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# Solitary adrenal metastasis in large cell carcinoma of lung

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## ÖZET

### *Büyük hücreli akciğer kanserinin soliter adrenal metastazı*

*Metastatik küçük hücreli dışı akciğer kanseri (KHDAK) kötü prognozludur. Olguların %5-10'unda ilk tanıda adrenal metastazı (AM) vardır. Literatürde izole AM'nin opere edilmesiyle sağkalım süresinin daha uzun olduğunu gösteren olgular vardır. Olgumuz 55 yaşında, akciğerde opere edilebilir kitlesi ve soliter AM'si olan, neoadjuvan kemoterapi sonrası primer lezyon ve metastaz cerrahisi uygulanan bir erkek hastadır. Tanı tarihi Mart 2002 olup, hasta halen yaşamaktadır.*

**Anahtar Kelimeler:** *Küçük hücreli dışı akciğer kanseri, adrenal metastazı, cerrahi.*

## SUMMARY

### *Solitary adrenal metastasis in large cell carcinoma of lung*

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*Metastatic non-small cell lung cancer (NSCLC) has a poor prognosis. Adrenal metastasis (AM), in NSCLC, are present in 5-10% of patients at initial presentation. Several case reports have shown that operation of isolated AM results in longer survival time. We describe a 55 year-old man with diagnosis of NSCLC with operable lung tumor and solitary AM treated with combination of neoadjuvant chemotherapy followed by primary site and metastasis surgery. He was diagnosed on March 2002 and is still alive.*

**Key Words:** *Non-small cell lung cancer, adrenal metastasis, surgery.*

Metastatic non-small cell lung cancer (NSCLC) is a lethal disease. Surgery is not preferred, and adjuvant therapy regimens have been structured around palliation and maximizing the quality of life for patients. However, patients who have resec-

table primary tumors and a solitary site of metastasis in brain, adrenal gland, and other sites represent a subgroup with a better prognosis (1).

Adrenal metastasis (AM), in NSCLC, are present in 5-10% of patients at initial presentation (2). On

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computed tomography (CT), AM tends to be larger, less homogenous and have more irregular borders as adenomas. But alone these criteria have a poor specificity and only additional evaluation by CT or MR chemical shift imaging should exclude typical adenomas on the presence of intracytoplasmic fat (3). Undetermined cases are indications of percutaneous biopsy.

It is not really clear whether patients with NSCLC and a solitary AM benefit from surgical resection; since AM transfers the patient to an advanced disease stage, treatment of which is non-operative. Several case reports have shown that operation of isolated AM results in longer survival time (4-7). In case of homolateral AM, adrenalectomy is performed synchronously with the lung resection. In case of AM on the contralateral side, adrenalectomy is performed after the lung resection (3). Nonsurgical treatment is associated with poor survival (3,8).

The value of operation in the treatment of patients with metastatic disease has been overlooked during the past two decades, especially for cancers that do not respond well to systemic chemotherapy (8). As a general principle, patients with a single site of metastatic disease that can be resected without major morbidity should undergo resection of this metastasis if the primary neoplastic site can be (or was) also surgically treated in a curative intent (3,8).

We describe one case of NSCLC with operable lung tumor and solitary AM treated with combination of neoadjuvant chemotherapy followed by primary site and metastasis surgery.

### CASE REPORT

A 55-years-old man presented with complaints of cough and hemoptysis which developed over a period of one month, in March 2002. There was no history of loss of weight, appetite, chills and fever and pain. He was an ex-smoker for 8 years, with a smoking history of 30 pack-year.

On examination the patient was in good general condition. Physical examination was normal.

A chest radiograph showed homogeneous opacity measuring 5 x 5 cm in the right paracardiac

region (Figure 1). No pleural effusion or any other evidence of metastases was seen in the lungs. The patient was hospitalized with the possible diagnosis of lung cancer.

Routine laboratory examination tests were within normal limits. Thoracic CT revealed enlarged lymph nodes in paratracheal, precarinal, carinal and subcarinal localization, central mass lesion in right middle lobe and left adrenal mass measuring 5 x 3 cm (Figure 2). CT of the abdomen did not show any pathological appearance other than left adrenal mass. On bronchoscopic examination middle lobe was obliterated with



Figure 1. Chest radiograph of the patient on admission.



Figure 2. Thoracic CT section showing central mass lesion in right middle lobe.

the mass. Bronchial mucosal biopsy and bronchial lavage cytology revealed undifferentiated large cell carcinoma. Tru-cut biopsy was performed for the left surrenal mass. Pathological examination was compatible with undifferentiated large cell carcinoma metastasis. A final diagnosis of lung cancer (large cell carcinoma) Stage IV with solitary metastasis to left surrenal gland was made.

Paclitaxel-carboplatin combination chemotherapy was begun on March 29<sup>th</sup>, 2002. Restaging after two cycles showed complete response of left surrenal mass and partial response of pulmonary mass. Then chemotherapy was completed to 6 cycles. On July 2002, right thoracotomy and right pneumonectomy was performed because of significant response of the lesion and downstaging of the disease. Left surrenalectomy and lymph node dissection was performed on October 2002. Two cycles of gemcitabine-cisplatin was planned as adjuvant chemotherapy. His Eastern Cooperative Oncology Group (ECOG) performance status was 0 during all these treatment period. He had no significant myelosuppression or other treatment related toxicity. He was able to work full time, 2 months after completing adjuvant chemotherapy.

On March 2003, patient himself palpated a mass, measuring 10 x 10 cm, on anterior chest wall, located on the right sternal margin (Figure 3). Fine

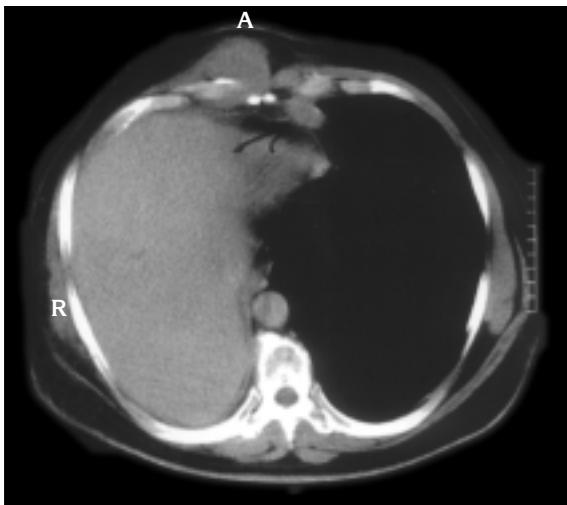


Figure 3. Mass on anterior chest wall measuring 10 x 10 cm, located on the right sternal margin.

needle aspiration was performed and cytologic examination revealed undifferentiated large cell carcinoma metastasis. FDG-PET study, performed to observe other possible metastases, showed right surrenal metastasis, invasion of anterior chest wall on the right sternal margin and mediastinal prevascular, left paraaortic invasion (Figure 4). External radiotherapy to anterior chest wall was completed in total dose of 3000 cGy, on May 2003. After then, he was subsequently treated with 2 cycles of paclitaxel-carboplatin chemotherapy, completed on June 2003. All control radiological investigations are within normal limits.

## DISCUSSION

Concerning the therapeutic management of a solitary adrenal mass from operable NSCLC, the first step is to determine whether it represents a metastasis or an adenoma (3). The sensitivities and specificities of CT scanning and magnetic resonance imaging, even when combined, are not sufficient to distinguish between benign and malignant lesions and pathologic confirmation of the true nature of a unilateral adrenal mass necessitates (3,8).

As for metastatic disease to liver or bone in NSCLC, surgical treatment for AM has not been widely preferred because of the probability of other distant metastases and lower incidence of truly solitary AM in operable NSCLC. But reasonable long-term survival in case reports and a few small series reinforced surgical approach in solitary AM as in patients with solitary brain metastasis with surgery of both primary NSCLC and the metastatic tumor (4-6,9,10). Patchell and coworkers found better survival period in surgically resected plus radiotherapy group than only radiotherapy group in brain metastases (11). With regard to solitary AM from NSCLC, Luketich and colleagues reported a series of 14 patients and suggested that in certain cases, chemotherapy followed by surgical resection may be better than chemotherapy alone (9).

Synchronous contralateral metastases are likely to be the first manifestation of disseminated disease as in our case. Aggressive operative intervention does not seem to be indicated, because

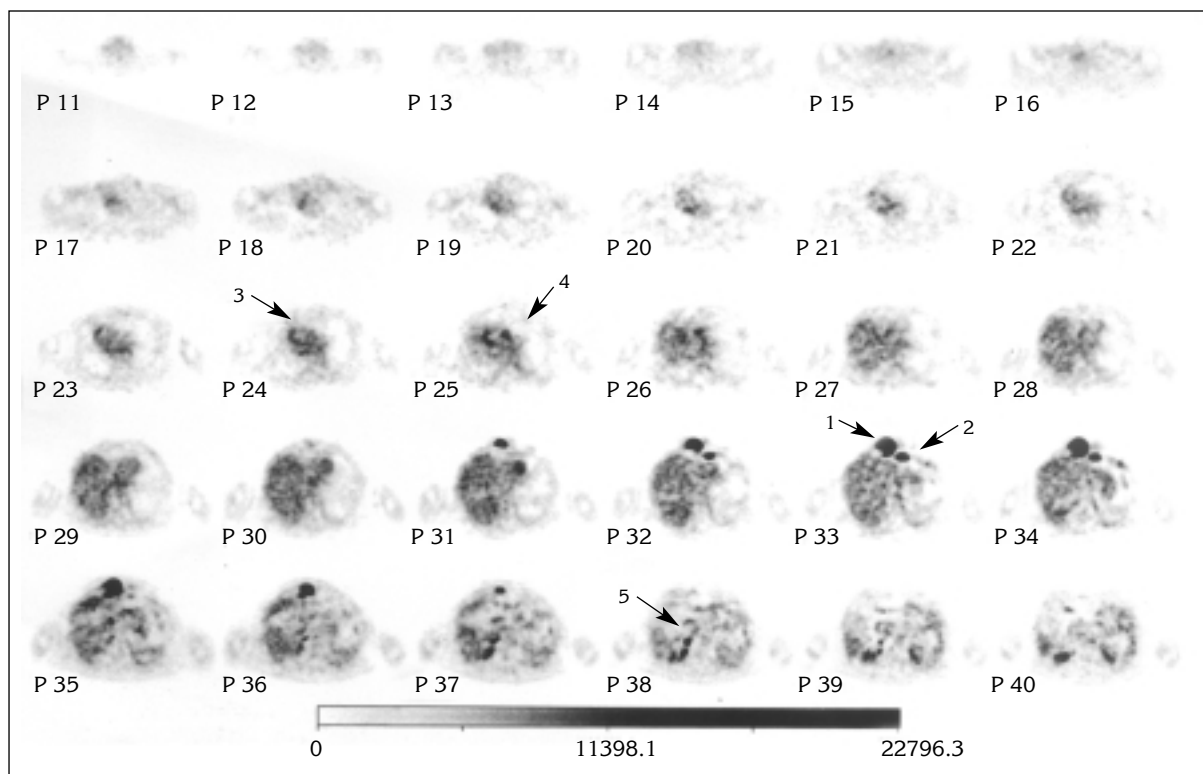


Figure 4. FDG-PET study on March 2003.

it requires two episodes of general anesthesia. Because of the presence of long-term survivors, patients might have a chance for surgical approach after a careful evaluation (8). Performance status of patient, absence of any other metastatic side and minimum 3 months of duration between lung resection and adrenalectomy are important. Our patient's performance status was 0 and no other organ metastasis was found in staging procedures.

Study of Porte and coworkers on resection of AM from NSCLC confirms the possibility of long-term survival after resection and presents the metastasis surgery as the best option for a potential cure, or at least the best palliative therapy compared to nonsurgical treatments (8). Advocated by Luketich and associates, neoadjuvant chemotherapy can be given for patients with synchronous AM (12). Neoadjuvant chemotherapy was given to our patient and a complete regression of AM was assessed.

The main problem of concern is to establish preoperatively that the AM is truly isolated. In the

present series, 56% of the patients developed their recurrent lung cancer within the 6 months after adrenalectomy, and 38% within the first 3 months, which reflected the multiple nondetectable lesions at the time of operation, despite complete staging (8). Our patient had also recurrence of disease on anterior chest wall, 6 months after surgery.

To our concern, surgery after neoadjuvant chemotherapy is an effective palliative treatment procedure, for patients with solitary AM of operable lung tumor in NSCLC, resulting in longer and better survival time.

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