CASE REPORT
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Persistent Late Post-pneumonectomy Spontaneous Pneumothorax

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Abstract

Post-pneumonectomy spontaneous pneumothorax is extremely rare and has a high mortality rate. In the literature, only a very few cases have been reported, and most occurred in the early post-operative period.

We herein describe a 37-year-old man presenting with a late spontaneous pneumothorax after pneumonectomy. Careful follow-up was necessary after pneumonectomy with emphysematous changes in the remaining lung.

Keywords: pneumothorax, pneumonectomy, bullous lung

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INTRODUCTION

Spontaneous pneumothorax after pneumonectomy is a rare condition and is correlated with the existence of emphysematous changes in the lung. Surgical management can be difficult. Operative intervention is not feasible at all times. We report a case of late spontaneous pneumothorax after pneumonectomy and its clinical importance.

CASE PRESENTATION

A 37-year-old man underwent right pneumonectomy with mediastinal lymph node dissection for atypical carcinoid tumor with pathologic stage T2N2M0. The expansion of the upper lobe was insufficient to fill the hemithorax because of the diffuse emphysematous changes in the right upper lobe; therefore, pneumonectomy was performed (Figure 1). Postoperative course was uneventful and chest drain was removed on the postoperative first day. The patient recovered well and was discharged on the 7th day. Because of the lymphatic dissemination of the tumor, adjuvant chemotherapy was offered but the patient refused any further therapy. Eighteen months later, he was admitted to an emergency department with shortness of breath and chest pain. Consequently, left pneumothorax was detected on chest X-ray. A chest tube was inserted and his symptoms disappeared (Figure 2). After the patient's stabilization, he was transferred to our hospital. Because of prolonged air leak, the chest tube was immediately maintained on negative suction. After the lung reached the chest wall and the air leak was stopped, the tube was removed cautiously on the 5th day. Eight hours later he deteriorated again because of recurrent pneumothorax. Chest drain was immediately placed. Continuous aspiration (15 cm water) was applied to the chest tube. His symptoms again significantly improved. On the follow-up chest X-rays, pneumothorax disappeared, the air leak was resolved on the 11th day and the chest tube was removed. Chest X-ray showed no sign of pneumothorax and the patient was discharged with close follow-up (Figure 3). He was alive and well in the eight years of follow-up.

DISCUSSION

The incidence of contralateral pneumothorax is very low, reported as 0.3-1.2% [1]. It is thought to be a greater threat in patients undergoing operations for bullous or bleb disease of the lung. Compared with the other morbidities, postpneumonectomy spontaneous pneumothorax is correlated with a very high mortality rate.

Only a few isolated case reports exist in the literature [1-3]. Late occurrence is much rarer than early post-resectional pneumothorax. Management can be challenging. There is no standard treatment option. Thoracoscopic procedures, with wedge resections of bulla or pleurodesis, are the most common treatment options for spontaneous pneumothorax. One of the cases in the literature [2] underwent video-assisted thoracoscopy after the failure of tube thoracostomy. Due to the critical pulmonary status of these patients, video-assisted thoracoscopic approach is not feasible. Inadequate lung deflation because of impaired pulmonary status limits visualization. According to this criterion, video-assisted thoracoscopy was converted to thoracotomy. As in our case, a rupture of bulla was the origin of the contralateral pneumothorax. Nishiuchi et al. reported that median sternotomy is one of the most favorable approaches due to its minimal effect on pulmonary function [4].

Ishikawa et al. [5] preferred to use percutaneous cardiopulmonary support (PCPS) during resection of bulla in a

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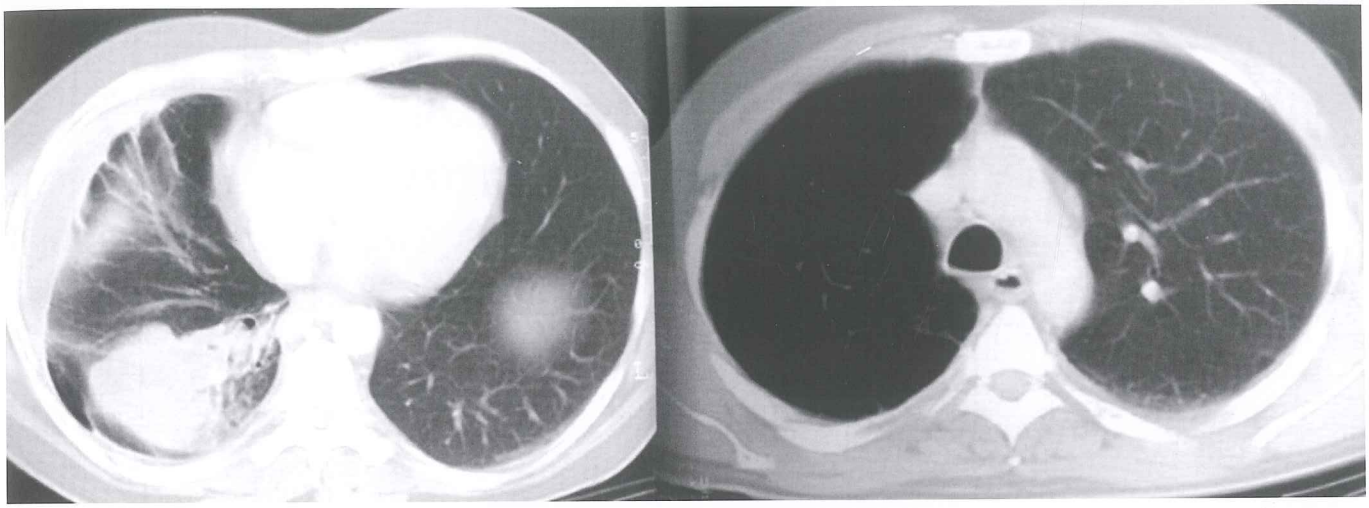

Figure 1. Computed tomography shows right lower lobe tumor with right upper lobe emphysematous changes. On the same image, a bulla can be seen on the posterior segment of the left upper lobe.

similar patient, citing that it facilitates a safer performance of the bullectomy. The authors believe that surgical removal of the bulla is necessary in order to reduce the postoperative recurrence. On the other hand, Niimi et al. [6] experienced the same situation, and they stressed avoidance of thoracotomy and treated their patient with chest drainage only, similar to our case.

Another focus of discussion concerns the definition of the title. Some prefer to use "contralateral pneumothorax"; however, when discussing a pneumonectomy patient, it is unnecessary to insist on use of the term "contralateral" [2].

In conclusion, it is very important to consider the possibility of spontaneous pneumothorax after pneumonectomy due to the emphysematous changes. Such patients should be carefully followed-up.

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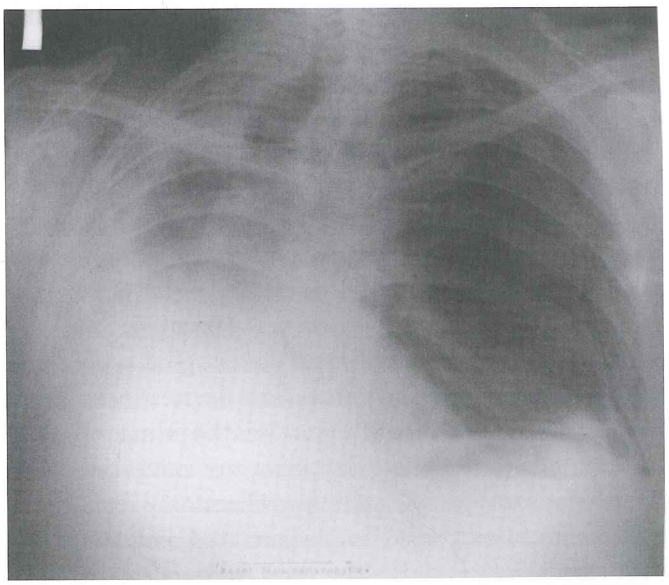

Figure 2. Chest X-ray showing persistent pneumothorax after tube drainage.

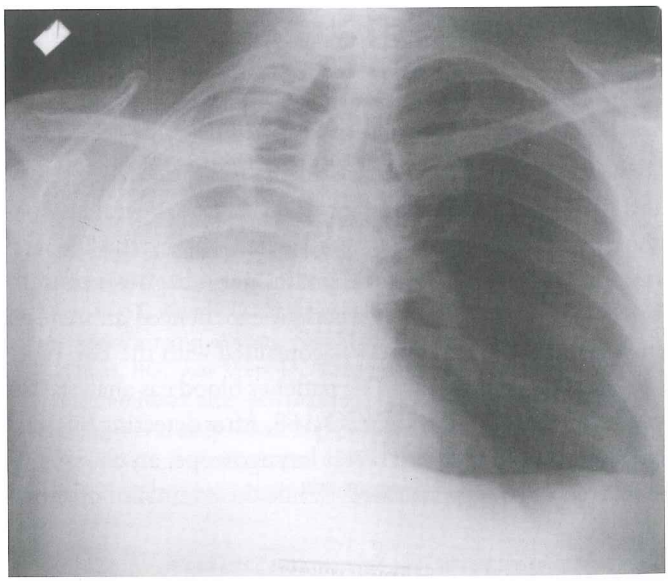

Figure 3. Chest X-ray after tube removal.