

## Surgical Management of Spontaneous Haemopneumothorax

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We report 2 cases of spontaneous haemopneumothorax treated surgically.

**Case 1**, a 19-year-old man was referred to our hospital because of trapped lung after continuous tube drainage for 3 weeks. The chest roentgenogram showed a left haemopneumothorax with collapsed lung. At thoracotomy, 200g of clot blood was evacuated and decortication was performed.

**Case 2**, a 20-year-old man was admitted complaining of chest pain and dyspnea. X-ray examination showed a moderate lung collapse and homogenous density. Chest tube drainage yielded 480ml of blood. However, bleeding was continuous and expansion of the right lung was poor, emergency thoracotomy was carried out and 950g of clot blood was obtained. Recovery was uneventful and complete expansion of the right lung was observed.

From our experience, early thoracotomy for spontaneous haemopneumothorax is recommended.

**Key Words:** spontaneous haemopneumothorax, thoracotomy, decortication, pleural adhesion

Spontaneous haemopneumothorax is a condition of pneumothorax combined with haemothorax without any known trauma. In Japan, the condition was first reported by Nakayama (1) in 1935. There are about 80 cases of this entity reported in the Japanese literature by 1991 (2).

We report 2 cases of spontaneous haemopneumothorax treated by thoracotomy.

### Case reports

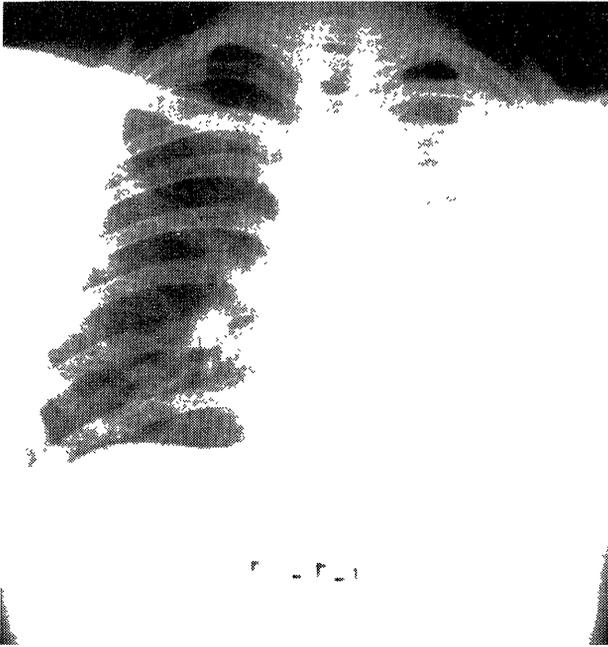
**Case 1**- a 19-year-old man noticed chest pain and dyspnea during walking. He visited a community hospital and was found a left pneumothorax (Fig. 1). A small catheter was inserted into the left pleural cavity. On the next day, pleural effusion was found on the chest roentgenogram and a large chest tube was inserted for continuous suction drainage. About 740ml of blood was obtained. However, expansion of the left lung was not gained and he was referred to our hospital 3 weeks after the onset of symptoms. On arrival, he complained of chest pain and fever. A chest roentgenogram showed a massive pleural effusion with small

pneumothorax (Fig. 2). A respiratory function test revealed a marked decrease of vital capacity which was 68 percent of predicted value. Left thoracotomy was performed and 200g of clot blood was evacuated. No bleeding point was identified. Thick "peel" of the parietal and visceral pleura was removed to expand the lung. After decortication, a reflation of the left upper lobe was well but, inflation of the lower lobe was poor. His postoperative course was uneventful and a chest roentgenogram taken 6 months after operation showed a complete expansion of the left lung (Fig. 3).

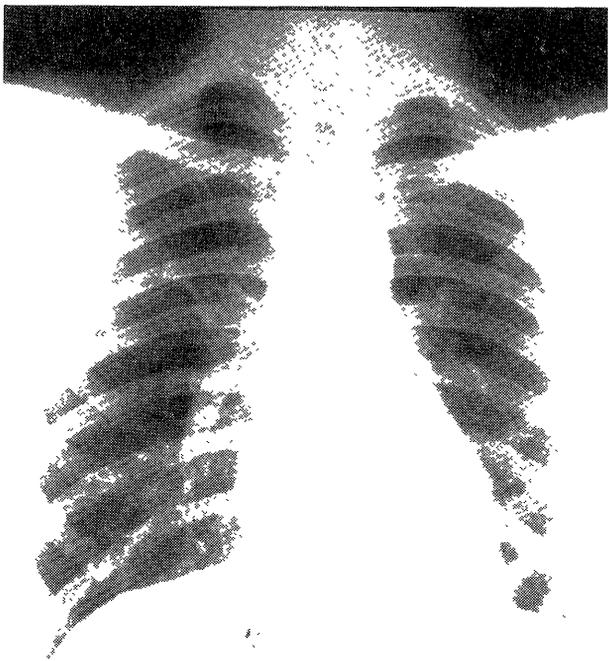
**Case 2**- a 20-year-old man was admitted complaining of moderate chest pain and dyspnea. He had a history of thoracotomy for a left spontaneous pneumothorax one year



**Fig. 1.** Chest x-ray film of case 1, obtained at onset of symptoms, shows a pneumothorax on the left side.



**Fig. 2.** Chest x-ray film of case 1, obtained 10 days after chest tube insertion, shows unexpanded lung with fluid loculations.



**Fig. 3.** Chest x-ray film of case 1, exposed 6 months after thoracotomy, shows complete expansion of the left lung.

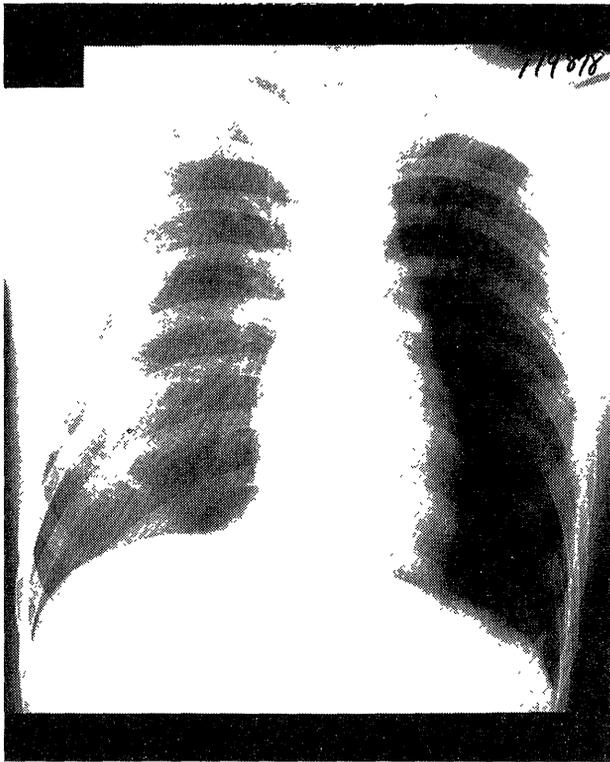
and 10 months ago (Fig. 4). His chest roentgenogram, obtained in the supine position, showed a right pneumothorax with pleural effusion (Fig. 5). Physical examination revealed a blood pressure 110/70mmHg, pulse 84 and respiration 32. There was hyperresonance over the right anterior chest with diminished breath sounds. Hemoglobin

was 13.5g/dl and white blood cell count was 10,300. A chest tube was inserted and 480ml of blood was evacuated. His symptoms were relieved slightly. However, he was still bleeding with a total evacuation of 1,700ml and x-ray examination on the next day showed no great improvement of lung expansion with a homogenous density (Fig. 6). Thoracotomy was performed and 950g of clot blood was obtained. Continuous arterial bleeding from torn apical pleural adhesions was observed and 2 blebs and one ruptured bleb were found in the apical area of the upper lobe. The bleeding vascular adhesions were ligated and the blebs were excised.

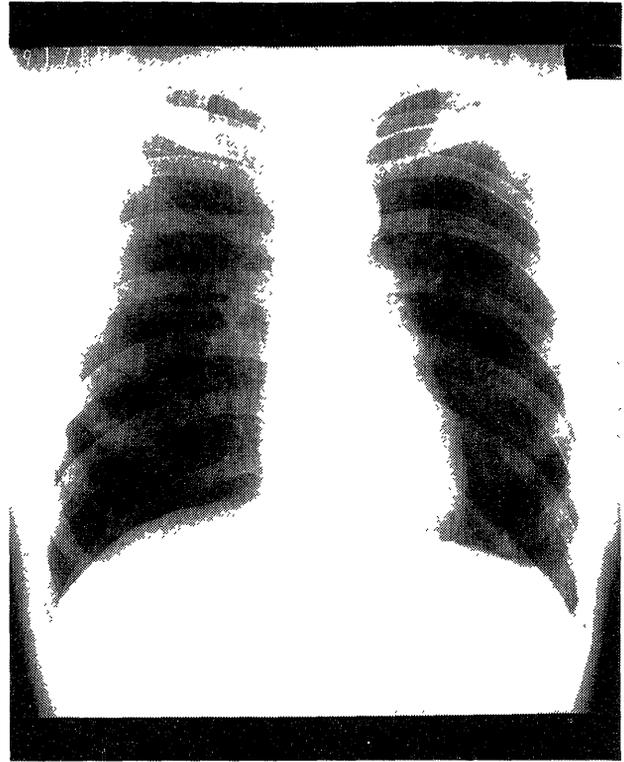
His recovery was uncomplicated and chest roentgenogram 3 weeks after operation showed a complete expansion of the right lung (Fig. 7).



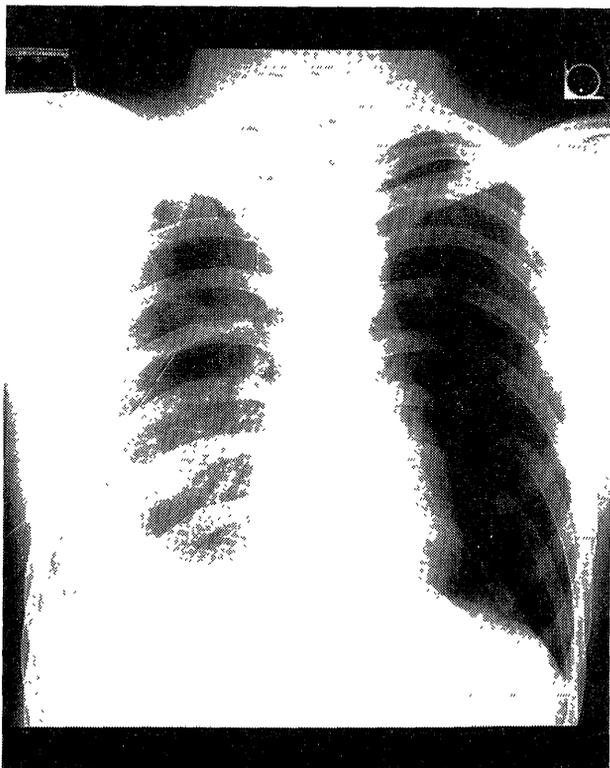
**Fig. 4.** Chest tomogram of case 2, exposed one year and 10 months ago, shows left pneumothorax.



**Fig. 5.** Chest x-ray film on admission of case 2, obtained in the supine position, shows a partly collapsed lung with a homogenous density.



**Fig. 7.** Postoperative chest x-ray film of case 2 shows complete expansion of the right lung



**Fig. 6.** Preoperative chest x-ray film of case 2 shows unexpanded lung and massive density in the right hemithorax.

### Comment

Spontaneous haemopneumothorax is a rare condition and its incidence was 8.3 per cent reported by Fry and associates (3), 4.4 percent by Ohmori and coworkers (4) and 1.2 per cent by Kitahara, et al. (5). Of 149 patients with spontaneous pneumothorax experienced in our department, 2 had spontaneous haemopneumothorax, approximately 1.3 per cent.

The etiology of spontaneous haemopneumothorax is generally accepted as subpleural bleb ruptures, usually apical in location. An important factor in the production of haemothorax is massive bleeding from torn vascular adhesions (3, 4, 7, 8, 9). The lack of a muscular layer of the vessels in the adhesions, the systemic pressure carried by the vessel and the negative intrapleural pressure may encourage bleeding to continue (7). Another source of the bleeding comes from the torn abnormal vessels of the wall of ruptured bleb or bulla (10, 11). Unknown origin of bleeding was reported from 29.6 to 35 percent (5, 12).

The age range of spontaneous haemopneumothorax was between 20 and 40 years and parallels that of spontaneous pneumothorax (3). However, the sex incidence was predominantly in males (4). Only 5 females with this entity were reported in the Japanese literature until 1992 (2). There was no difference in the incidence of conditions

between the right and left side.

The onset of spontaneous haemopneumothorax is always accompanied by chest pain which is usually severer than that of spontaneous pneumothorax. Haemorrhagic shock is often noted when the haemorrhage has been great and was observed in 25 percent of the patients with bleeding of 1,000ml or more (5). Chest roentgenogram, obtained in the upright position, will show a hydropneumothorax. However, xray examination is made in the supine position, a hydropneumothorax is not shown and a massive or homogenous density with lung collapse is observed which is different from hyperlucent shadow of pneumothorax alone. Thoracentesis will reveal the fluid as being blood and the diagnosis of haemopneumothorax is established (7).

Management of spontaneous haemopneumothorax is early chest tube insertion and drainage with oxygen therapy. If bleeding is small and stops, and lung expansion is complete, thoracotomy is unnecessary. However, such cases were unusual and conservative treatment resulted a high mortality of 12 to 25 per cent and fibrothorax with respiratory cripple in another 25 per cent of the patients in the past (3, 7). Therefore, early thoracotomy was recommended in the recent reports (2, 5, 8, 9). The advantages of primary thoracotomy for spontaneous haemopneumothorax are to arrest the bleeding, to expand the lung and to remove a clot blood, resulting shortness of admission. In cases of bleeding more than 1,000ml, persistent density in the x-ray examination, recurrent bleeding, severe shock and deteriorative condition of the patients, emergency thoracotomy is

recommended (3, 5, 7, 9).

In the present day, thoracotomy for the patient with spontaneous haemopneumothorax is a safe procedure and the prognosis is almost well.

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