

## Carcinoid Tumor Arising from the Cystic Wall of the Lung

Masao TOMITA, Hiroyoshi AYABE  
and Katsunobu KAWAHARA

*First Department of Surgery, Nagasaki University School of Medicine  
Nagasaki, Japan.*

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**ABSTRACT:** A 65-year-old male with carcinoid arising from the cystic wall was reported with some consideration to lung cancer associated with lung cyst. It is emphasized that an increasing mass adjacent lung cystic wall on chest xp should be taken into account as a malignant tumor arising from the cystic wall.

### INTRODUCTION

Elongation of life span causes degenerative changes in various organs. In particular, it is well known that the lung falls into parenchymal emphysema enough to make bulla/bleb and cyst with advancing age. It is assumed that long standing stimulation on the surface of the cystic wall will introduce epithelial dearrangement, metaplasia and subsequently cancerous change.

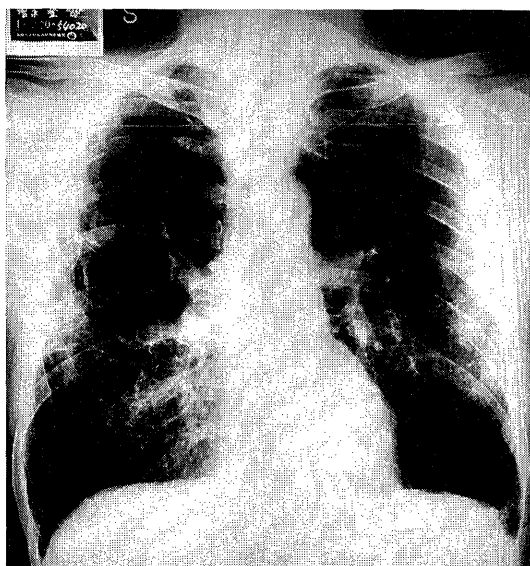
Some reports are aware of lung cancer arising from preeixisiting giant bulla. Therefore, many investigations focus on lung cancers associated with emphysematous lungs and cystic lung diseases.

A rare case of carcinoid tumor arising from giant bulla is reported with some discussion with respect to etiology and incidence of this disease.

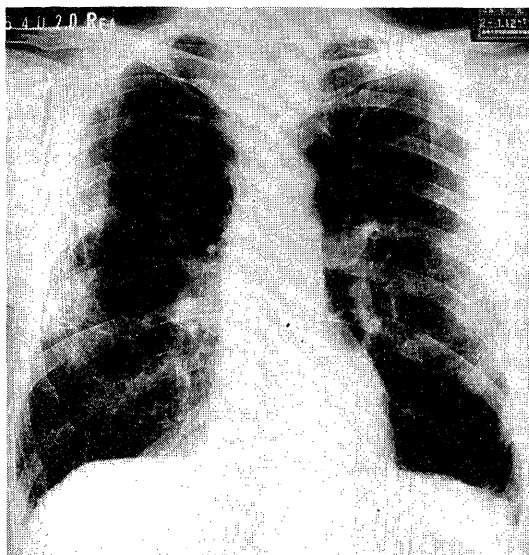
### PATIENTS

A 65-years-male had been pointed out a presence of lung cyst as shown in **Fig. 1**. In 1976, the patient suffered from fever and sputum and underwent the medical treatment for vanishing lung and bronchitis.

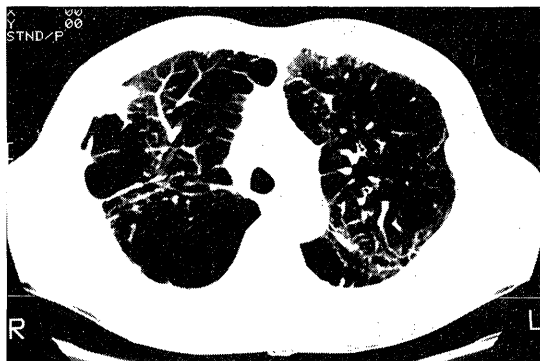
On October 15, 1989, it was recognized that the size of an abnormal mass on chest-xp (**Fig. 2**) and CT (**Fig. 3**) has increased and the complanints of cough, sputum and exertional dyspnea were aggravated and manifested. Therefore, surgery was recommended as a treatment.



**Fig. 1.** Preoperative chest X-Ray film, showing abnormal nodular shadow with giant, in the upper lung field.



**Fig. 2.** Preoperative chest X-Ray film, showing increased size of abnormal nodular shadow in the upper right lung field at the time of 1 year later Fig. 1.

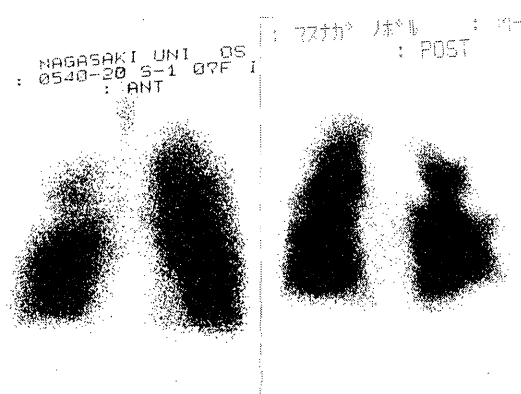


**Fig. 3.** Preoperative CT scan, showing abnormal shadow and bulla.

On admission, there was no abnormal physical sign. In particular, no abnormal signs of palpable cervical nodes and clubbed finger were noted. Respiratory sound was weak and occasional sonorous rales were heard in all the lung field.

The abdomen was flat and soft. There was no rigidity or tenderness. The liver, spleen and kidney were not palpable.

There was no abnormal finding of the extremities. It is considered that the cystic lesion of the lung is increasing in size and com-



**Fig. 4.** Perfusion scintigram, showing filling defect in the upper right lung field.

pressing the healthy lung tissues accompanying inflammation as shown in perfusion scintigram (**Fig. 4 a, b**). The size of an abnormal dense tumorous shadow of the anterior wall of the cyst adjacent to the anterior thoracic wall increased on CT scan. Therefore, it was suggestive of malignant tumor arising from the cystic wall. Transbronchial lung biopsy revealed no evidence of malignancy, being class I by cytology. The ventilation and perfusion scans showed the defect in the right upper lung area, reflecting cystic lesion in situ. The increase in the cystic size was remarkable and one took it into consideration that compression of increasing size of the cyst to healthy lung tissues might cause dyspnea.

Surgery was done. The cyst was situated in the right upper lobe of the lung. The right upper lobectomy was performed. The other lobes were somewhat emphysematous, although there was no other cystic lesion. The surgical specimen showed the cystic wall in which well-circumscribed small yellowish tumor mass, 2 × 1.8cm in size, was seen in the site of the opening of the right upper lobe bronchus as shown in **Fig. 5**.

Histologic examination revealed carcinoma as shown in **Fig. 6**. The histology showed clumps of uniform round or oval cells, some are showing glandular differentiation and some have the ribbonlike pattern more commonly seen. These findings were consistent with carcinoid tumor.

The postoperative course was uneventful and he was discharged on day 14 after surgery

without any complication.



Fig. 5. Surgical specimen, showing yellowish tumor (1.8 × 2cm) near the opening site of the right upper lobe bronchus.

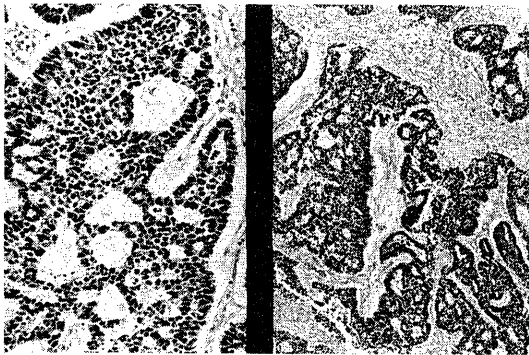


Fig. 6. Histologic findings, showing clumps of uniform round and oval cells (left) and forming ribbon like pattern (right) which are compatible with carcinoid tumor.

## DISCUSSION

It is well known that high risk of lung cancer is environmental pollution, the habit of heavy smoking, the occupation inhaling chemical agent of chrom, tar and so on. Niitani<sup>1)</sup> recommended that high risk group should be restrictively controlled by mass examination.

High incidence of lung cancer developed from benign lung diseases has been reported. The term, scar carcinoma, refers to the etiologic mechanism of lung cancer from healing scar of benign lung disease. The mechanism of lung cancer arising from cystic wall indicates that scar formation by ruptures and adhesion of lung

cysts produces carcinoma<sup>2)</sup>. The reasons for producing lung cancer are that carcinogens which accumulates in the cystic cavity persistently stimulates the cystic wall, the endothelium tends to occur squamous metaplasia and unevenness of ventilation and perfusion rate<sup>3)</sup> used to cause carcinoma from emphysematous diseases.

The criteria of giant bulla in the bullous lesion occupying the space from the apex to the anterior level of the second rib<sup>4)</sup>. Kawakami<sup>5)</sup> emphasized that the term<sup>1)</sup> giant bulla is a air space lesion occupying over one third of the thoracic space.

The prognosis of giant bulla following surgery is not necessary fair. Ito<sup>6)</sup> reported brain metastasis in one out of 4 who underwent lobectomy for lung cancer associated with giant bulla. Nishiki<sup>7)</sup> lost a case of squamous cell carcinoma, 4 months after lobectomy and one case expired 11 months after surgery according to Shirakusa' report<sup>8)</sup>.

Needless to say, it is necessary to detect carcinoma associated with giant bulla in an early stage to improve the surgical outcome.

It is a key point of early detection to recognize that giant bulla has a high risk of lung cancer and requires a follow-up study periodically in the clinical course. CT finding is of great use to detect lung cancer associated with giant bulla, even if accumulated fluid may conceal an abnormal shadow of lung cancer on chest x-ray film.

## REFERENCES

- 1) Niitani, H *et al*: High risk group for carcinoma—lung cancer—*Jap. J. cancer and chemotherapy* 14: 2632, 1987.
- 2) Yokoo H, Suckow EE: Peripheral lung cancers arising in scars. *Cancer* 14: 1205, 1961.
- 3) Yoneyama T, Naruke T, Suemasu K, Ishikawa S: Bronchial carcinoma in patients with pre-existing unilateral lung diseases. *Thorax*. 31: 650, 1976.
- 4) Goldstein MJ, Snider GL, Liberson MD, Poske RM: Bronchogenic carcinoma and giant bullous disease. *Amer. Rev. Res. Dis.* 97: 1062, 1988.
- 5) Kawakami M, Nakata T: Giant lung cystic diseas. *Clin Surg.* 34: 1004, 1979.

- 6) Ito M. The problems of surgery for bilateral lungs lung cancer from both lungs and contralateral relapsing lung cancer. *Jap. J. Surg. Society.* **85**:952, 1984.
- 7) Nishiki M, Okumichi T, Yoshioka S, Yamane M, Ezaki H: Primary bronchogenic carcinoma associated with emphysematous giant bulla, Hiroshima, *J. of Medical Sci.* **33**:577, 1984.
- 8) Shirakusa T, Emori K, Shigematsu N: Light d electromicroscopic study on lung cancers arising from lung cyst. *Jap. J. Thorac. Dis.* **16**:906, 1978.