here are a variety of breast tumors with obvious mucin production. Mucinous carcinoma is the most common type. Mucinous cystadenocarcinoma (MCA) is a rare form, first described by Koenig and Tavassoli in 1998.1 This unusual variant of primary breast carcinoma bears a stringing resemblance to MCA’s of ovary and pancreas.2

Only eight primary MCA’s of the breast have been reported previously. All of them were hormone independent tumors.3 We wish to document an additional and hormone dependent case. The informed consent of the patient was obtained for this case report.
CASE REPORT

A 49-year-old postmenopausal woman referred to Ankara Oncology Educational and Research Hospital because of a malignant epithelial tumor in her left breast. Patient’s mammogram obtained before the biopsy showed smoothly bordered 2 cm-diameter mass in the upper left quadrant of the left breast. Ultrasonography of the mass defined a 20 x 15 mm, irregular, hypoechoic lesion. Excisional biopsy was performed in the hospital that the patient was admitted previously. In the initial pathologic report of the patient, macroscopic examination showed a cystic tumor, 3x1.8x1.5 cm in size. Some white solid areas arising from the cyst wall were found. The cyst lumen was comprised of abundant transparent to gelatinous material with many small papillary structures. The final diagnosis in the first center was “malignant epithelial tumor, suspicious for the metastases from gastrointestinal tract”. The whole tumor was submitted for histopathological re-evaluation.

Clinical examinations of the case ruled out the possibility of metastases in our hospital. There were no proven lesions in gastrointestinal or genitourinary systems with endoscopic examination, abdominal ultrasonography and CT scans. Tumor markers were within the normal ranges. (Ca 125:24 U/ml; Ca 19-9:5.03 U/ml). No palpable axillary lymph node was noticed. There were no suspicious metastases in the axillary lymph nodes by ultrasonography.

Re-excision and axillary lymph node sampling was performed. There were neither residual tumor nor axillary metastases. The paraffin blocks of the patient were also consulted. In hematoxylin–eosin stained slides, there were dominant cystic lesions which had many microcysts and small papillary structures with delicate fibrous cores. These were extracellular eosinophilic material. Lining epithelial cells were tall columnar and their cytoplasm was vacuolated. Some of these were similar to goblet cells (Figure 1, 2). Epithelial cells showed nuclear pleomorphism, ranging from minimal to moderate atypia. Mitotic figures were rare. There was no ductal insitu carcinoma (DCIS) inside or near the tumor or surgical margins, so that the surgical margins were tumor-free.

Histochemically, there was abundant mucin in the cytoplasm of the columnar cells and the endocellular areas were stained with periodic acid-Schiff (PAS), with or without diastase digestion.

Immunohistochemically, there were strong positivity for cytokeratin 7 (CK7) (Neomarker’s, dilution 1/100), mammoglobin (Dako, dilution 1/100) and progesterone receptor (PR) (50% and moderate severity) (Figure 3). Cytokeratin 20 (CK20) (Immunovision, dilution 1/100), estrogen receptor (ER) (Neomarker’s, dilution 1/200) and c–erbB-2 (Score 1) were negative (Neomarker’s, dilution 1/800 for IHC and Ventana silver insitu hybridization for in-situ hybridization) (Figure 3).

DISCUSSION

Breast carcinoma comprising of tall columnar cells with nuclei located at the base of the cell and abundant intra and extracytoplasmic mucin with cystic appearance is extremely rare.4 A review of the literature, revealed eight previous reports of breast MCAs.1,2,5,6 The ages of the patients’ at the diagnosis ranged from 49 to 96 years, with a mean of 68 years. Our case was a 49 year- postmenopausal woman and her age was similar to other patients reported in the literature. Most of the reported cases were postmenopausal.1,2,5

Because of the rarity of this tumor, the possibility of metastases from other organs is a subject of debate in the literature.1,6 Metastatic mucinous carcinoma, particularly originating from the ovary or pancreas, should be ruled out before primary mucinous cyst adenocarcinoma of the breast is diagnosed.7 Breast MCAs are CK 7 (+) and CK 20 (-) while both markers are positive in ovarian and pancreatic mucinous adenocarcinoma. In our case, CK 7 was positive and CK 20 was negative, and the carefully examinations of the gastrointestinal and genitourinary systems did not show any primary malignancies. Additionally, mammoglobin was strongly positive in our case. Since mammoglobin-
lin is a specific marker for the breast cancer, this tumor should primarily arise from the breast.  

According to Koenig and Tavassoli, the tumor cells are negative for ER-alpha and PR. Houna et al. also reported that tumor cells were negative for ER-alpha and PR, suggesting that MCA’s of the breast develop independent of estrogenic stimulation. Similar to the previous reports ER was negative in our case, but in contrast, we found that PR was positive and because of this we thought this tumor was hormone dependent.

It is better to observe ductal carcinoma in situ (DCIS) areas in and out of the tumor mass. Of the eight previously reported cases, one case was associated with adjacent foci of DCIS, mucinous cystadenocarcinoma in situ and invasive ductal carcinoma. Another case was associated with adjacent DCIS and a focus of ordinary mucinous carcinoma. Two cases had foci of mucinous cystadenocarcinoma in situ and one had DCIS adjacent to the tumor. Three cases, similar to the one presented here showed no association with DCIS.

Because MCA is an extremely rare variant of breast carcinoma, some cases may have been misclassified as other breast carcinomas. We want to present a case who was hormone dependent in contrast to previously reported cases. This was the first PR positive case. We do not know how the positivity of PR will affect the prognosis, longer follow-up duration and more cases needed to be evaluated to have more information on this issue.
REFERENCES