

Case Report

Adrenalectomy for isolated adrenal metastasis after Gamma Knife Surgery for an intracerebral metastasis of non–small-cell lung carcinoma

ABSTRACT

Only a limited group of patients with non–small-cell lung cancer (NSCLC) is eligible for treatment with a curative intent. Adrenalectomy for a solitary adrenal metastasis of NSCLC may be curative when combined with resection of the primary tumor. It is unclear whether resection of an isolated adrenal metastasis is justified in patients with a second metastasis. We report a case of successful adrenalectomy with adjuvant chemotherapy in a patient who was previously treated with a right lower lobe resection and subsequent Gamma Knife treatment of an intracranial metastasis. At 20-month follow-up, patient was in a good clinical condition without signs of recurrent disease. In selected cases, adrenalectomy with adjuvant chemotherapy for an adrenal metastasis of NSCLC may be performed successfully, with good short-term results, even after earlier treatment of a cerebral metastasis.

KEY WORDS: Adrenalectomy, chemotherapy, metastasis, non–small-cell lung carcinoma, surgery

INTRODUCTION

Lung cancer is the most common malignancy in the world with an annual incidence of 1.3 million. Non–small-cell lung cancer (NSCLC) accounts for 80% of cases and is considered incurable in most patients due to locoregional or metastatic spread. The most common sites of metastasis are the liver, bones, adrenal glands, and brain.^[1] The occurrence of adrenal metastases is more frequent in patients with widely disseminated disease.^[2] Post mortem reports have shown that adrenal gland metastases are present in approximately 30% of patients with NSCLC.^[3] Solitary adrenal metastasis from NSCLC, however, occur in only 1.6 to 3.5% of patients.^[2,4]

Several authors have documented a prolonged survival after surgical resection of a solitary adrenal metastasis from NSCLC.^[4-6] It is debatable whether an adrenal metastasis should be considered in case of a solitary metastasis after previous treatment of other metastasis, with a curative intent. Therefore, the outcome of surgical treatment of a second metastasis is of clinical importance. We report a case of a patient who was successfully treated with radiotherapy for a cerebral metastasis and subsequently underwent a surgical resection of a metastasis to the adrenal gland from NSCLC.

CASE REPORT

A 53-year-old woman with a remote history of tobacco use presented with joint and muscle pain, mainly located in the fingers, that had existed for six weeks. Furthermore, the end of the fingers became enlarged and the nails more shiny and abnormally curved. Patient's medical history was insignificant, as well as her familial anamnesis. Physical examination revealed no abnormalities except for clubbed fingers and subtle knee and ankle swelling. Because of a suspicion of Marie-Bamberger syndrome, additional imaging was performed. A chest X-ray demonstrated a coin lesion in the right lower lobe. The subsequent computed tomography (CT) scan showed a 4-cm tumor located in the right lower lobe without other radiological abnormalities in the chest and abdomen. The patient was staged utilizing a positron emission tomography (PET)/CT-scan and bronchoscopy. The PET/CT images demonstrated an intense fluorodeoxyglucose (FDG) uptake in the right lower lobe mass, with a maximum standardized uptake value of 10.3 [Figure 1]. There were no signs of distant metastasis. Fiberoptic bronchoscopy did not reveal any abnormalities. Bronchial brush biopsies from two segments of the right lower lobe showed malignant cells of a non–small-cell type of lung cancer and contamination with *Staphylococcus*

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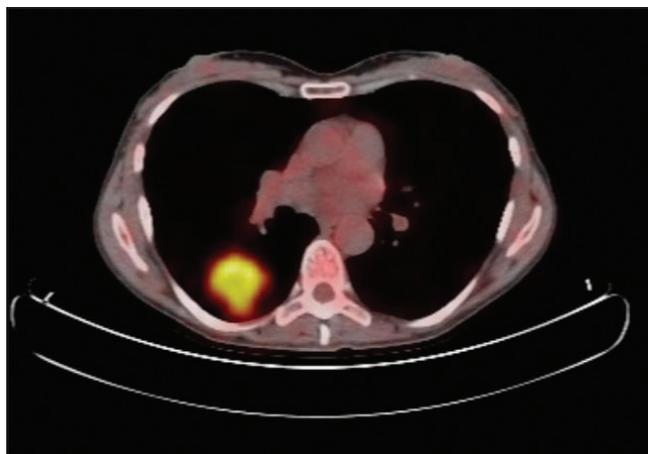


Figure 1: PET/CT demonstrating pathological FDG uptake within the right lower lobe

aureus species. For the latter, the patient was treated with antibiotics. The tumor was staged as cT2N0M0 and surgical intervention was planned. During thoracotomy, no signs of pleural metastases or local tumor ingrowth was found. A right lower lobe lobectomy was performed with a mediastinal lymphadenectomy. The postoperative course was uneventful and patient was discharged at the seventh postoperative day.

Pathological examination showed a margin-free resection of a moderately differentiated adenocarcinoma with a maximum diameter of 3.8 cm. There was evidence of pleural ingrowth without through-growth. All lymph nodes were tumor-negative. The tumor was classified as pT2N0M0. Thus, adjuvant chemotherapy was not indicated.

Nine months later, a magnetic resonance imaging scan of the brain was performed because of word finding difficulties, reading problems, and aphasia. A solitary metastasis with a diameter of 1.4 cm and peritumoral edema was found in the

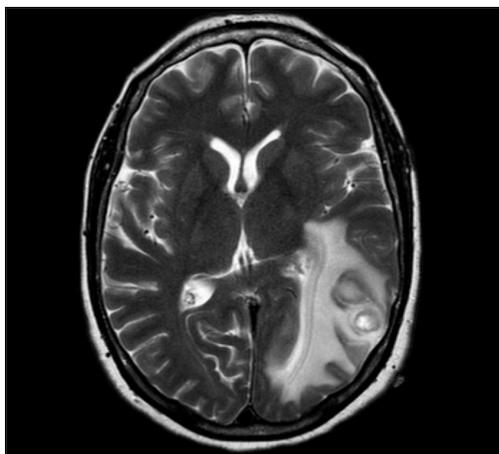


Figure 2: MRI showing a solitary metastasis in the left parieto-occipital lobe with peritumoral edema

left parieto-occipital lobe [Figure 2]. A PET/CT with diagnostic CT-scan showed, in addition to the cranial metastasis, uptake in the right adrenal gland, with a maximum standardized uptake value of 9.7, clinically suspect for a metastasis [Figure 3]. Patient was treated with dexamethasone and she was referred to a specialized center for Gamma Knife treatment where a single dose of 22 Gy was delivered at the tumor. After extensive consideration, a laparoscopic adrenalectomy was planned one month after radiosurgery. The postoperative course was uneventful and patient was discharged at the third postoperative day. Additionally, the patient was treated with four adjuvant cycles of Cisplatin and Pemetrexed. Pathological examination showed a margin-free resection of metastasis of an adenocarcinoma, histological and immunological matching lung carcinoma.

An intensive follow-up scheme was planned with regular physical examination, biochemistry, chest X-ray, and PET/CT-scans. At 20-month follow-up after the adrenalectomy, the patient remained in a good clinical condition and was free of recurrent disease.

DISCUSSION

There is no consensus as to what combination of therapy is optimal for disseminated NSCLC. This condition is generally considered incurable and treated with palliative chemotherapy. Median overall survival of NSCLC patients treated with chemotherapy is about 8 months, with less than 10% alive at two years.^[7] Due to the low incidence of isolated adrenal metastases, there is limited evidence on the efficacy of metastasectomy. Several reports have suggested that surgical treatment of a solitary adrenal metastasis from resectable NSCLC may improve survival, favoring metachronous over synchronous metastases. Patients with an isolated synchronous metastasis who undergo adrenalectomy have a shorter median overall survival compared with patients with a metachronous

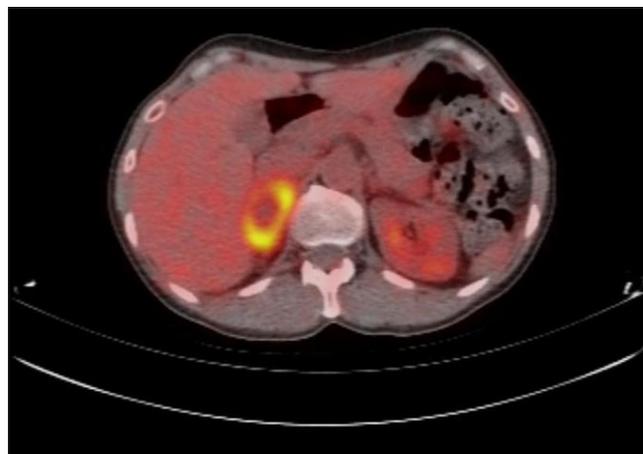


Figure 3: PET/CT showing pathological FDG uptake in the right adrenal gland with central necrosis

metastasis (1 year and 2.5 years, respectively). However, 5-year survival estimates are equivalent at approximately 25%.^[8]

It is arguable if an adrenalectomy for an adrenal metastasis should be considered in a patient who has had other metastases. We have presented a case in which adrenalectomy was performed after Gamma Knife treatment for a brain metastasis. To our knowledge, this is the first report of an adrenalectomy with subsequent chemotherapy after prior treatment for a cerebral metastasis. At 20-month follow-up, patient is in a good clinical condition without signs of recurrent disease. However, more reports and a prolonged follow-up are indicated to further elucidate this subject. Our current follow-up is 20 months following adrenalectomy, which does not exclude late recurrences. Nevertheless, our case shows that this approach may be justified in patients with a solitary adrenal metastasis after a cerebral metastasis. In our opinion, a resection of a solitary adrenal metastasis could be considered in patients without signs of disseminated disease on PET/CT and following successful resection of the primary tumor.

CONCLUSION

With our report, we want to point out that in selected cases, adrenalectomy with adjuvant chemotherapy for an adrenal metastasis of NSCLC may be performed successfully, with good short-term results, even after earlier treatment of a cerebral metastasis.

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