

Pneumomediastinum after transbronchial cryobiopsy

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Abstract

Pneumomediastinum is defined as the presence of air or gas within the mediastinum and it rarely complicates bronchoscopy. We report, to our best knowledge, the first case of pneumomediastinum following a transbronchial cryobiopsy (TBLC). TBLC is considered a safe procedure as compared with both transbronchial biopsy and surgical lung biopsy. Systematic reviews, metanalysis and a Pubmed research, revealed that in literature no pneumomediastinum has been mentioned after TBLC. We report this case for to make it known to interventional pulmonologists the possibility that a pneumomediastinum can follow a TBLC. In our case the spontaneous resolution in few days did not require any interventions.

Introduction

Pneumomediastinum is defined as the presence of air or gas within the mediastinum and it rarely complicates bronchoscopy. It is caused both from a lesion of the trachea or from an alveolar rupture. We report, to our best knowledge, the first case of pneumomediastinum following a transbronchial cryobiopsy.

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Case Report

The case of a 75-years-old Caucasian man, ex-smoker, was discussed in our interstitial lung disease (ILD) multidisciplinary group. The patient reported dry cough for about 8 months and gradual increase dyspnea for a few months. Anamnesis showed an epilepsy in treatment with levetiracetam and hypothyroidism treated with levotiroxin. He had a BMI of 29 and thorax examination revealed bibasal crackles. Spirometric data highlighted normal flow and volume but the carbon monoxide diffusion (DLCO) was slightly decreased (52%). Pulmonary artery pressure was normal. The computed tomography (CT) scan revealed a bilateral basal interstitial thickening, with traction bronchiectasis, but without honeycombing. We excluded other causes of ILD. The patient had no domestic or occupational environmental exposures, no history of drug toxicities and immunological data were negative. In the presence of Usual Interstitial Pneumoniae (UIP) possible pattern, we decided to perform transbronchial lung cryobiopsy (TBLC). The biopsies were obtained under fluoroscopic guidance using the flexible bronchoscope inserted through the rigid tube. During the procedure we performed a bronchoalveolar lavage (BAL) in the lingula, two transbronchial cryobiopsies in left B9 bronchus and two in left B10 bronchus.

After two hours from the procedure, the patient had dysphonia and subcutaneous emphysema. An X ray showed pneumomediastinum. A CT scan showed pneumomediastinum and mild neck subcutaneous emphysema (Figure 1). The patient remained haemodynamically stable, therefore we have chosen a conservative approach. Slowly the symptoms and signs improved in the next two days and finally disappeared so the patient was discharged.

On histology slides four samples were examined: three of them showed patchy fibrosis, few fibroblastic foci and partial architectural distortion with alveolar bronchiolization, favouring the diagnosis of probable UIP pattern [1]. The fourth sample was represented by a longitudinal section of a bronchial wall with cartilage (Figure 2). The multidisciplinary group, according to most recent official ATS/ERS/JRS/ALAT statement [2], evaluated the UIP radiological pattern and the histological features, and concluded for a diagnosis of idiopathic pulmonary fibrosis (IPF).

Discussion

Pneumomediastinum can recognize three different causes: spontaneous pneumomediastinum, mucosal disruption and soft tissue infection. Most of the time the cause of pneumomediastinum following an endoscopic procedure is the Macklin effect [3], or ventilation-induced barotrauma, which causes mucosal disruption and spreading of air to nearby tissues via the fascial planes connecting them. The advent of TBLC has occurred over previous decade, it might soon be integrated in the routine diagnostic pathways [4]. TBLC is considered a safe proce-

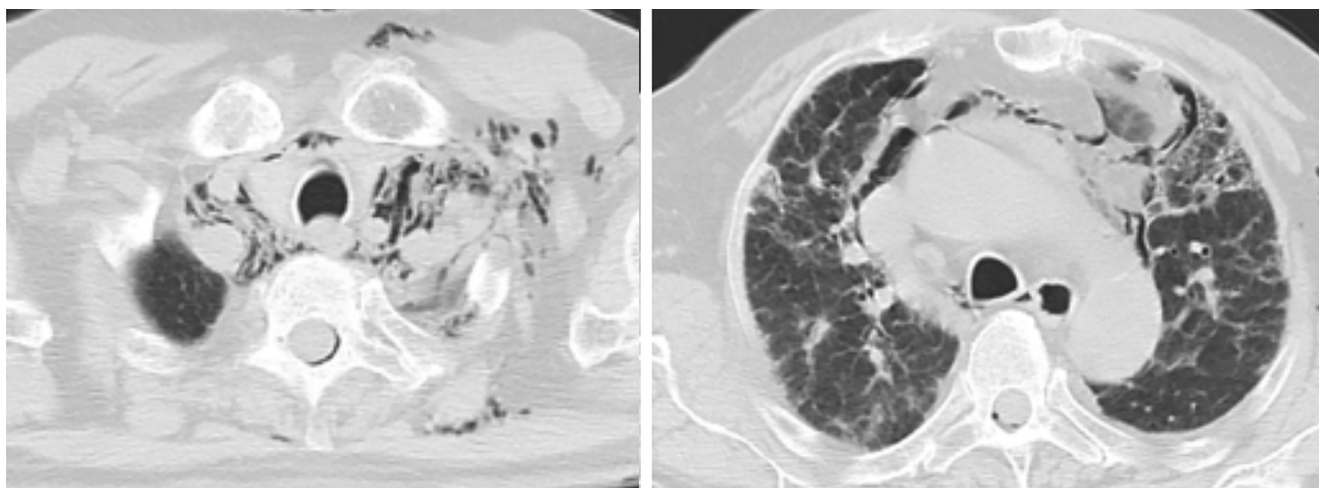


Figure 1. CT scan revealed air into mediastinum.

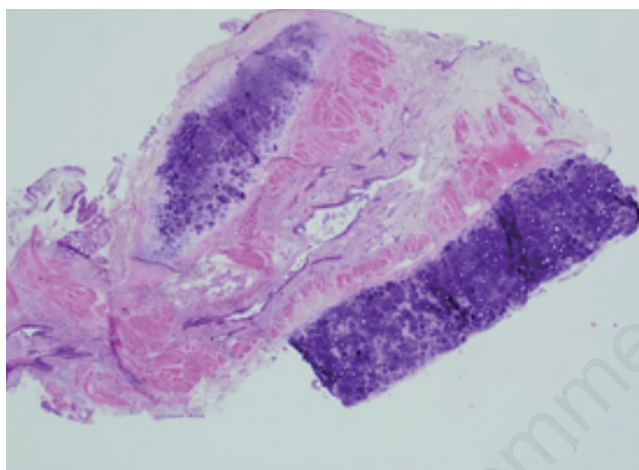


Figure 2. Longitudinal section of a bronchial wall with cartilage.

ture as compared with both transbronchial biopsy and surgical lung biopsy [5-8].

In a review published in 2016, focusing on the safety of transbronchial cryobiopsy, the most important adverse events of TBLC on 994 patients were pneumothorax and bleeding. Other signalled adverse events were prolonged air leak, transient respiratory failure, acute exacerbation, neurologic manifestation and one death [6]. Systematic reviews, metanalysis and a Pubmed research revealed that in the literature no pneumomediastinum has been mentioned after TBLC [7,8].

In the present case we performed cryobiopsy using a rigid bronchoscope in a patient in deep sedation with propofol and remifentanyl, without neuromuscular blockage, so we do not expect that the cause was barotrauma. One of the samples was taken too centrally and this induced air to penetrate into the mediastinum without causing pneumothorax.

We report this case for to make it known to interventional pulmonologists the possibility that a pneumomediastinum can follow a TBLC. In our case the spontaneous resolution in few days did not require any intervention.

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