

## Case Report

# A Case of Non-Metastatic Giant Mucinous Carcinoma of the Breast

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A surgically resected case of giant mucinous carcinoma of the breast that had remained untreated for 2 years is reported. A 64-year-old postmenopausal woman presented with a large right breast mass (17.4 × 16.5 × 14.5 cm). Although she had noticed a mass in the right breast 2 years previously, she had not sought treatment. Mucinous carcinoma was diagnosed by core needle biopsy and she underwent right modified radical mastectomy with a free skin graft. There were no lymph node metastases or distant metastases. Fourteen months postoperatively, she remains well without evidence of tumor recurrence. Although several reports have suggested that pure mucinous carcinoma of the breast has a favorable prognosis, we need to follow this case until the clinical behavior and the outcome become clear.

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Mucinous carcinoma of the breast is comparatively rare among primary breast carcinomas and it has a better prognosis than invasive ductal carcinomas<sup>1,5)</sup>. Histologically, this carcinoma is divided into two types. One is the pure type and the other is the mixed type<sup>1,2)</sup>. The biological behavior of the pure type differs from that of the mixed type<sup>1,3)</sup>. A case of locally advanced mucinous carcinoma (pure type) of the breast, which had remained untreated for 2 years, is described, and a review of the literature is contained herein.

### Case Report

#### Clinical History

A 64-year-old postmenopausal woman was admitted with a giant mass of the right breast. Her family history and past medical history were unremarkable. Despite having been aware of a right breast mass for 2 years, she had not sought medical treatment. The patient had a profound enlargement of the right breast with skin pigmentation. Physical examination revealed a giant tumor, mea-

suring 17.4 × 16.5 × 14.5 cm, that almost filled out the entire right breast (Fig 1). Fixation to the skin was evident, but the tumor was mobile and not fixed to the chest wall. There was no mass in the left breast or in either axilla. A chest computed tomography (CT) scan showed a right breast tumor with a relatively clear margin adjacent to the right chest wall and without any finding of chest wall invasion or swollen axillary lymph nodes (Fig 2).

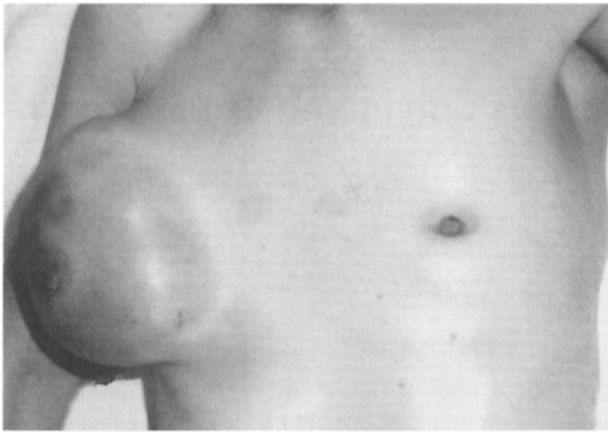
Laboratory data on admission were within normal limits. The serum level of the tumor marker CA15-3 was elevated to 82 ng/dl, while those of CEA and NCC-ST439 were within normal limits. Pure mucinous carcinoma was diagnosed based on examination of a core needle biopsy specimen. Estrogen receptor was positive, progesterone receptor and HER-2 status were negative by immunohistochemical examination. A modified radical mastectomy was performed, followed by repair of the skin defect using a free skin graft from the abdominal wall. Postoperatively, the patient has remained well without any signs of tumor recurrence for 14 months.

#### Histological Findings

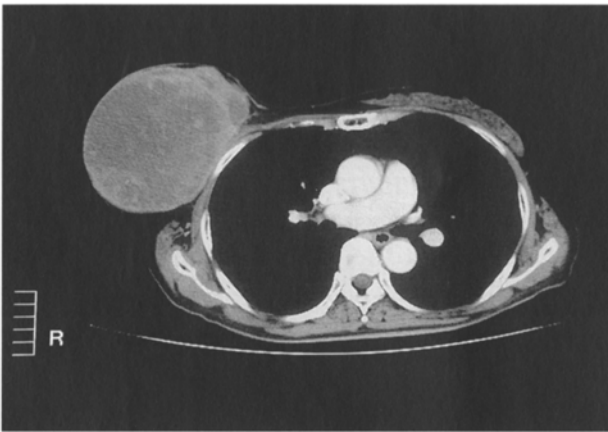
The surgically resected tumor, measuring 15.2 × 14.1 × 9.2 cm, had occupied all quadrants of the right breast, and formed a gelatinous mass inter-

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**Fig 1.** Giant tumor of the right breast. The tumor almost filled the entire right breast with skin pigmentation but was not fixed to the chest wall. The tumor measured 17.4 × 16.5 × 14.5 cm.



**Fig 2.** CT of the chest showing the huge breast tumor with a relatively clear margin in the right chest wall. There were no findings of chest wall invasion or swollen axillary lymph nodes.

sected by a thick fibrous tissue (Fig 3). On microscopic examination, 20 tissue blocks of the tumor were made, and the tumor was classified as a pure mucinous carcinoma showing neoplastic growth composed of irregularly shaped tubular or papillary glands among abundant extracellular mucin (Fig 4). The nuclear size and atypia were moderate and the mitotic count was 2 mitoses per 30 high-power fields (×400). Seventeen lymph nodes were dissected at surgery, but none of the lymph nodes demonstrated tumor metastasis. In addition, there were no signs of blood vessel, lymphatic or perineural involvement.

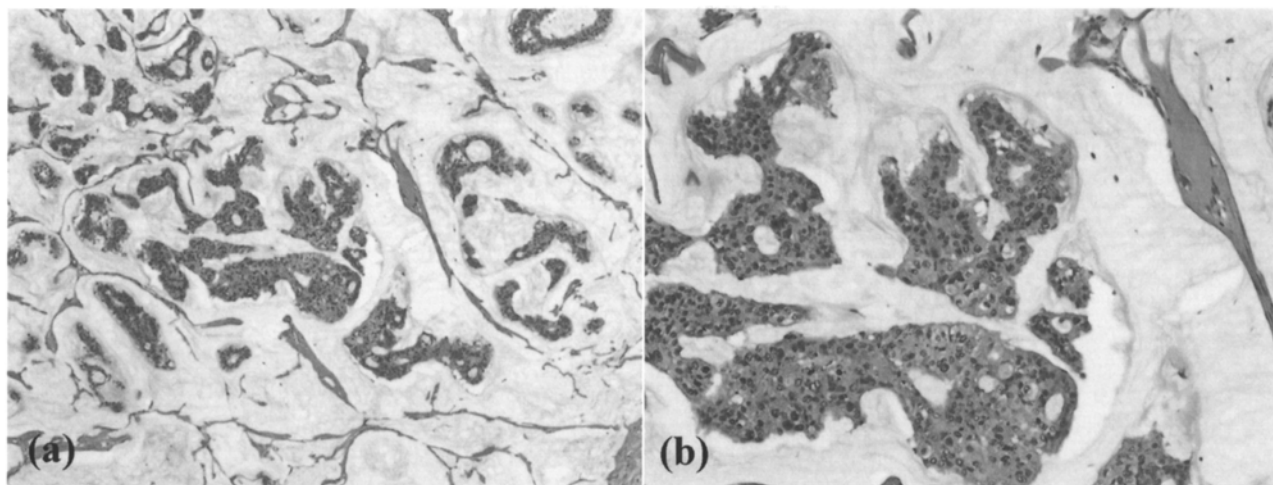


**Fig 3.** Gross appearance of the cut surface of the surgically resected tumor. The border was relatively clearly demarcated by thick fibrous tissue (arrowheads).

## Discussion

Mucinous carcinoma of the breast is a special type of breast carcinoma characteristically, presenting with massive production of extracellular mucin<sup>2, 6</sup>. It constitutes 1 to 6% of all primary breast cancers, usually occurs in elderly patients and has a significantly better prognosis than infiltrating ductal carcinomas of common types<sup>2, 7-11</sup>. Based on the microscopic appearance, mucinous carcinoma is subclassified into pure and mixed types<sup>7, 12, 13</sup>. Regarding prognosis, the pure type shows a far better prognosis than the mixed type<sup>2, 7</sup>. The 10-year survival rate for the pure type is 90% to 100%<sup>2, 14</sup>, whereas that for the mixed type is 60%.

In previous reports of breast mucinous carcinomas, locally advanced cases were rare. Rasmussen<sup>1</sup> reported 247 cases of mucinous carcinoma, which varied in size from 0.5 to 12 cm, with an average diameter of 2.8 cm. In a report by Komenaka *et al.*<sup>15</sup>, the median pathologic size was 1.8 cm in diameter (range, 0.3 to 12 cm) in 65 cases of pure mucinous carcinoma. Several authors reported a correlation between tumor size and prognosis<sup>1, 9, 16</sup>. Ishikawa *et al.*<sup>17</sup> reported a locally advanced mucinous carcinoma, 25 cm in diameter, with sudden growth acceleration and axillary lymph node metastasis. However, some reports have suggested that there is no correlation between tumor size and prognosis because tumor size depends on the volume of extracellular mucin<sup>15, 18</sup>. The present case was a locally advanced tumor measuring 17.4 cm, which is the second largest



**Fig 4.** Hematoxylin and eosin stain of the breast tumor specimen showing carcinoma cells with an irregularly shaped tubular or papillary pattern, and floating in pools of extracellular mucin. Original magnification: (a)  $\times 25$  and (b)  $\times 100$

among previous reports of breast mucinous carcinoma. However, there were no lymph node metastases or distant metastases. Therefore, we chose tamoxifen as the adjuvant therapy in the present case, and 14 months postoperatively, the patient remains well without evidence of tumor recurrence. These results in our case suggest the typical biological behavior of pure mucinous carcinoma.

Recently, there have been reports that advocate reduction surgery (breast-conserving therapy or omission of axillary nodal dissection) because of the very low incidence of extensive intraductal spread and axillary nodal metastasis in pure mucinous carcinoma<sup>15, 16, 18</sup>. However, because cases of huge mucinous carcinoma are rare and the prognosis differs according to the individual case, larger studies and longer follow-up are needed to determine the clinical behavior. Therefore, we need to follow this case until the clinical behavior and the outcome become clear.

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