Solid papillary carcinoma of the breast with neuroendocrine features in a pregnant woman

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Abstract

Solid papillary carcinoma, a special form of breast carcinoma with neuroendocrine differentiation, usually presents in women aged 60 years or more. (Koern 2010). According to our best knowledge, we present the second case of such a tumor in pregnant women.

CASE REPORT

CASE

In September of 2010, a 28-year-old Caucasian woman was referred to our center in her 31st week of first pregnancy. She developed a palpable mobile tumor in her lower internal quadrant of the left breast, 1.5 cm in diameter, which was diagnosed by her primary care obstetrician during a routine 3rd trimester breast clinical examination. Sonography revealed the nodule to have suspicious characteristics. The lymph nodes in the left axillary fossa were unsuspected.

The ultrasonography guided high-speed core biopsy of the lump revealed a DCIS of the breast. She was treated with lumpectomy and axillary lymph node resection in the 31st week of gestation.

The chormogranin A level initially was 4.6 nmol/l, FT4 – 1.10 ng/dl, TSH – 0.8126 μIU/ml.

Macroscopically, a well circumscribed tumour (Figure 1), 11 mm in diameter, was removed within a 40 × 30 × 20 mm breast tissue fragment. Based on histological and immunohistochemical studies, the diagnosis of solid papillary breast carcinoma with focal neuroendocrine immunophenotype was settled. Histological study revealed the neoplasm to be built of solid nests of atypical epithelial cells (Figure 2), which were characterized by light or moderate polymorphism, mucin droplets in cytoplasm, and abundant mitotic activity. They presented a strong expression of cytokeratin CK7 (Figure 3), and estrogen receptor (ER) in nearly all tumor cells. The reactions against progesterone receptor, chromogranin A (Figure 4), and Ki67 protein gave positive results in 30%, 20% and 40% of neoplastic cells, respectively. There was no reaction to HER2 receptor.

The personal and familial history of our patient was negative for breast cancer. At the time of evaluation, our patient was in good general condition. The obstetrical status was: a single fetus in cephalic presentation, the biophysical status of the fetus and uterus was adequate to gestational age with estimated fetal weight of 1 890 g; normal, Grade 2 placenta attached to the posterior uterine wall with

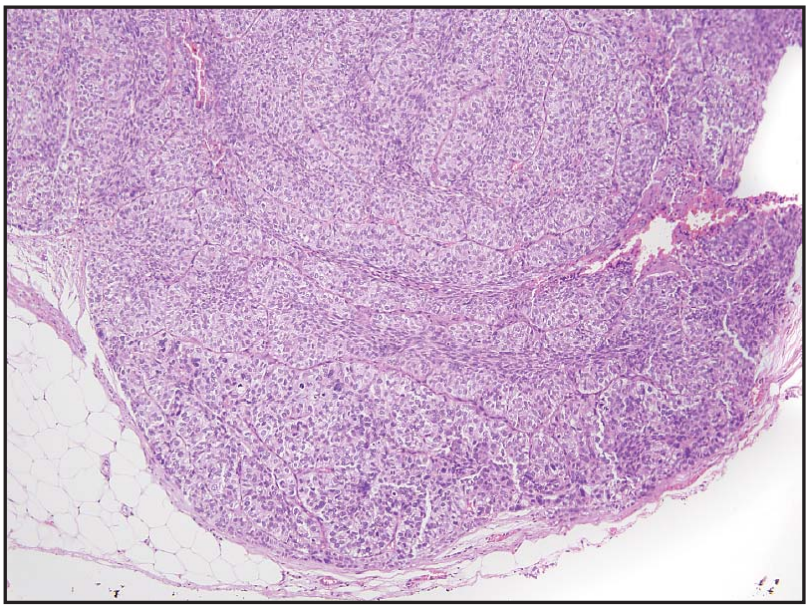

Fig. 1. Well circumscribed tumour.

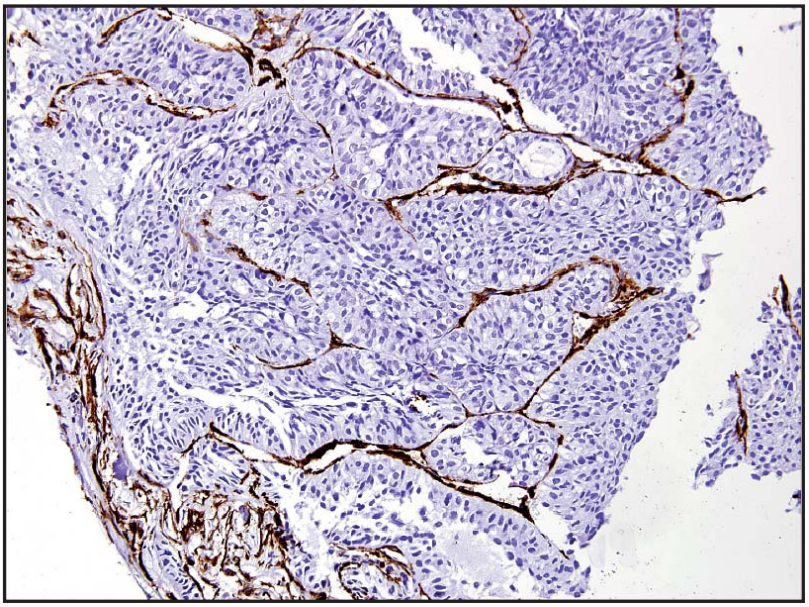

Fig. 2. Atypical epithelial cells.

a normal amount of amniotic fluid. The anatomy of the fetus, umbilical cord and placenta were within normal range. At 31 weeks of gestation, based on OGTT, she was diagnosed with Diabetes Type G/B (fasting glucose level – 7.34 mmol/l, and 8.06 mmol/l, 120 minutes after 75 g glucose load). The abdominal ultrasound examination revealed no pathology. The patient was treated with 3 injections of a rapid insulin analogue and 2 injections of isophane insulin. A metabolic wellness status was reached with diabetic diet (1 800 kcal/6 meals) and 22 units of insulin/24 hrs. She was diagnosed with Barlow syndrome and Wolf Parkinson White syndrome.

She delivered at 36 +2 weeks of gestation vaginally. She delivered a healthy girl 3 060g/52 cm, 10 points of Apgar score.

Our patient had SLN dissection on the ipsilateral axilla (4 nodes with maximum radioisotope signaling of 1100) – which were histologically negative. The patient had axillary lymph nodes irradiated, and was regionally treated with Anthracycline-based chemotherapy concurrently with TAM hormone therapy.

Our patient is in good health with a Performance Status 0 (ECOG). A thorough examination (breast mammography, abdominal ultrasound, total-body computerized tomography, bone scintigraphy, pelvic and transvaginal ultrasound and PET) showed no evidence of metastases.

DISCUSSION

Solid papillary carcinoma (SPC) is an uncommon breast neoplasm representing approximately 1–1.5% of breast malignant tumours (Kuroda *et al.* 2010). It can be considered both as a distinctive form of papillary carcinoma (Hardisson *et al.* 2003) as well as peculiar subtype of neuroendocrine breast carcinoma (Righi *et al.* 2010). According to WHO 2003 classification, SPC is a rare variant of intraductal carcinoma (Otsuki *et al.* 2007); however most SPC cases do not present the immunohistochemical staining for myoepithelial markers in spite of a well-circumscribed non-invasive histological appearance (Nicolas *et al.* 2007). Importantly, the ultrastructural studies did not reveal the presence of myoepithelial cells in the region of neoplastic cells (Dickersin *et al.* 1997).

Solid papillary breast carcinomas are characterized by distinctive morphological and immunohistochemical features. They are composed of circumscribed large cellular nodules, separated by bands of dense fibrosis (Otsuki *et al.* 2007). The tumor cells express a positive reaction to estrogen and progesterone receptors, as well as at least focal cytoplasmic positivity for chromogranin A or synaptophysin (Wei *et al.* 2006). Although neuroendocrine differentiation is often described to be specific for SPC and many authors have stressed the importance of using special staining for neuroendocrine markers to differentiate between SPC and other types of DCIS (Maluf & Koerner, 1995; Kanbayashi *et al.* 2001), the positivity for neuroendocrine markers does not necessarily confirm a diagnosis of SPC (Otsuki *et al.* 2007). Yet some authors reported that a few cases do not exhibit neuroendocrine differentiation (Tsang & Chan 1996).

Solid papillary carcinoma of the breast tends to occur in older women. In the series of 58 cases of SPC, the mean age of patients was 72 years and in the other three reports presenting 20 cases each, the mean age of patients was 66 years (Otsuki *et al.* 2007; Wei *et al.* 2006). However, there are sporadic reports of a young female diagnosed even in their second decade of life (Jaffer *et al.* 2004). To our knowledge, there was only one case of SPC of the breast reported in a pregnant woman (Jaffer *et al.* 2004).

Follow-up data of few studies suggested that SPC often carried an indolent clinical behaviour and favourable prognosis (Otsuki *et al.* 2007; Wei *et al.* 2006). Lymph node metastases were uncommon and generally limited to cases with coexisting invasive components (Nassar *et al.* 2006). Such an additional invasive component of SPC can consist of the histological texture typical for invasive neuroendocrine cell carcinoma or mucinous carcinoma (Otsuki *et al.* 2007). Otsuki *et al.* reported a better prognosis of SPC even associated with invasive cancer. The 5-year disease – free survival rate was 93.4% and 83.0% for grade 1 and grade 2 Breast Cancer. Since nothing is known about the prognosis of SPC diagnosed in pregnant women, a large-scale follow-up study would be of great value.

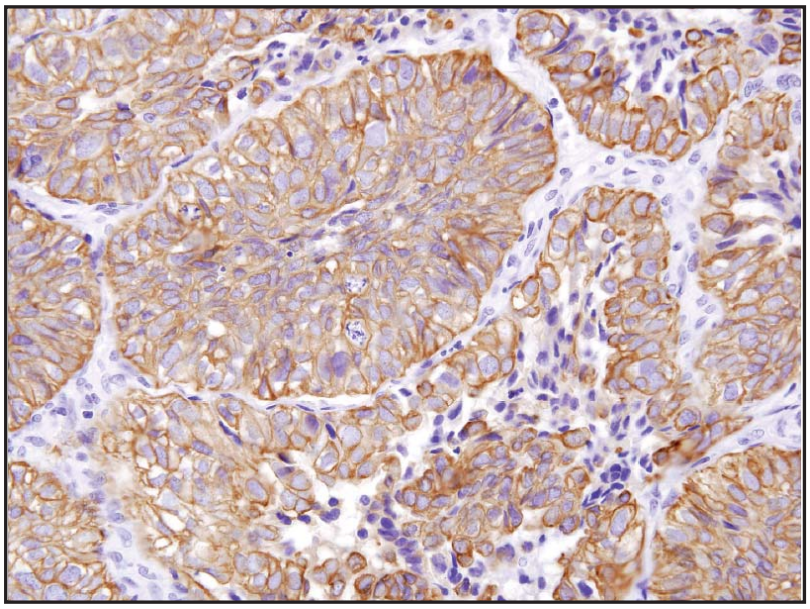

Fig. 3. Positive immunohistochemical reaction to cytokeratin 7.

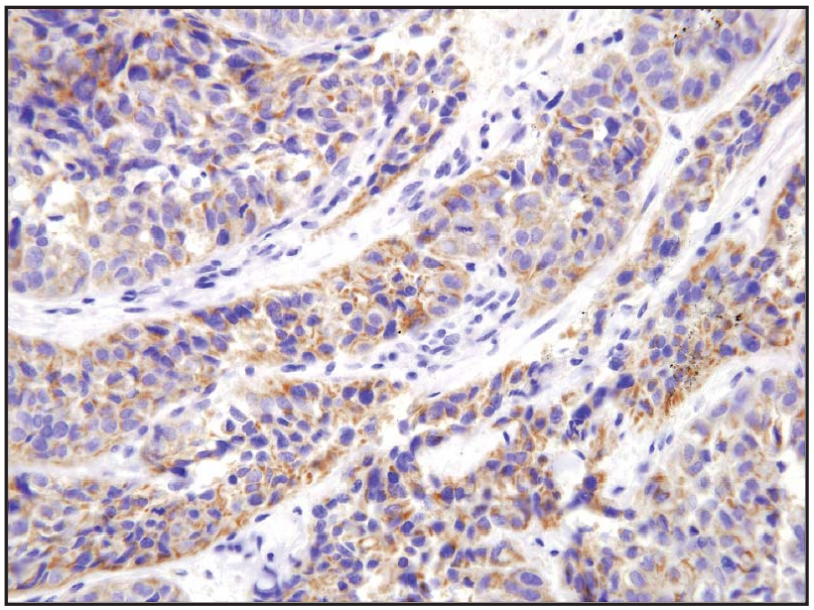

Fig. 4. positive reaction to chromogranin A - magnif. 40×

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