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Malignant pleural effusion in breast cancer 12 years after mastectomy that was successfully treated with endocrine therapy

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Patient: Female, 94
Final Diagnosis: Malignant pleural effusion
Symptoms: —
Medication: —
Clinical Procedure: Cytology
Specialty: Oncology

Objective: Unusual clinical course
Background: The most common site of postoperative breast cancer recurrence is bone, followed by local relapse, lung, and liver. The majority of relapses occur within the first 3 years after surgery. Pleural recurrences more than 10 years after surgery are rare.
Case Report: A 94-year-old woman who had undergone modified radical mastectomy for right breast cancer (invasive ductal carcinoma, pT2, pN1, ER+, PgR+) 12 years earlier presented to our hospital with carcinomatous pleuritis and a chief complaint of dyspnea. Endocrine therapy with oral letrozole was started and the pleural effusion had disappeared 3 months later.
Conclusions: Oral endocrine therapy may be effective for the treatment of late recurrence of hormone receptor-positive breast cancer in elderly women.

Key words: malignant pleural effusion • breast cancer • late recurrence • endocrine therapy

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Background

Postoperative recurrence of breast cancer occurs in approximately 18% to 45% of patients [1–3]. The most common site of the relapse is bone, followed by local relapse, lung, and liver [1,4]. The majority of relapses occur within the first 3 years after surgery [1,3,5]. Pleural recurrences more than 10 years after surgery are rare [1,5–8]. We report herein the case of a patient who developed pleural recurrence from breast cancer 12 years after surgery and in whom letrozole was effective in treating the pleural effusion.

Case Report

A 94-year-old postmenopausal woman presented to our hospital with dyspnea. She had undergone modified radical mastectomy for right breast cancer at age 81. Pathological examination of the primary specimen revealed 25×25 mm in size, invasive ductal carcinoma with metastasis to the axillary lymph node, and estrogen and progesterone receptor positivity (Figure 1). According to the UICC-TNM classification, the tumor was pT2pN1M0 stage B. After the mastectomy, the patient had received adjuvant hormonal therapy with fadrozole hydrochloride hydrate followed by anastrozole and toremifene citrate for 5 years. She had remained well until 2 weeks before our hospital visit, when she reported experiencing difficulty breathing at rest.

Chest X-ray and computed tomography showed bilateral pleural effusion, predominantly on the right side (Figure 2). Plural effusion in the right thoracic cavity was removed by thoracentesis, and cytological examination revealed adenocarcinoma cells. Immunohistochemical analysis revealed that the tumor cells were positive for estrogen receptor and progesterone receptor (Figure 3). Therefore, the patient was diagnosed with pleural recurrence of breast cancer. As intensive chemotherapy was judged to be too dangerous due to the patient's advanced age, treatment with oral letrozole and diuretics (furosemide and spironolactone) was started. The pleural effusion had disappeared 3 months later (Figure 4). Chest X-ray demonstrated that the pleural effusion remained absent at 8 months after the start of treatment (Figure 5). No serious adverse effects were encountered during therapy. Although the patient was cured of her dyspnea, she died of natural causes about 9 months after the development of pleural effusion.

Discussion

Malignant pleural effusions (MPEs) are defined as effusions that result from the direct infiltration of the pleura by cancer cells [9]. Breast cancer is the second most common cause after lung

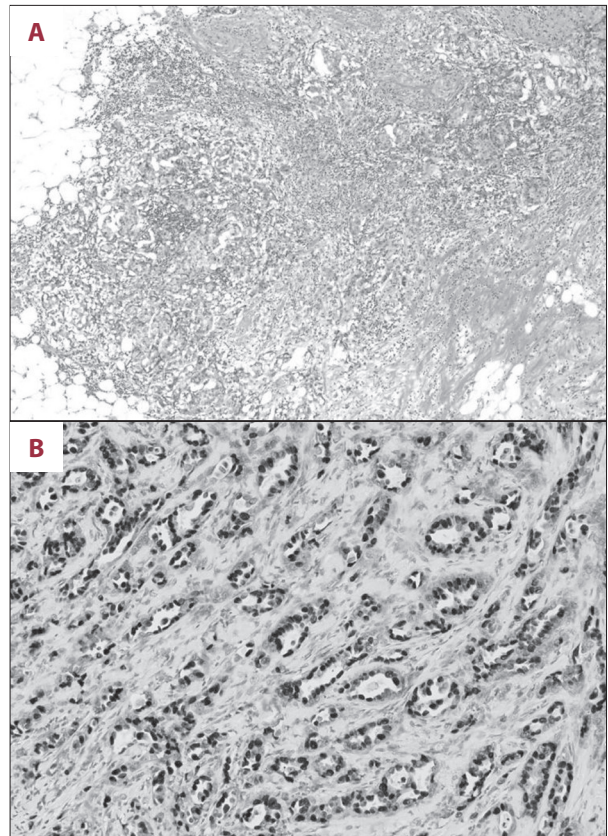


Figure 1. Pathological findings of the primary resected specimen showing invasive ductal carcinoma, papillotubular carcinoma with scirrhous carcinoma (A ×40). Tumor cells are positive for estrogen receptor (B ×100).

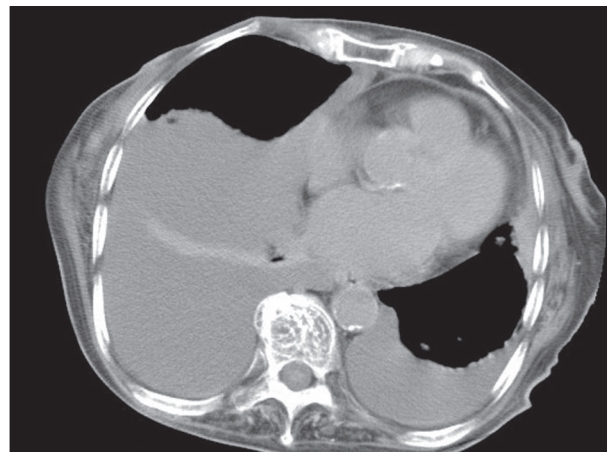


Figure 2. Chest CT scan showing bilateral and right massive pleural effusion.

cancer of MPEs, accounting for approximately one third of all MPEs [10,11]. Moreover, breast cancer is often related to MPEs, with about 2% to 11% of patients with breast cancer developing MPEs during the disease course [12,13]. Approximately 80% of patients with pleural recurrences develop MPEs within

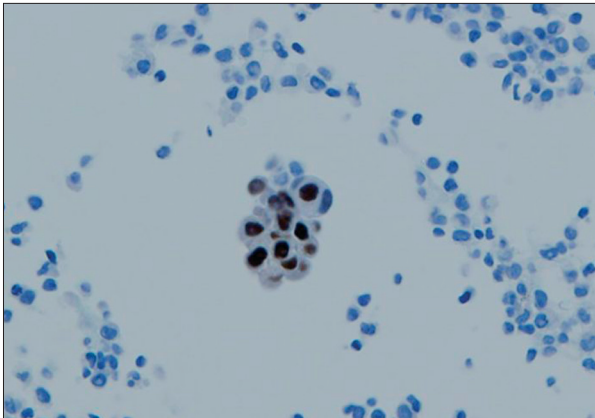


Figure 3. Immunocytochemical examinations of the thoracentesis fluid revealing estrogen receptor-positive adenocarcinoma cells.



Figure 4. Chest X-ray film taken 3 months after starting oral hormonal therapy showing disappearance of bilateral pleural effusion.

the first 5 years after primary surgery, although pleural recurrences more than 10 years after surgery are rare [7,8].

MPEs are associated with a poor prognosis. In breast cancer patients, the median survival following pleural fluid accumulation is 5 to 13 months [7,11,14]. Many patients with malignant effusions experience dyspnea, and additional symptoms include weight loss, anorexia, malaise and fatigue, which disturb quality of life. Therefore, management of MPEs is important to improve the quality of life of patients, and inadequate

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Figure 5. Re-accumulation of pleural fluid is not observed 8 months after the start of treatment.

management results in deterioration in respiratory function that can shorten expected survival time.

Therapeutic thoracentesis is the initial approach for patients with respiratory symptoms including dyspnea. However, pleural fluid usually recurs after simple aspiration [7]. Therefore, various approaches are used to prevent the re-accumulation of pleural effusions. Approaches to treatment of MPEs include chemical pleurodesis using various sclerosing agents [15], use of a chronic indwelling catheter [11,16], and pleuroperitoneal shunting [17,18]. Systemic therapy using with cytotoxic and/or endocrine agents may also be effective in decreasing pleural fluid or relieving dyspnea in breast cancer patients [19]. Because the purpose of treatment for metastatic breast cancer is to maintain favorable quality of life and to improve survival, it is important to reduce the degree of treatment-related discomfort. In general, endocrine agents have fewer adverse effects than cytotoxic anticancer agents. In our case, the patient experienced no adverse effects with the hormonal therapy and was able to live comfortably for several months without dyspnea.

Conclusions

The hormonal therapy may be a useful treatment for elderly postmenopausal women with late recurrences of estrogen receptor-positive breast cancer.

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