

A case of simultaneous lung cancer and abdominal aortic aneurysm treated with a two-stage strategy

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ABSTRACT The optimal treatment strategy for simultaneous lung cancer and abdominal aortic aneurysm remains controversial. This report presents the case of a 76-year-old man with lung cancer in addition to an abdominal aortic aneurysm. A chest computed tomography (CT) examination showed a mass lesion measuring 38 mm in diameter in S⁶ of the left lower lobe; the mass exhibited features suggestive of lung cancer. Meanwhile, an abdominal CT examination showed an abdominal aortic aneurysm measuring 52mm in diameter. Considering the progression of the lung tumor, we performed a left lower lobectomy and lymph node dissection, and the lung tumor was histologically diagnosed by as an adenocarcinoma, pT3(pm1)N1M0. On the 58th day after the first surgery, we performed endovascular stent grafting, and on the 31st day after the endovascular surgery, adjuvant chemotherapy with carboplatin plus gemcitabine was initiated. During the chemotherapy, there were no remarkable adverse events, and the treatment was completed as planned.

(Accepted on July 29, 2010)

Key words : Lung cancer, Abdominal aortic aneurysm, Two-stage surgical treatments, Adjuvant chemotherapy

INTRODUCTION

Lung cancer with a simultaneous abdominal aortic aneurysm (AAA) is rather rare (about 1% of all treated cases of lung cancers)¹⁻³⁾. The concomitant presence of the two diseases makes therapeutic decisions critical, especially in terms of the priority and timing of the treatments. The cumulative surgical risk involved in the treatment of the two

disease conditions and the overall condition of the patients, who are often elderly and with impaired functions, frequently necessitate a two-stage treatment strategy⁴⁾.

We report the case of a patient in whom a two-stage operation was performed for lung cancer and AAA, followed by adjuvant chemotherapy for the lung cancer.

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CASE REPORT

A 76-year-old man was referred to our institute for further investigation of an abnormal opacity in the left lower lung field on a plain chest X-ray. There was no previous history of malignancy. A physical examination revealed no abnormalities. The results of routine hematological and biochemical investigations were all nearly normal. A chest computed tomography (CT) examination revealed a mass lesion measuring 38mm in diameter in the lower lobe of the left lung (Fig. 1A). An ^{18}F -fluorodeoxyglucose positron emission

tomography (FDG-PET) examination demonstrated accumulation in the lung tumor and in a hilar lymph node (Fig. 1B). An abdominal CT examination revealed a dilated segment of the infrarenal abdominal aorta measuring 52mm in diameter (Fig. 2). Because the lung tumor was highly suspected as a locally advanced lung cancer, we decided to perform a two-stage surgical treatment. At first, a left lower lobectomy and lymph node dissection were performed. Pathologically, the lung tumor was diagnosed as an adenocarcinoma, pT3(pm1) N1M0. The patient developed no remarkable

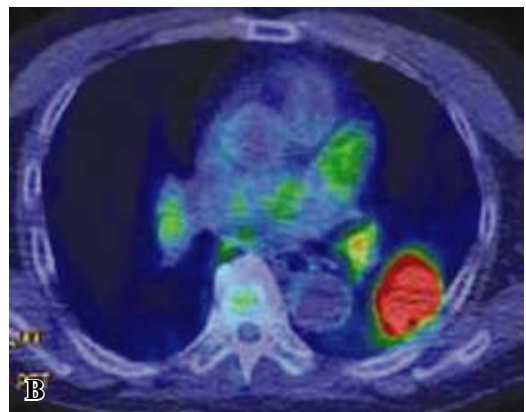
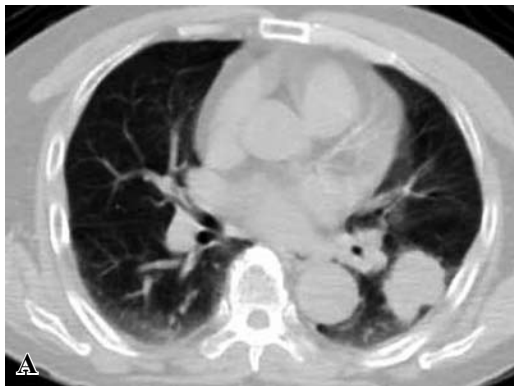


Fig. 1. Chest CT showing a mass lesion measuring 38×31mm in the lower lobe of the left lung (A), FDG-PET showing accumulation in the lung tumor and a hilar lymph node (B).

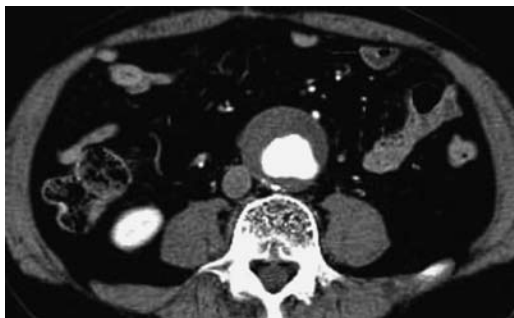


Fig. 2. Abdominal CT showing a dilated segment of the infrarenal abdominal aorta measuring 52mm.



Fig. 3. Angiography of the endovascular stent graft showing absence of any endoleak.

complications necessitating any treatments during the postoperative period.

On the 58th day after the lung resection, endovascular stent grafting using the Excluder System (Gore, USA) was performed under general anesthesia. The final angiogram of the procedure showed the effective sealing of the aneurysmal sac, with preserved flow in the abdominal aorta (Fig.3). There were no major complications during the postoperative period. On the 31st day after the endovascular surgery, the patient underwent adjuvant chemotherapy with carboplatin (area under the curve = 2.5) on day 1 and 15, and gemcitabine (1000mg/ m²) on day 1 and 15. The chemotherapy was repeated every 28 days for a total of 4 cycles. During the chemotherapy, the patient developed no remarkable adverse events, and the adjuvant therapy was completed as planned. To date, 18 months after the lung resection, the patient has no evidence of lung cancer recurrence or of endoleak from the aortic stents.

DISCUSSION

The reported incidence of simultaneous lung cancer and AAA ranges from 0.8 to 1.3% of all treated cases of lung cancer¹⁻³. The therapeutic problems in patients with simultaneous lung cancer and AAA are mainly related to the appropriate surgical strategies and the timing of these procedures. Simultaneous treatment is more cost-effective, but it entails double access to the chest and abdomen, which significantly increases the invasiveness of the surgery⁵.

In a two-stage treatment, it is important to determine which surgery should be carried out first. In general, the priority should be given to the lung cancer surgery because of the risk of cancer progression associated with any treatment delay and the potential immunologic suppression caused by prior abdominal aortic surgery; on the other hand, the danger of rupture of the aneurysm might

necessitate earlier surgery for the aneurysm. The reported frequencies of aneurysmal rupture range from 0% to 6% for aneurysms with a diameter of <5cm, and 9% and 12.5%, for aneurysms measuring 6.5cm and 7.5cm in size, respectively^{6,7}. The general condition of the patients, including the adequacy of the cardiac, renal, respiratory, and central nervous functions, must also be carefully evaluated, including an assessment of the American Society of Anesthesiology risk, before determining the operative indications for the AAA.

In the present case, we assigned priority to the lung cancer surgery than to the surgery for the AAA, because the lung cancer was suspected of being locally advanced, and the risk of AAA rupture appeared to be relatively low. For the treatment of the AAA, we chose endovascular stent grafting. Endovascular stent grafting has radically modified the treatment of AAAs, especially for patients with a poor general health and a high anesthesia risk. It is much less invasive than open surgery in the short term⁸. In this case, because of the detection of an intrapulmonary metastasis and a lymph node metastasis from the lung cancer, adjuvant chemotherapy was thought to be necessary. Therefore, we chose a less invasive surgical method for the treatment of AAA, since the invasiveness of the surgery might have had an adverse influence on the subsequent chemotherapy. The adjuvant chemotherapy was completed as planned in terms of both the doses and the number of cycles; therefore, our decision on assigning priority to the surgical treatment for lung cancer and to perform endovascular stent grafting for the AAA was considered to be appropriate.

CONCLUSION

In patients with lung cancer and AAA, careful consideration must be given to whether simultaneous treatments or two-stage treatment would be more appropriate, and to which disease

treatment priority should be assigned. Endovascular stent grafting can be the treatment of choice in such complicated cases.

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