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LEFT PNEUMONECTOMY FOR RAPIDLY GROWING LUNG METASTASIS FROM PHYLLODES TUMOR

A. Imperatori, L. Dominioni, L. De Monte, L. Festi, E. Nardecchia, N. Rotolo

Center for Thoracic Surgery, Department of Surgical Sciences, University of Insubria, Varese, Italy

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Correspondence: L. Dominioni MD, Center for Thoracic Surgery, Department of Surgical Sciences, University of Insubria, Varese, Italy. E-mail: lorenzo.dominioni@uninsubria.it;

Abstract

Distant metastases occur in 10-25% of malignant phyllodes tumors of the breast, heralding fatal outcome within few months. Only four cases of successful resection of solitary pulmonary metastases from phyllodes tumor are described in the literature. We report the case of a 67-year-old woman who developed rapidly growing metastases (volume doubling time: 25 days) in the left lung, two years after mastectomy for malignant phyllodes tumor. The left lung was the only site of 18-FDG uptake at total-body PET scan and the patient was successfully treated by left pneumonectomy.
Key words: metastasis, sarcoma, pneumonectomy, lymph nodes, positron emission tomography (PET)

Phyllodes tumor of the breast is a rare biphasic neoplasm, with epithelial and stromal components, accounting for less than 1% of all breast tumors. Between 10% and 40% of phyllodes tumors have malignant biology, with tendency to recur locally and to disseminate[1]. Metastatic phyllodes tumors have a poor prognosis, as documented by the few reports of long term survival[2].

A 67-year-old woman in February 2007 underwent left mastectomy for malignant phyllodes tumor with osteocondrosarcomatous component. The mastectomy resection margins were tumor free. One year after mastectomy the patient developed a single skin metastasis to the scalp from phyllodes tumor; the metastasis did not invade the skull and was resected with wide margins. In January 2009, the patient presented with cough, left thoracic pain and dyspnea. Chest X-ray film showed a large radiopaque mass in the left thoracic field (Figure 1A) and chest CT-scan (Jan. 8, 2009) showed a large mass in the lower lobe of the left lung, formed by multiple confluent nodules. The largest mass was 3.5 cm in size, centrally located in the lung, with growth into the lumen of the left main bronchus. At bronchoscopy a tumor growth was found in the left lower bronchus, which was completely obstructed. The tumor projected into the main bronchus, partially obstructing the upper lobe bronchus. Endoscopic biopsy yielded non-diagnostic necrotic material. Transthoracic CT-guided needle biopsy of the left pulmonary mass was performed, showing malignant cells with osteocondrosarcomatous differentiation, with features of malignant phyllodes tumor. 99mTc pulmonary perfusion scintigraphy indicated that uptake was 7% to the left lung and 93% to the right. During the two weeks of diagnostic investigation the patient conditions worsened, characterized by increasing dyspnea and fever, with chest X-rays showing an almost completely radiopaque left chest; at that time another bronchoscopy was performed, demonstrating a complete obstruction of the left main bronchus 2 cm below the carina. Whole body PET scan showed that the left lung was the only site of 18-FDG uptake and left pneumonectomy was planned. Before surgery a new chest CT-scan was obtained, which showed that the tumor mass had grown further, as documented by the largest metastasis which had increased to 4.5 cm in size, invading the left main bronchus and causing complete lung atelectasis (Figure 1B). Based on the two serial CT measurements available of the largest lung metastasis, its volume doubling time was calculated to be 25 days, indicating very rapid growth.

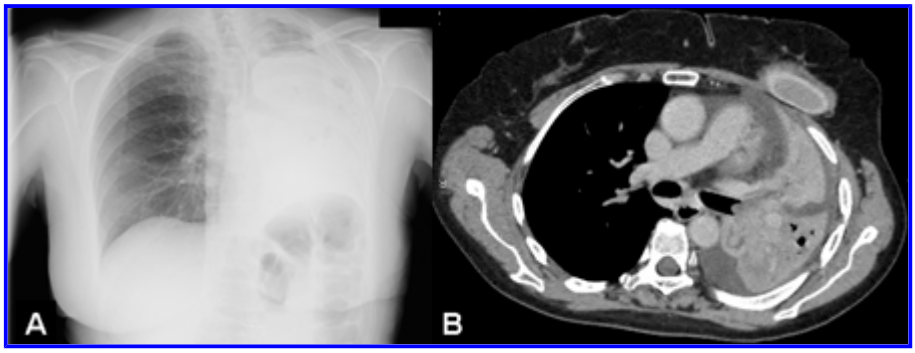

Figure 1 (A): chest X-ray film demonstrating a large radiopaque mass occupying the left hemithorax.

Figure 1 (B): chest CT scan showing atelectasis and multinodular mass of the left lung, invading the main bronchus. Reconstruction of the left breast with silicone prosthesis after mastectomy.

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On march 2, 2009, about two months after the beginning of chest symptoms, the patient underwent a standard left posterolateral thoracotomy with excision of the 6th rib, to allow access for resection of the large multinodular pulmonary mass. The left lung was freed from dense adhesions to the chest wall and mediastinal pleura, which was not invaded by tumor. The pulmonary veins were compressed and partly infiltrated by the tumor mass; therefore intrapericardial ligation and transection of the pulmonary veins was performed. The left pulmonary artery was ligated and transected extrapericardially. The main left bronchus was prepared, staple-closed and transected 1 cm below the carina, under bronchoscopic control. Histological examination of bronchial resection margin demonstrated R0 resection. Left pneumonectomy was completed and lymphadenectomy of level 7 and level 10 nodes was performed.

In the immediate postoperative period repeated episodes of atrial fibrillation occurred. These were successfully treated by intravenous amiodarone and the patient was discharged home on the 14th postoperative day, with oral bisoprolol antiarrhytmic therapy.

The final histological examination showed a large intrapulmonary tumor (osteocondrosarcomatous proliferation with abundant giant cells; Ki67 proliferation index: 25%), composed of multiple neoplastic nodes, the largest of 6.2 cm in size, invading the main bronchus. The peripheral lung parenchyma demonstrated purulent pneumonia. All excised lymph nodes were free of tumor.

Osteosarcomatous differentiation of malignant phyllodes tumor is rare, occurring in 1.3% of phyllodes breast tumors[3]. Haematogenous spread is reported in 10-25% of high-grade malignant phyllodes tumors, most frequently to the lung (70-80%), pleura (60-70%) and bones (25-30%)[4].
To our knowledge, there are only four reports of metastasis from breast phyllodes tumor to a single lung which were successfully resected[5-8]. In 1978 Hart and colleagues reported 26 cases of stromal tumor of the breast; pulmonary metastases occurred in three patients but only one underwent pulmonary lobectomy, surviving 16 years[5]. In 1992 Takahashi et al. described the resection of a giant pulmonary metastasis from cystosarcoma phyllodes of the breast[6]. Filosso et al. in 2005 described wedge resection of the right upper lobe of the lung for treatment of a giant visceral pleural metastasis of phyllodes tumor[7]. Another case was documented in 2007 by Ganti et al., who reported en-bloc excision of the left upper pulmonary lobe with a portion of chest wall invaded by phyllodes tumor metastasis[8]. In none of these four cases the status of hilar lymph nodes of the resected lung was reported. Interestingly, these lung metastases of phyllodes tumors that were resected had giant size[6-8].

At variance with these four reports, in our case the phyllodes tumor metastasis was centrally located in the lung, with growth into the main bronchus. Sequential chest CT-scans documented that in our patient the pulmonary metastasis grew rapidly (volume doubling time: 25 days) and within few weeks caused atelectasis, obstructive pneumonia and dyspnea. Based on the results of surgical treatment of the four cases previously mentioned[5-8] and on the successful treatment of our case by left pneumonectomy, we confirm the

recommendation to resection in selected cases of phyllodes tumor lung metastases.

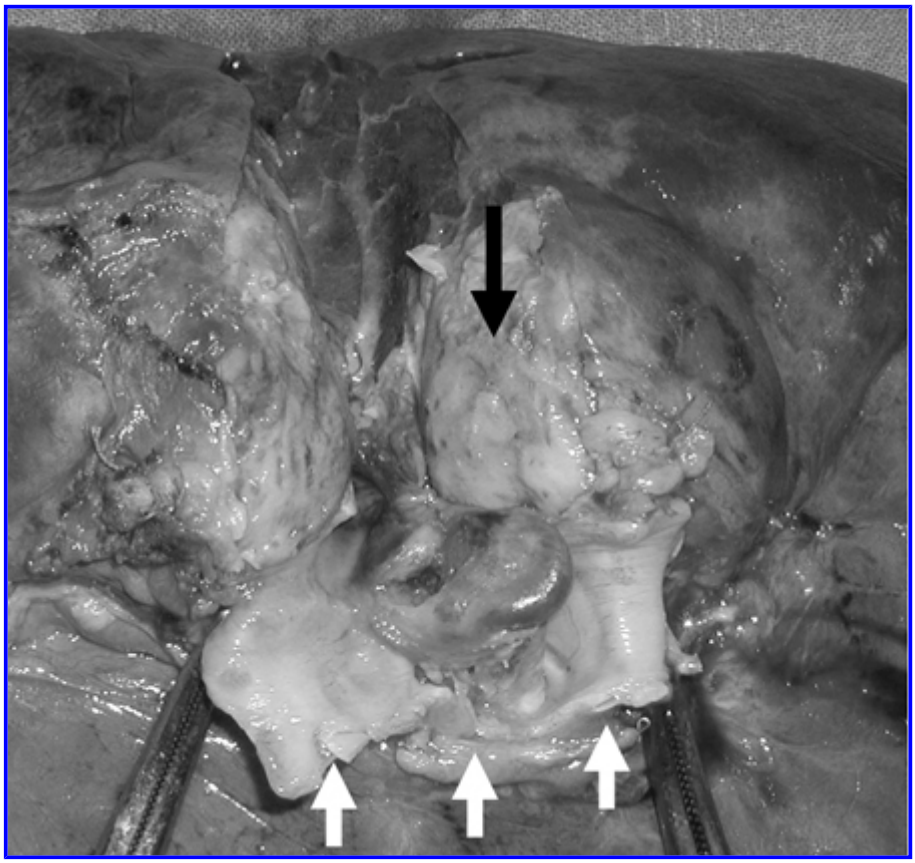

Figure 2: left pneumonectomy specimen showing metastasis of sarcomatous phyllodes tumor (black arrow) projecting into the lumen of the main bronchus, which was opened longitudinally. Bronchial resection margin (white arrows) was histologically free of disease.

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