcome between one, two or more than two years after breast cancer diagnosis.^[14]

The twin babies are healthy and showed no congenital problem. According to the limited available reports, chemotherapy does not appear to have teratogenic effects.^[15] The risk of fetal malformations and damage to the fetus after chemotherapy and/or hormone therapy seem similar to that in the general population.

Tamoxifen is a mixed estrogen agonist and antagonist that have a variety of effects on gynecologic function among both younger and older women.^[16] Menstrual function may be either normal or disrupted during tamoxifen therapy. Women who have menstrual dysfunction while taking tamoxifen may resume normal menses after cessation of therapy.^[17] Tamoxifen may increase plasma estradiol concentration and disrupt the hypothalamic ovarian feedback loop for further estrogen synthesis.

CONCLUSION

This report showed a successful pregnancy, healthy patient and healthy babies, after secondary amenorrhea induced by breast cancer treatment with CAF regime of chemotherapy and while on tamoxifen for 2 years.

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