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Pregnancy in Breast Cancer Survivors; Is It Safe?

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Dear Editor,

Cancer can be considered an age-related disease (1). As the average age for pregnancy has risen over time, it has become more common for women to be diagnosed with cancer during reproductive years which may interfere with having children (2). Breast cancer is the most common invasive cancer in women with ASR = 51.6 in 2016, worldwide (3). Fortunately, advances in diagnosis and treatments in recent decades have led to improved survival rates of various cancer types, especially breast cancer (4). The pooled 1-, 3-, 5- and 10-year survival rates in women with breast cancer in the Eastern Mediterranean Region were 0.95, 0.80, 0.71, and 0.56, respectively (5). Returning to a normal life after breast cancer treatment has been considered a crucial ambition in cancer care in the last decade (6). Pregnancy after breast cancer diagnosis and treatment is considered an important factor in increasing cancer patients' quality of life (7). In the United States, 7% of breast cancer survivors are under 40 years old which coincides with their reproductive period (8). In some other countries, about 21% of breast cancer survivors are in the reproductive age (9). Nearly 70% of breast cancer survivors desire to get pregnant after their treatment. This number is slightly lower than the general population because of the fear of probable adverse effects of the cancer treatment on their offspring's health or on the course of their own disease (6, 10). Now the question is "Should we accept and recommend pregnancy after breast cancer treatment?"

Based on previous studies, pregnancy is usually safe for both mother and baby after cancer treatment. In this regard, it has been shown that pregnancy subsequent to breast cancer treatment does not appear to increase the risk of cancer recurrence and has no detrimental effect on overall survival or diseases free survival (4, 6). Occasionally patients are advised to become pregnant a while after the end of treatment. This delay depends on:

(1) The type of cancer and its stage
(2) The type of treatment
(3) The time of cancer management
(4) Patient's age
(5) Patient's desire

Some doctors recommend that patients do not become pregnant for 6 months after receiving chemotherapy because of the chemo toxic effects of drugs on ovarian follicles, and many consider 2 - 5 years after treatment to be the right time to get pregnant. This is due to the recurrence in the early years and also cancer treatment during pregnancy is complex (11).

According to the fetal-antigen hypothesis, there are similar antigens between embryonic cells and cancer cells. Fetal antigens initiate a robust memory response from the immune system during pregnancy which is first stimulated by breast cancer cells isoimmunization occurs during pregnancy and as a result, subclinical micrometastases are checked by the immune system. Therefore, pregnancy not only decreases the disease recurrence probability but also according to some studies, it suppresses micro metastases and reduces recurrence (12).

Another challenge is whether the risk of recurrence is higher in breast cancer pregnant women with positive hormone receptor (ER^+) compared to negative receptor (ER^-) or general population? According to pre-clinical studies, pregnancy caused apoptosis in the ER^+ breast cancer cell line by increasing estrogen levels after a deprivation period. In addition, fetal microchimerism acts as an immunological boost in patients who are exposed to cancer antigens. These hypotheses reinforce the evidence that the overall survival and disease-free survival in ER^+ pregnant women is similar to ER^- pregnant women and the general population (13).

Antihormonal drugs used in breast cancer patients should be discontinued before attempting to conceive. Tamoxifen, which is prescribed in hormone-positive pa-

tients, should be discontinued three months before pregnancy due to some fetal genital anomalies like clear cell carcinoma of the vagina, T-shaped or hypoplastic uterus, and abnormal cervix. Evidence has shown that delaying the onset or discontinuation of tamoxifen during treatment for pregnancy to compare postpartum treatment has no effect on disease recurrence (14, 15).

Trastuzumab, which is prescribed to HER2+ patients, should be discontinued 7 months before pregnancy due to oligohydramnios and pulmonary hypoplasia of the fetus (16).

In all recent studies, including the San Antonio 2020 Symposium, pregnancy in breast cancer survivors is not associated with declining overall survival, a congenital defect in the fetus, or significant pregnancy and delivery complications. Only the risk of low birth weight and small gestational age in newborns increases in patients with a history of chemotherapy which means the need for full monitoring during pregnancy (4, 12). Overall, there is reliable evidence of safe pregnancy in patients with a history of breast cancer as the most common cancer with good survival.

Footnotes

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