

Received: 2014.05.13
Accepted: 2014.06.18
Published: 2014.10.15

ISSN 1941-5923
© Am J Case Rep, 2014; 15: 444-446
DOI: 10.12659/AJCR.891027

Long-term Survival after Surgical Treatment of Metachronous Bilateral Adrenal Metastases of Non-small Cell Lung Carcinoma

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Data Interpretation D
Manuscript Preparation E
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Conflict of interest: None declared

Patient: **Male, 70**
Final Diagnosis: **Bilateral adrenal metastasis**
Symptoms: —
Medication: —
Clinical Procedure: **Surgery**
Specialty: **Surgery**

Objective: **Unusual or unexpected effect of treatment**

Background: Although resection of the metastases is the treatment of choice for unilateral solitary adrenal metastasis of non-small cell lung carcinoma (NSCLC), the surgical treatment for bilateral adrenal metastases is quite rare, likely due to the coexistence of multiple synchronous metastases at other sites and/or primary adrenal insufficiency following bilateral adrenalectomy. We herein report a rare case of asynchronous metastasis of NSCLC to the bilateral adrenal glands with long-term survival after bilateral adrenalectomy.





Case Report: A 70-year-old male underwent right upper lobectomy for lung adenocarcinoma T2aN2M0, stage IIIA following induction chemotherapy. Forty-four months later, right adrenalectomy of a right adrenal tumor was performed, which revealed metastatic lung carcinoma.

Following the administration of adjuvant chemotherapy, a metastatic tumor was detected in the left adrenal gland. Although there were no other signs of distant metastasis on radiological examinations, he underwent the chemotherapy due to the risk of adrenal insufficiency. However, on follow-up CT the adrenal lesion was found to have enlarged; therefore, left adrenalectomy was performed. Three years and six months later, he was doing well, with no evidence of recurrence.

Conclusions: Selected patients with solitary adrenal metastases of NSCLC can benefit from an aggressive treatment approach, even if such metastases are bilateral.

MeSH Keywords: **Adrenal Gland Neoplasms • Carcinoma, Non-Small-Cell Lung • Survivors**

Full-text PDF: <http://www.amjcaserep.com/abstract/index/idArt/891027>

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Background

Adrenal glands are one of the most common sites of spread of non-small cell lung carcinoma (NSCLC). In some necropsy series, approximately one-third of patients have been found to have metastases in the adrenal glands [1]. Although bilateral metastases of the adrenal glands, including both synchronous and metachronous lesions, are not uncommon, this condition is usually associated with diffuse systemic spread. Therefore, surgical treatment for bilateral adrenal metastases is quite rare.

We herein report a case of long-term survival after surgical treatment for metachronous bilateral adrenal metastases of NSCLC.

Case Report

A 70-year-old male was referred to our hospital due to chest X-ray shadow. His chest X-ray showed a consolidated area in the apex of the right lung. Chest CT revealed a peripheral mass measuring 24×22 mm in the right upper lobe with multiple mediastinal lymphadenopathies. Adenocarcinoma was diagnosed using a trans-bronchial lung biopsy (TBLB) and the clinical stage was determined to be T2aN2M0, stage IIIA. The patient received 2 cycles of induction chemotherapy with cisplatin (80 mg/m²) and docetaxel (60 mg/m²) postoperatively. After chemotherapy, the patient was reevaluated and CT showed a partial response of the carcinoma. Therefore, in August 2004, right upper lobectomy was performed.

The postoperative pathological stage was downgraded to T1bN0M0, stage IA. The patient received adjuvant chemotherapy after surgery with tegafur (UFT 400 mg/body/day) orally for 4 months. However, we discontinued the UFT treatment due to severe appetite loss, a known adverse effect of UFT. In April

2008, 3 years and 8 months later after surgery, the serum tumor marker CEA level was significantly elevated (7.0 ng/ml). A CT scan demonstrated a nodule in the right adrenal gland measuring 2×1.5 cm in size (Figure 1A). In addition, fluorodeoxyglucose/positron emission tomography (FDG/PET) revealed a moderate uptake in the nodule, with a maximum SUV of 6.7, which was suggestive of metastasis of the lung malignancy (Figure 1B). Since there were no other signs of local recurrence or distant metastasis, right adrenalectomy was performed. A pathological examination confirmed metastasis of the lung adenocarcinoma. After undergoing 4 courses of chemotherapy with cisplatin (80 mg/m²) and docetaxel (60 mg/m²) postoperatively, the patient received regular follow-up with planned CT imaging. In April 2009, 1 year after the right adrenalectomy, the serum tumor marker CEA level was again evaluated (10.9 ng/ml), and an abdominal CT scan showed a mass in the left adrenal gland measuring 2.5×1.6 cm in size (Figure 2A). In addition, FDG/PET revealed a moderate uptake in the nodule, with a maximum SUV of 6.0 (Figure 2B). Although there were no other signs of local recurrence or distant metastasis on radiological examinations, the patient received 2 courses of chemotherapy with cisplatin (80 mg/m²) and docetaxel (60 mg/m²) due to the risk of adrenal insufficiency. However, the adrenal lesion was found to have enlarged on follow-up CT, with an elevated CEA level (33.0 ng/ml); therefore, left adrenalectomy was performed. The patient had an uneventful recovery under steroid replacement therapy. At follow-up 3 years 6 months after bilateral adrenalectomy, he was found to be well, with no evidence of recurrence.

Discussion

Case reports and limited retrospective studies suggest that adrenalectomy is recommended for isolated adrenal metastasis of NSCLC when the primary lesion is resected or resectable

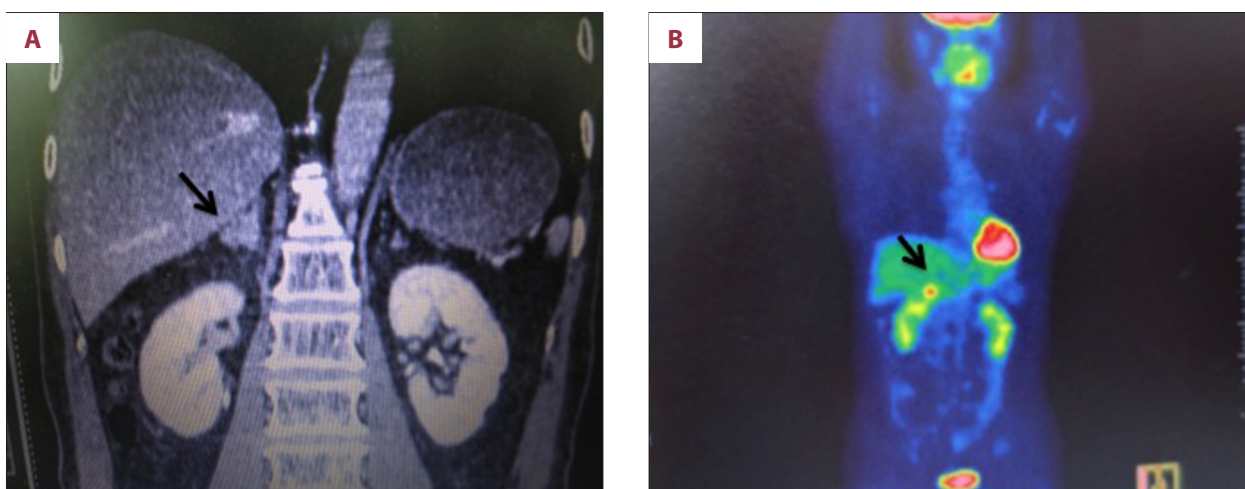


Figure 1. (A) Abdominal CT performed 3 years 8 months after the right upper lobectomy shows a right adrenal tumor (2.0×1.5 cm). (B) A PET/CT scan shows a moderate uptake in the tumor, with a maximum SUV of 6.7.

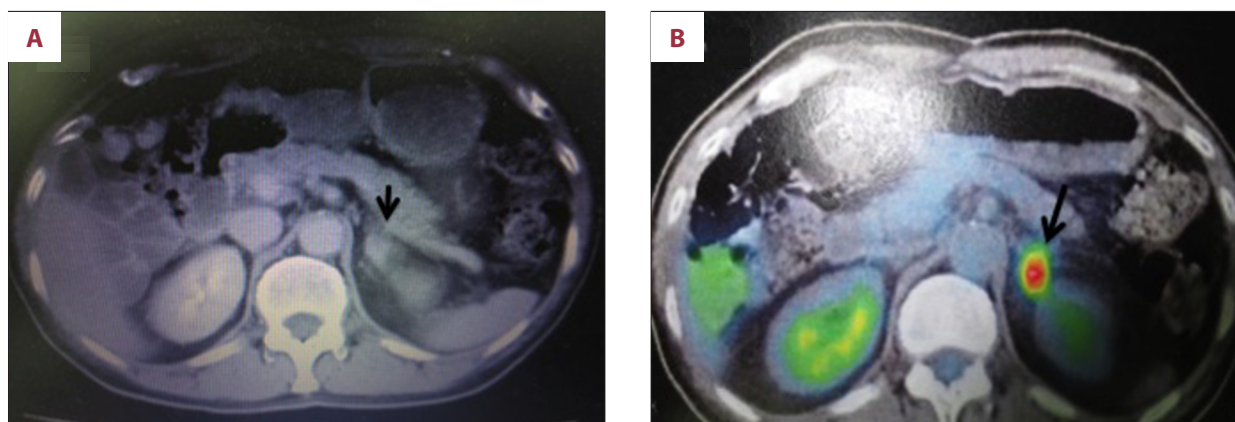


Figure 2. (A) CT performed 1 year after right adrenalectomy shows a left adrenal tumor (2.5×1.6 cm). (B) A PET/CT scan shows a moderate uptake in the tumor, with a maximum SUV of 6.0.

[2,3], although the management of isolated adrenal metastases of NSCLC continues to be debated. However, few cases of surgical treatment of bilateral adrenal metastases have been previously reported, perhaps due to primary adrenal insufficiency after bilateral adrenalectomy and/or the coexistence of multiple synchronous metastases at other sites. After performing a Medline search for articles in the English literature, we found only a few reports of bilateral adrenal metastases [4–6].

In the present case, we administered chemotherapy for the left adrenal metastasis due to the risk of adrenal insufficiency, because right adrenalectomy had been previously performed. However, we subsequently performed left adrenalectomy due to the patient's poor response to chemotherapy, without widespread dissemination or no nodal disease at resection. He is currently disease-free under steroid replacement therapy at 7 years after bilateral adrenalectomy.

According to Urschel et al. [4] and Karolyi. [7], adrenal metastases for NSCLC usually exhibit hematogenous spread of the

disease to other sites. Therefore, most cases of lung cancer metastasizing to the adrenal glands are incurable. However, due to lymphatic connections between the lungs and retroperitoneum, some adrenal metastases can develop from the lymphatic spread of lung cancer. In cases involving lymphatic spread to the adrenal glands, this type of adrenal metastasis is expected to have a more favorable response to aggressive treatment than other types.

Conclusions

Therefore, selected patients with solitary adrenal metastases of NSCLC can benefit from an aggressive treatment approach that includes bilateral adrenalectomy, although more studies are needed to investigate the treatment of synchronous solitary metastases of the bilateral adrenal glands [8].

This case report suggests that surgical resection can provide long-term survival without major complications.

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