**Clinical case**

**Massive cavitation of solid pulmonary metastatic lesions in a breast cancer patient: a case report**

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Received 24 January 2001; revised 26 June 2001; accepted 24 July 2001

A 40-year-old female with metastatic breast cancer developed multiple lung nodules some of them with cavitations. Following treatment with Taxol/Herceptin most of the lesions disappeared and in many cavity lesions appeared. There was no further change in the appearance of lung lesions.

**Key words:** breast cancer, cavitation, lung metastases

**Introduction**

The lungs are one of the most common metastatic sites in breast cancer patients. The phenomenon of spontaneous cavitation within both primary lung cancers and metastatic pulmonary lesions has been documented by several authors, but what is not clear is the role of chemotherapy in cavitation of metastatic pulmonary nodules. We report a case of cavitation of solid metastatic lung lesions in a patient with breast cancer.

**Case history**

A 40-year-old female underwent modified radical mastectomy for stage II breast cancer in March 1996. The histological findings were intraductal (comedo-type) and infiltrating ductal carcinoma of the breast, with metastases in 4 of 12 axillary lymph nodes. Immunohistochemical analysis showed estrogen receptor positivity, progesterone receptor negativity, Her-2/neu-positive membrane staining in 80% of tumor cells (3+ strong staining of the entire membrane in >10%), Ki67 negativity, and p53 negativity.

The patient received adjuvant chemotherapy (5-fluorouracil, doxorubicin, cyclophosphamide, given on day 1 of each of six 21-day cycles), and radiation therapy to the axilla and supraclavicular area. The patient was well until July 1999 when multiple lung lesions were observed on routine chest radiography. Computed tomography (CT) of the chest demonstrated multiple lesions compatible with lung metastases (Figure 1A). Metastatic breast cancer was confirmed by open biopsy. Docetaxel (Taxotere®: Aventis, Pharma, UK) 100 mg/m² every 21 days was given for 2 months (three cycles). It was stopped due to progressive disease. Treatment was changed to weekly paclitaxel (Taxol®: Bristol-Myers Squibb, Princeton, NJ, USA) 100 mg/m² × 1 h and the humanized anti-Her-2 antibody trastuzumab (Herceptin®; Genentech Inc., San Francisco, CA, USA) 4 mg/kg loading, then 2 mg/kg i.v. q week. Two months later, CT showed disappearance of most of the nodular lesions with the appearance of multiple cavity lesions (Figure 1B). Treatment was continued for 8 months until brain metastases appeared.

**Discussion**

About 4% of metastases to the lung evolve into cavity lesions. About two-thirds of the multiple cavitating nodules are from squamous cell primary tumors and many of the rest are adenocarcinomas [1]. Cases of cystic and cavity pulmonary metastases from the bladder [2, 3], kidney [4], synovial sarcoma [5] and gallbladder [6] have been reported in the literature. Several authors have documented cavitation of metastatic pulmonary nodules, but cavitation after treatment has not been emphasized. On review of the literature we could find only one report of cavitation of metastases in the lung after systemic treatment [7] and could not find reports of breast cancer pulmonary metastases cavitation.

Mermershtain et al. [8] reported on an unusual cystic transformation of solid metastatic lesions in patients with metastatic malignant melanoma after sequential chemoimmunotherapy. In the described melanoma patients, metastases in the liver, retroperitoneum, axilla and spleen underwent dramatic changes, as seen on CT, consistent with massive cystic necrosis. Aspirates from cysts contained only bloody debris, with no malignant cells.

The current case is different because a pulmonary cavity is not filled with fluid or necrotic debris and we cannot prove the disappearance of malignant cells.
The interesting point is the response obtained under Taxol® and Herceptin® therapy in a patient who was Taxotere® refractory. In a CancerLit search we could find only one case report, from Japan [9], of docetaxel-resistant lung metastasis from breast cancer responsive to paclitaxel therapy. Sequential chemo–biotherapy has additive or synergistic antitumor effects. With the development of the humanized anti-Her-2 antibody (trastuzumab), biological therapy of breast cancer has become a reality. Herceptin® is the first humanized monoclonal antibody for patients with metastatic breast cancer who overexpress Her-2/neu membrane staining. Phase II and III clinical trials demonstrated clinical efficacy and safety of Herceptin® [10, 11]. In the present case we observed a near complete response with cavitation of solid metastatic lesions. It is hard to believe that these changes would have occurred without treatment; we cannot, however, prove that it is a result of the treatment, which may have been due to Taxol®, Herceptin® or both, because the cavitation began before treatment (Figure 1A).

References