

Lipid-Rich Carcinoma of the Breast With Unusual Clinical and Histopathological Features

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Abstract

Lipid-rich carcinoma of the breast is a rare form of invasive breast carcinoma of special type. Most cases are grade 3, hormone receptor negative, and associated with aggressive clinical behavior. We report an unusual case of lipid-rich carcinoma with morphological and immunophenotypical features different from those of cases reported so far in the literature. The index case underscores the fact that there is no consensus with regard to the exact nature of this tumor. Hence, larger studies are needed to draw meaningful conclusions.

Keywords

lipid-rich carcinoma, Elston grade, immunohistochemistry, electron microscopy

Introduction

Lipid-rich carcinoma of the breast is a rare form of invasive breast carcinoma. It is defined as an invasive breast carcinoma of special type in which no fewer than 90% of the tumor cells contain intracytoplasmic lipids.¹ Most cases of lipid-rich carcinoma described in the literature are grade 3, hormone receptor (estrogen and progesterone) negative, and associated with aggressive clinical behavior. Here, we report an unusual case of lipid-rich carcinoma with morphological and immunophenotypical features different from those of cases reported so far in the literature.

Case Summary

A 58-year-old previously healthy woman presented with left breast lump for 6 months. On examination, she was found to have a hard lump in the central quadrant measuring approximately 7 cm in maximum dimensions. The lump was not fixed to the chest wall or overlying skin. A total mastectomy procedure was performed in another institute. The gross specimen revealed a circumscribed gray-white tumor measuring 8 cm in its maximum dimensions. The slides and blocks were reviewed in our institute. Microscopically, the tumor was well circumscribed and had pushing margins (Figure 1A). The tumor cells exhibited an alveolar growth pattern with no tendency to form tubules (Figures 1B and 1C). The individual tumor cells were polygonal, with round to oval hyperchromatic nuclei, inconspicuous nucleoli, and abundant foamy cytoplasm

with distinct cytoplasmic borders (Figure 1D). Mitotic activity was 2/10 per high-power field (field area of 0.196 mm²). The overall Elston grade² was 1. This typical morphology was evident in >95% of tumor cells. Periodic acid-Schiff (PAS) stain was negative. There was no associated ductal or lobular carcinoma in situ component in the adjacent breast parenchyma. Oil-red O stain performed on the paraffin sections was non-contributory to the diagnosis. Immunostains for Estrogen receptor (ER) (Figure 2A) and Progesterone receptor (PR) (Figure 2B) were positive. The Ki67 labeling index was <1% (Figure 2D). Immunostains for Her2-Neu (Figure 2C), CK5/6, and p63 were negative. To rule out the possibility of an invasive mammary carcinoma of no special type with apocrine differentiation, androgen receptor staining was performed, and the result was negative (Figures 3A and 3B). The skin, nipple-areola complex, and lymph nodes were free of tumor. Electron microscopic examination revealed numerous fat globules and cytokeratin filaments within the cytoplasm of the tumor cells (Figures 4A–4D). The subcellular organelles, especially the mitochondria and Golgi apparatus, did not show any significant morphological changes.

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