Case Report

A Very Rare Complication After Broncoalveolar Lavage: Pneumothorax

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ABSTRACT

The frequency of iatrogenic pneumothorax is high in acquired pneumothorax. Bronchoalveolar lavage (BAL) is a method of evaluating materials taken from the tracheobronchial system by bronchoscopy. The complication rate in BAL procedure is below 5%. These complications are pneumonia, temporary alveolar infiltration, bronchospasm, hypoxia and alveolar hemorrhage. Pneumothorax is a very rare complication of BAL. In our study, we aimed to report a very rare case of pneumothorax that developed after BAL.

Keywords: *Bronchoalveolar Lavage, Pneumothorax, Thoracostomy.*

ÖZ

Bronkoalveoler Lavaj Sonrası Çok Nadir Görülen Bir Komplikasyon: Pnömotoraks

Edinsel pnömotoraksta iyatrojenik pnömotoraks sıklığı yüksektir. Bronkoalveoler lavaj (BAL), bronkoskopi ile trakeobronşiyal sistemden alınan materyallerin değerlendirilmesi yöntemidir. BAL işleminde komplikasyon oranı %5'in altındadır. Bu komplikasyonlar pnömonitis, geçici alveoler infiltrasyon, bronkospazm, hipoksi, alveoler hemorajidir. Pnömotoraks ise Bronkoalveoler lavajın çok nadir görülen bir komplikasyonudur. Çalışmamızda, BAL sonrası gelişen ve çok nadir görülen pnömotoraks olgusunu bildirmeyi amaçladık.

Anahtar Sözcükler: *Bronkoalveolar Lavaj, Pnömotoraks, Torakostomi.*

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Pneumothorax is the presence of air between parietal and visceral pleurae for various reasons. It is divided into two as spontaneous and acquired pneumothorax. The most common causes of iatrogenic pneumothorax are transthoracic fine-needle aspiration biopsy (24%), subclavian catheter insertion (22%), thoracentesis (22%), pleural biopsy (8%), and barotrauma due to mechanical ventilation (7%) (1, 2).

BAL is the process of removing cellular/extracellular elements from the tracheobronchial system through bronchoscopy for the diagnosis of peripheral airway and parenchymal diseases. It is a very important procedure especially in patients on whom biopsy cannot be performed. Its main indications are diseases with an unknown cause, the determination of the exposure rate to drugs or toxic agents, and the diagnosis of organic / inorganic particles, infectious agents and neoplasms. Complication rate in BAL is less than 5% (3). These complications are pneumonia, temporary alveolar infiltration, bronchospasm, hypoxia and alveolar hemorrhage. Pneumothorax is a very rare complication (3, 4, 5).

In our study, we aimed to share the very rare complication of pneumothorax that developed after BAL.

CASE REPORT

A 62-year-old female patient who presented to the chest diseases unit with complaints of dyspnea, chest pain, cough and fever was hospitalized for examination and treatment. Bilateral infiltrations and consolidations were detected in the computed tomography of the patient, who had local infiltrations on chest radiography (Figures 1, 2, 3).

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Figure 1. *Chest X-ray of the patient before BAL.*

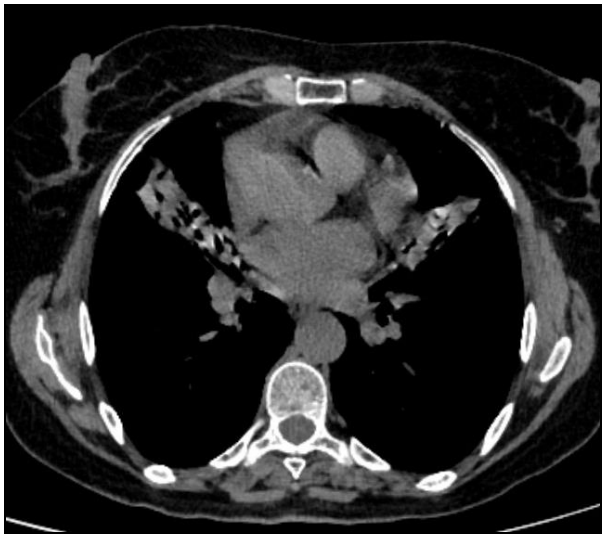

Figure 2. *Tomography image before BAL (mediastinal section).*

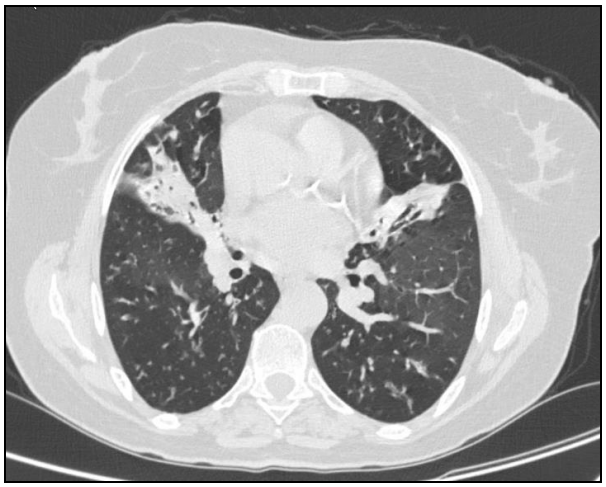

Figure 3. *Tomography image before BAL (parenchymal section).*

Erythrocyte sedimentation and white blood cell elevation were detected in the routine laboratory examinations (biochemistry and complete urine) of the patient whose results were negative for acid-fast bacillus (AFB) in sputum. It was decided to perform BAL on the patient. Emergency chest x-ray was taken to the patient who had sudden shortness of breath, chest pain and tachycardia after BAL. Right pneumothorax was detected in the chest X-ray of the patient (Figure 4).

Figure 4. *Chest X-ray of the patient after BAL.*

Right tube thoracostomy was performed to the patient. In the control radiographs, the tube of the patient whose lung was expanded and who did not develop complications was terminated (Figure 5).

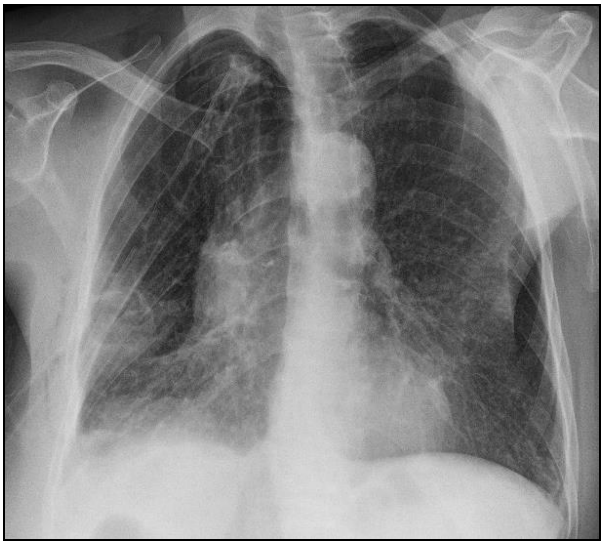

Figure 5. *Chest X-ray of the patient after tube thoracostomy.*

DISCUSSION

While the frequency of pneumothorax in men is 18-28/100.000, it is 1.2-6/100.000 in women. Spontaneous pneumothorax is classified as primary, secondary, catamenial and neonatal, while acquired pneumothorax is classified as iatrogenic and traumatic (6). Our case

was a very rare case of iatrogenic pneumothorax developed after BAL.

The etiology of primary spontaneous pneumothorax is unknown. However, the most common cause is rupture of subpleural blebs and bullae at the apex of the lungs. There is an underlying lung disease in secondary spontaneous pneumothorax. Catamenial pneumothorax is associated with thoracic endometriosis seen in the first 72 hours of menstruation. Neonatal pneumothorax is a type of pneumothorax seen in newborns due to surfactant deficiency. Sometimes, the lung collapses due to pneumothorax, pleural pressure increases and the contralateral lung may be compressed with the shift of the mediastinum to the opposite side. This condition is called tension pneumothorax (6).

Contribution of BAL in the diagnosis and treatment of diseases is 50-90%. Considering the clinical findings, age and contraindication factors of the patients, it is a very important procedure especially in patients who cannot be biopsied. Regardless of the cause, the symptoms of pneumothorax are chest pain, shortness of breath, tachypnea, hypoxemia, hyperinflation, hyperresonance, hypersonoritis, decreased or absent respiratory sounds on the affected side, cyanosis, excessive sweating, jugular venous fullness, tachycardia, hypotension and agitation (7, 8). In our case, there are chest pain, shortness of breath and tachycardia. The presence of the thin visceral pleural line in the area close to the chest wall on the chest radiograph confirms the diagnosis. The diagnosis is 100% with computed tomography of the thorax (8). In our case, diagnosed by chest x-ray radiography after clinical suspicion.

The aim of treatment is to evacuate the air in the pleural space. The main methods are observation, simple needle aspiration, percutaneous drainage catheter (± pleurodesis), tube thoracostomy (± pleurodesis), surgery (conventional thoracotomy, video-assisted thoracoscopic surgery or robotic surgery (± pleurodesis)) (9, 10). In our case, the preferred treatment method was tube thoracostomy.

As a result, although the development of pneumothorax after BAL is a very rare complication, it should be included in the preliminary diagnosis and should not be remembered in patients who develop sudden shortness of breath and chest pain after the procedure.

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