Microinvasive Breast Carcinoma with Extensive Involvement of Level III Axillary Lymph Nodes: a Case Report

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A 44-year-old woman presented with a right huge axillary mass. Both mammography and ultrasonography revealed a primary cancer of 2.8 cm maximum diameter in the right breast and metastases in the axillary lymph nodes, both being confirmed by aspiration cytology as ductal carcinoma. Right standard radical mastectomy with level III axillary lymph node dissection was carried out. Pathologically, the tumor was diagnosed as ductal carcinoma in situ with microinvasion (DCISM), histologic grade 3. The area of stromal invasion measured 1 mm at its widest point. Sixteen of the 17 resected axillary lymph nodes contained metastases, including six level III lymph nodes. Immunohistochemical studies of the tumor revealed overexpression of p53 protein, but not that of c-erbB-2 protein. The frequency of lymph node metastases from DCISM is reported to be very low. Therefore, the present case with extensive involvement of level III lymph nodes was unusual.

Key words: lymph node metastasis – ductal carcinoma in situ with microinvasion – lymph node dissection

INTRODUCTION

Lymph node metastases in cases of ductal carcinoma in situ with microinvasion (DCISM) are rare (1-3). Here, we describe a case of microinvasive breast carcinoma with extensive involvement of axillary lymph nodes.

CASE REPORT

A 44-year-old premenopausal woman, who had developed a right axillary tumor 1 month previously, was referred to the National Cancer Center Hospital. Her menarche had occurred when she was 12. She had married at 24 and had three children. There was no personal or family history of other malignant disease, except for her mother who had died of ovarian cancer.

Physical examination on admission revealed right axillary lymph node swelling (7.0 x 4.0 cm) and an ill-defined tumor measuring 2.8 x 1.8 cm in the lower outer quadrant of the right breast. Routine laboratory studies showed no abnormal findings. The plasma levels of carcinoembryonic antigen (CEA) and carbohydrate antigen 15-3 (CA15-3) were 47.3 ng/ml (normal range <5.0 ng/ml) and 73 U/ml (normal range <28 U/ml), respectively. Mammography disclosed a poorly defined mass with microcalcifications measuring 2.5 cm in diameter in the lower outer quadrant of the right breast, which was highly indicative of breast cancer (Fig. 1). Ultrasonography showed the tumor as a 1.3 cm irregularly shaped hypoechoic lesion containing tiny calcifications without shadowing (Fig. 2). Fine-needle aspiration cytology of the breast tumor and axillary lymph node revealed ductal carcinoma cells in each. The huge lymph nodes and primary tumor were judged to have invaded the pectoralis major muscle intraoperatively. Right standard radical mastectomy with level III axillary lymph node dissection was carried out.

On histopathological examination, the breast cancer was found to be composed of 99% non-invasive component, showing intraductal spreading and a predominant comedo pattern, histological Grade 3 (4), and 1% stromal invasive component. The number of mitotic figures per 10 high-power field of the non-invasive component exceeded 10 and solid structure was observed. No lymphatic invasion was identified in the primary lesion. The area of stromal invasion measured 1 mm at its widest point (Fig. 3). Investigation of 27 tissue sections cut from whole mammary glands of the resected specimen revealed no other cancerous focus. Therefore, we diagnosed the tumor as ductal carcinoma in situ with microinvasion (DCISM). Lymph node metastases were recognized in 16 of the 17 dissected nodes, including six level III nodes (Fig. 4). The tumor was positive for both estrogen receptor (50.0 fmol/mg protein) and progesterone receptor (36.7 fmol/mg protein). Overexpression of p53 protein, but not that of c-erbB-2 protein, was observed in both the tumor...
and the metastatic lymph nodes, according to the method we have reported previously (5,6).

Five weeks after surgery, the plasma levels of CEA and CA15-3 decreased to within the normal ranges, 3.2 ng/ml and 25 U/ml, respectively. The patient is currently receiving chemotherapy with adriamycin, cyclophosphamide and 5-fluorouracil planned for six cycles. After the chemotherapy, administration of tamoxifen citrate is scheduled consecutively. The patient has been disease free for the 4 months since surgery.

DISCUSSION

Microinvasive breast carcinoma is recognized as ductal carcinoma in situ with microscopic or limited stromal invasion (1–3,7). Recently, the extensive use of screening mammography has resulted in a marked increase in the frequency of detection of this disease entity (1).

Lymph node metastases in patients with DCISM are uncommon, the reported frequency ranging from 0 to 5.4% (1–3). Especially in cases with microinvasion (less than 1 mm at the widest point, as in the present case), no level III lymph node metastasis was detected in the Japanese multicenter joint study of 368 DCISM cases treated between 1971 and 1987 (8). In the present case, not only were metastases confirmed pathologically in 16 of 17 dissected lymph nodes, but also six level III lymph nodes had metastatic foci. To our knowledge, such aggressive lymph node metastases in a case of DCISM have never been reported previously. In contrast, among 30 cases of DCISM investigated by Schuh et al. (7), six (20%) had metastases in axillary lymph nodes. The difference is thought to be due mainly to the definition of DCISM and the method of examination employed. However, we think that meticulous evaluation of resected specimens is required in order to diagnose DCISM correctly.

It is unknown what kind of primary DCISM carries the massive lymph node metastasis as seen in the present case. The high histologic grade, Grade 3 in our classification, accompanied by p53 mutation might have explained the aggressiveness of the
tumor (4,9). Schwartz et al. (10) and Patchefsky et al. (11) demonstrated that comedo carcinomas were likely to invade more frequently than other histologic types, i.e. cribriform, papillary, solid and micropapillary. The highly invasive nature of comedo carcinoma might also have played a role in the massive lymph node metastases in the present case.

The risk of lymph nodal involvement in DCISM is considered to be low (1–3). If lymph node metastases are recognized, the number of metastatic nodes influences the prognosis of patients, irrespective of the absolute quantity in areas of the stromal invasion (8). However, clinicians should be aware of the potential for biological aggressiveness in DCISM and that DCISM should be considered a different entity that requires both careful evaluation and postoperative follow-up. We believe that lymph node dissection is indicated for this type of tumor in order to select an optimal form of adjuvant systemic therapy, as Rosner et al. (1) and Kinne et al. (12) have stressed.

References