



## **Adenocarcinoma Comprising Sarcomatoid Carcinoma of the Lung Proliferating Rapidly in the Right Main Bronchus**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author KM managed the patient, contributed to design of this report and wrote the first draft of the manuscript. Authors MH and HT managed the drafting and proofreading the manuscript. All authors read and approved the final manuscript.*

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**Case Study**

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### **ABSTRACT**

An 82-year-old male was referred to hospital with cough. A chest computed tomography scan revealed atelectasis of right upper lobe and obstruction of the upper lobe bronchus. We conducted a transbronchial biopsy, but could not make a diagnosis. The mass proliferated rapidly, resulting in complete obstruction of the right main bronchus. Since the patient experienced severe respiratory failure, we performed right upper sleeve lobectomy in an emergency. The findings of histopathological examination revealed adenocarcinoma. However, several sarcomatoid carcinoma cells with a few adenocarcinoma cells were observed only in an intra-bronchial development part.

**Keywords:** *Sarcomatoid carcinoma; lung cancer; adenocarcinoma.*

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## 1. INTRODUCTION

We present a case of adenocarcinoma of the lung with the sarcomatoid carcinoma element. The proliferation of the tumor resulted in obstruction of the right main bronchus. Histopathological examination results revealed acinar adenocarcinoma. However, several sarcomatoid carcinoma cells with a few adenocarcinoma cells were observed only in an intra-bronchial development part. It is an extremely rare histological finding. Sarcoma occasionally extends within the bronchus without invading the bronchial mucosa. Hence, the presence of the sarcomatoid carcinoma element caused rapid growth and became a factor for complete obstruction of the right main bronchus.

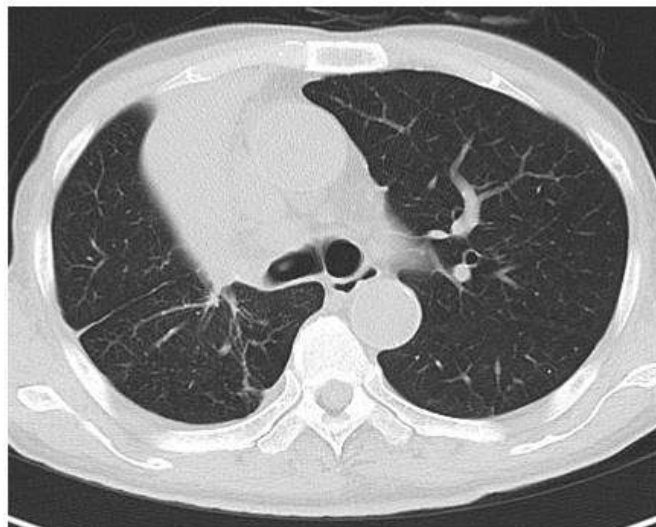
## 2. PRESENTATION OF CASE

An 82-year-old male presented to our hospital with a severe cough. A chest X-ray revealed an atelectasis in the right upper and middle lung field. A chest computed tomography (CT) revealed the atelectasis in the right upper lobe and obstruction of the upper lobe bronchus (Fig. 1A). Bronchoscopy revealed polypoid lesion in the right upper bronchus. We failed to diagnose the underlying condition even after performing a transbronchial nodal biopsy. We performed a positron emission tomography scan, and a malignancy was suggested on the basis of the high standardized uptake value (11.2) of 18F-fluorodeoxyglucose observed (Fig. 1B). After 8

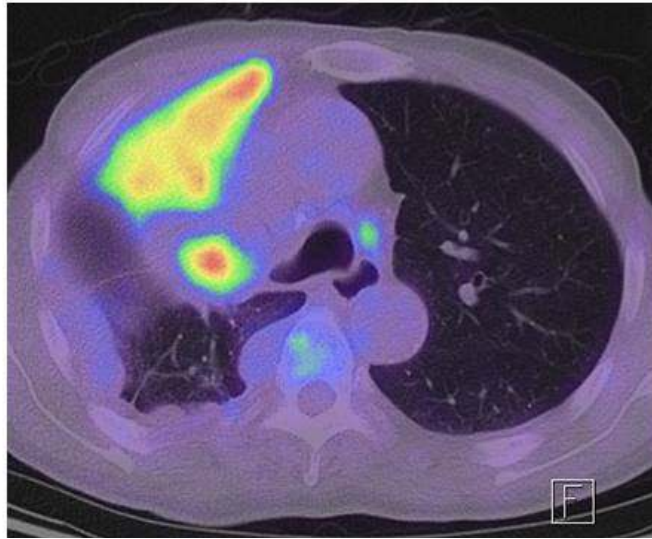
days from the first day, the patient experienced severe respiratory failure. A chest X-ray revealed extensive atelectasis in the right lung field, and a CT revealed complete obstruction of the right main bronchus (Fig. 1C). Since there was no lesion suggesting metastases, we performed right upper sleeve lobectomy in an emergency. The main bronchus was cut at two rings from the bronchial bifurcation, and the intermediate bronchus was dissected just under the upper lobe bronchus branch; they anastomosed each other. The histopathological examination results revealed acinar adenocarcinoma (pT2a [4.0 cm] N0M0). However, numerous sarcomatoid carcinoma cells along with some adenocarcinoma cells were observed only in an intra-bronchial development part (Fig. 2). Notably, adenocarcinoma and sarcomatoid carcinoma cells did not invade the bronchial mucosa.

## 3. DISCUSSION

Although, in the present case, the patient was primarily diagnosed with adenocarcinoma, we witnessed a rare histological finding that several sarcomatoid carcinoma elements exist only in an intra-bronchial development part. Sarcomatoid carcinoma is defined as a neoplasm with biphasic features consisting of both epithelial and differentiated sarcomatous components recognized by microscopy [1]. However, sarcomatoid carcinomas are generally difficult to diagnose preoperatively due to their mixed composition including both epithelial and sarcomatous components [2,3].



(A)



(B)



(C)

**Fig. 1. Chest computed tomography (CT) and positron emission tomography: A) A CT revealed atelectasis of the right upper lobe and obstruction of the upper lobe bronchus at the first day of the visit to our hospital B) Positron emission tomography scan showed significantly enhanced uptake in the right upper lobe C) A CT revealed complete obstruction of the right main bronchus 8 days after the first day**

Regarding the occurrence of pleomorphic carcinoma, some studies report that sarcomatoid carcinoma cells of pleomorphic carcinoma were probably derived from epithelial elements [4,5]. In the present case, carcinoma cells may be morphologically altered to sarcomatoid carcinoma cells only in the bronchus. Some reports suggest a significant correlation of

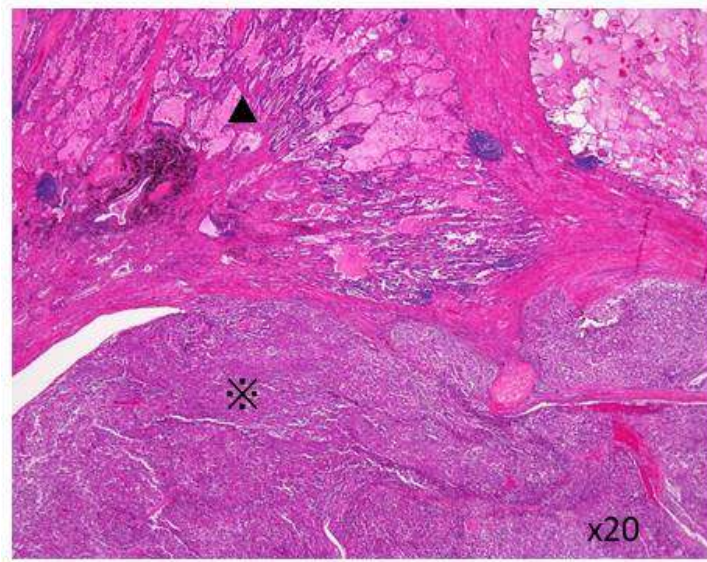
sarcoma with irradiation and smoking [5,6], which may be because of the influence of extensive smoking.

A tumor's growth rate is significantly higher in the sarcomatoid carcinoma element than in the carcinomatous element according to the analysis of MIB-1 index, which is an indicator of cell

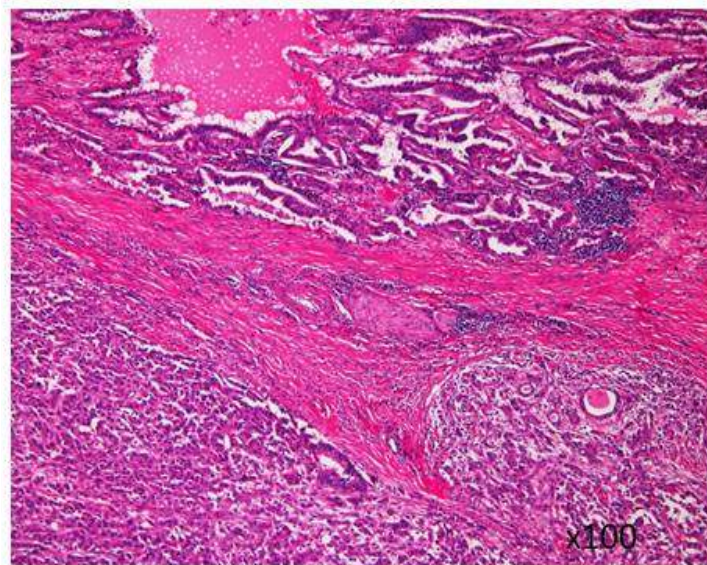
proliferation [7]. Perhaps, the presence of sarcomatoid carcinoma cells obstructs the right main bronchus in a short time.

In cases of bronchial obstruction of cancer, it is often challenging to perform a radical resection because of an invasion of cancer along bronchial mucosa. Consequently, a study suggests that it will be desirable to perform an optimal treatment, such as chemoradiotherapy, after opening the

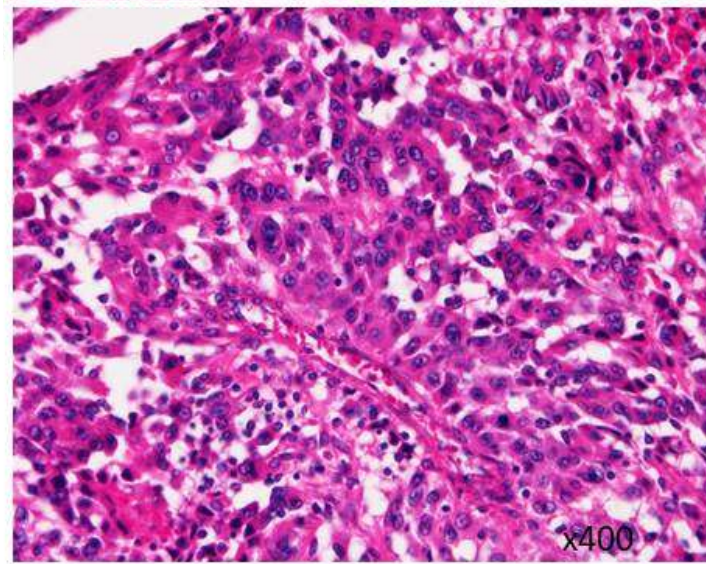
obstruction of the bronchus through the bronchoscopic intervention [8]. However, since sarcoma or sarcomatoid carcinoma tends to progress without invasion into the bronchial mucosa, it is possible to perform radical resection as a first-line treatment [8,9]. Some studies reported that complete surgical resection with clear margins is important to obtain a good prognosis [10,11]. Hence, the treatment of such cases warrants a thorough assessment.



(A)



(B)



(C)

**Fig. 2. Histopathological findings: A) and B) Acinar adenocarcinoma (▲) and sarcoma cells (※) was revealed in the specimen (A: Hemotoxylin and Eosin (H&E) stain: x20; B: H&E stain: x100) C) Sarcoma cells were primarily present in the bronchus (H&E stain: x400)**

#### 4. CONCLUSION

We experienced an extremely rare histological type of lung cancer with numerous sarcomatoid carcinoma and adenocarcinoma cells observed only in an intra-bronchial development part. The presence of sarcomatoid carcinoma element induced the rapid growth of tumor, leading to the complete obstruction of the right main bronchus.

#### CONSENT

All authors declare that written informed consent was obtained from the patient for publication of this case report and accompanying images.

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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