Oligohydramnios associated with administration of weekly paclitaxel for triple-negative breast cancer during pregnancy

case

A 35-year-old multipara presented at 17 weeks gestation with a right breast mass and bloody nipple discharge. On examination, she had a palpable 10 × 9 cm right breast mass and a 4 cm right axillary lymph node. A core biopsy revealed invasive ductal carcinoma. The tumor was negative for estrogen, progesterone, and HER2 receptors—a triple-negative phenotype. Limited staging with liver ultrasound and magnetic resonance imaging of T- and L-spine were unrevealing for metastases.

After multidisciplinary discussions with high-risk maternal and fetal specialists and oncologists, at 24 weeks gestation, the patient received four cycles of dose-dense doxorubicin and cyclophosphamide (AC), with growth factor [granulocyte colony-stimulating factor (G-CSF)] support between each cycle with dramatic response [1]. Serial fetal ultrasounds during chemotherapy indicated normal fetal growth and development. Subsequently, the patient started weekly paclitaxel—also with
growth factor support. Yet the breast mass grew to 7 \times 6 \text{cm} after the fourth weekly paclitaxel. Moreover, on fetal ultrasound, oligohydramnios was noted. Due to the development of oligohydramnios and tumor progression, the patient was admitted at 36 weeks gestation for delivery, both for maternal and fetal safety. She delivered a 5lb 4oz healthy infant by Cesarean section. Echocardiogram and complete blood count of the baby after delivery were normal.

**discussion**

Pregnancy-associated breast cancer (PABC) is defined as breast cancer diagnosed during pregnancy or in the first postpartum year. It is estimated that breast cancer occurs in 1 in 3000 pregnancies, with the average woman aged 32–38 years at diagnosis.

Estrogen and progesterone receptors are negative in ~70% of PABC, and 28%–58% of PABC express HER2/neu.

Despite the vulnerability to teratogens of specific development, chemotherapy can be administered relatively safely in the second and third trimesters of pregnancy, for delay in treatment may compromise maternal outcome.

During pregnancy, administration of anthracyclines once in every 3 weeks is considered safe. However, randomized controlled trials in women without pregnancy have shown that dose-dense (once in every 2 weeks) AC and metronomic (once a week) paclitaxel results in better disease-free and overall survival, particularly in women with triple-negative breast cancer [1]. Moreover, the use of dose-dense AC has been found to be safe during pregnancy [2]. Similarly, in our patient’s case, there was no clinical indication of fetal malformation or growth retardation by ultrasound while on dose-dense chemotherapy.

Our patient went on to receive weekly paclitaxel [3]. Relative safety of mostly standard schedules of docetaxel and paclitaxel during pregnancy has been demonstrated [4]. In contrast, our patient developed oligohydramnios after initiation of the weekly schedule of paclitaxel. To date, in the only case report noting anhydramnios associated with paclitaxel, anhydramnios was ascribed to the concomitant treatment with trastuzumab [5]. Weekly paclitaxel is more efficacious than 3-weekly paclitaxel, secondary to a more pronounced antiangiogenic effect on tumor in contrast to the predominantly cytotoxic effect on tumor with paclitaxel scheduling once in every 3 weeks [1, 3]. Speculatively, this antiangiogenic effect of weekly paclitaxel may have contributed to oligohydramnios in our patient.

Our case supports the data on safety of dose-dense doxorubicin and cyclophosphamide and G-CSF given after the first trimester in PABC [1,2]. However, we suggest that if weekly paclitaxel is administered during pregnancy, serial monitoring with fetal ultrasounds be used for early detection of possible oligohydramnios.

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**references**


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