A 96-Year-Old Woman With a Tumorous Lesion of the Right Breast

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A 96-year-old woman with a lump in her right breast was admitted to the surgery unit of a private clinic. The clinical and family histories were unremarkable. Clinical examination revealed a well-defined tumorous lesion approximately 2 cm in maximum diameter located in the upper right quadrant of the right breast near the axilla. The lesion was firm but movable. The lump and adjacent breast tissue were surgically removed.

The specimen was $4 \times 2.4 \times 2.1$ cm and consisted of adipose tissue. Slicing revealed an almost circumscribed, firm, whitish tumorous lesion 2.4 cm in maximum diameter with foci of hemorrhage.

Sections had some focal areas of solid tumor with margins of the pushing type (Figure 1), whereas in other areas there was obvious invasion of the mammary adipose tissue (Figure 2). The neoplastic cells were arranged in solid sheets supported by a delicate arborizing fibrovascular stroma (Figure 3). Focally, the neoplastic proliferation was so densely cellular that the stroma was almost obscured. Areas of trabecular and rarely cribriform growth pattern were also found. The neoplastic cells appeared mainly of median size with pale or eosinophilic cytoplasm. Nuclei were of moderate cytologic atypia, and some of them contained one or more small nucleoli. Mitotic figures were numerous (more than 13 per 10 high-power fields) (Figure 4). Scattered lymphocytes and plasmacytes were found around the neoplastic nests. In the center of the tumor, the stroma was collagenized and sclerosed with hemorrhagic and even necrotic foci, mild chronic inflammation, and hemophages.

Histochemically, intracytoplasmic mucin was detectable in some neoplastic cells with periodic acid–Shiff stain.

Tumor cells were diffusely positive for cytokeratin 7 (Dako, Glostrup, Denmark) and estrogen receptors (Dako) and focally positive for gross cystic disease fluid protein (GCDFP-15; Signet, Dedham, Mass), Leu-7 (Dako), and neuron-specific enolase (Dako). Cells were negative for progesterone receptors (Dako), chromogranin (Dako), synaptophysin (Dako), CD34 (BioGenex, Menarini, San Ramon, Calif), S100 protein (Dako), and c-Erb-B2 (BioGenex, Menarini).

What is your diagnosis?
Invasive ductal breast carcinomas include various special types and various types of differentiation. Papillary carcinoma accounts for about 1% to 2% of breast carcinomas in women and a slightly higher percentage of breast carcinomas in men.1,2

Women with solid or cystic papillary carcinoma of the breast usually are older than patients with other types of carcinoma (mean, 63–67 years). In the present case, the patient was much older than the mean age. Although in at least one third of patients the tumor presents with nipple discharge, in this patient the only symptom was a palpable mass, because this neoplasm was located away from the nipple in the upper right quadrant of the breast. Its maximum diameter was in accordance with the average size (2–3 cm) of papillary carcinoma.

A significant feature of papillary carcinoma is its mammographic and macroscopic appearance, which is usually rounded and circumscribed. These characteristics must be considered for its correct evaluation.

With regard to papillary carcinomas, in 1946 Foote and Stewart3 stated that “in some areas cell proliferation becomes so dense that basic papillary properties are overgrown.” Such tumors are referred to as solid papillary carcinomas. The existence of the solid variant of papillary carcinoma remains controversial and is not widely accepted. According to the description, these tumors are formed by ducts nearly or completely filled by a solid neo-plastic proliferation. All the neoplastic component is supported by a delicate network of fibrovascular stroma distributed in an arborizing pattern throughout the epithelium. The presence of such a network of fibrovascular stroma is the hallmark of solid papillary carcinomas. The epithelium usually has such a densely solid and cellular structure that the stroma can be obscured. Areas with an organoid growth pattern or solid areas broken up into ribbons or trabeculae can be found. Cribriform foci and comedo necrosis are rare. Collagenization of stroma may occur to some degree, leading to the appearance of a radial sclerosing lesion. Foci of intraductal carcinoma can be found in ducts at the periphery of a solid papillary carcinoma. A broad range of intracytoplasmic mucin can be visualized with histochemical stains (mucicarmine, alcin blue, and period acid–Shiff) in papillary carcinomas, including the solid variant.

Tumors with a solid papillary growth pattern may contain Grimelius- and chromogranin-positive neurosecretory-type cytoplasmic granules. These granules usually are immunoreactive for synaptophysin and neuron-specific enolase and positive for estrogen receptor.4 The solid papillary carcinoma of the breast was first described as a form of intraductal carcinoma with endocrine differentiation frequently associated with invasive mucinous carcinoma.5,6 Recently, more than 50% of “solid papillary carcinoma” that were evaluated displayed coexpression of neuroendocrine and apocrine markers, thus suggesting that neuroendocrine and apocrine differentiation may coexist in the same breast tumor.7 In the present case, although some neoplastic cells were positive for markers such as Leu7 and neuron-specific enolase, all cells were negative for the neuroendocrine markers chromogranin and synaptophysin. Thus, there was no immunohistochemical proof of neuroendocrine differentiation of the carcinoma.

In the sections taken from the specimen, no in situ component in the ducts at the tumor periphery was found. The absence of ductal carcinoma in situ in the sections examined suggested a possible metastatic origin, but the lack of relevant clinical history in association with the intense positive reaction of the neoplastic cells for estrogen receptors and their focal immunoreaction for GCDFP-15 were strongly supportive of the tumor’s primary nature.

The growth pattern of this tumor is in accordance with the hallmark features of solid papillary carcinoma with invasion. The invasive nature was confirmed by discovery of small cohesive sheets of carcinoma cells in the adjacent fat.

All pathologists should be aware of the histopathologic characteristics of this variant of papillary breast carcinoma, which allow its distinction from an invasive ductal carcinoma of no special type and lead to the correct diagnosis. Such a distinction is very important because the prognosis for patients with invasive papillary carcinoma, including the solid variant, is very favorable, even for women who have axillary nodal metastases. A low frequency of axillary lymph node metastases has been reported in these patients, and when axillary nodal metastases occur they rarely involve more than 3 lymph nodes. Overall, 5-year disease-free survival is considered to be about 90%.8 According to another study,7 the patients with mucinous and solid papillary carcinomas have a significantly longer survival time than do patients with tumors of other histologic types.

References