Localized Subcarinal Adenitis following Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration

Albert Sánchez-Fonta,b  Luis Álvarezc  Gabriela Ledesmaa,b  Víctor Curulla,b

a Servei de Pneumologia, Hospital del Mar, Parc de Salut Mar, UAB, CIBERES, ISCIII, and b IMIM, Hospital del Mar Medical Research Institute, Barcelona, Spain; c Servei de Pneumologia, Hospital Nostra Senyora de Meritxell, Escaldes-Engordany, Andorra

Established Facts

• Complications associated with endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) are rare and include hemorrhage, pneumothorax and infection, mainly mediastinal abscess and mediastinitis.
• We know that germs colonizing the oropharynx may have been dragged along by the echobronchoscope, inoculating the punctured mediastinal lymph node.

Novel Insight

• We report the first case of localized adenitis as a rare complication of EBUS-TBNA described in the literature.

Key Words

Endobronchial ultrasound-guided transbronchial needle aspiration · Adenitis · Complications

Abstract

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is a minimally invasive procedure for the diagnosis of mediastinal lymph nodes and masses. Its complications are rare and include hemorrhage, pneumothorax and infections such as mediastinitis. We report the case of a 51-year-old patient who presented with a localized subcarinal adenitis after EBUS-TBNA. Germs colonizing the oropharynx may have been dragged along by the echobronchoscope, inoculating the punctured mediastinal lymph node.

Introduction

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is a minimally invasive technique useful in the diagnosis of mediastinal lymph...
nodes and masses. Complications associated with this procedure are rare and include hemorrhage, pneumothorax and infection, mainly mediastinal abscess. We report the first case of localized adenitis as a rare complication of EBUS-TBNA described in the literature.

**Case Report**

We report the case of a 51-year-old man, a former smoker, who worked laying bricks and tarring roads. His medical history was unremarkable, and he had not undergone any previous treatment. A 5-year follow-up chest CT for lung nodules detected multiple bilateral hilar and mediastinal lymph nodes, namely the right paratracheal, prevascular and subcarinal lymph nodes as well as those in the aortopulmonary window (fig. 1a). An EBUS-TBNA was performed in the subcarinal adenopathy, and the echographic images suggested an isoechoic texture without necrosis. The pathology report described the presence of lymphoid cells with 3-dimensional histiocytic aggregates filled with anthracotic pigment and the presence of silica crystals after polarization, suggesting silico-anthracosis. Seventy-two hours following the procedure, the patient developed fever (38.5°C) and high cervical and retrosternal pain that worsened with swallowing and deep inspiration. Blood tests showed leukocytosis of 12.5 × 10^3/µl (80.5% neutrophils) and a polymerase chain reaction of 41.3 mg/l, which increased to 184.8 mg/l the following day. A chest CT showed a slight increase in size of the subcarinal adenopathy, which had a heterogeneous density, hypodense center and peripheral uptake, suggestive of an abscess (fig. 1b). No edema or mediastinal fat trabeculation, signs of acute mediastinitis, were observed. The presence of Gemella morbillosum was detected in two blood cultures. The patient had a favorable clinical, biochemical and radiological outcome and was discharged on amoxicillin/clavulanic acid, 2 g every 12 h for 1 month (fig. 1c).

**Discussion**

EBUS-TBNA is a safe diagnostic procedure, with few complications. In a meta-analysis including 1,299 patients, complications were found in 0.07% of the cases [1]. Another systematic review of 14 articles reported no complications [2]. The complications described in the literature have been minor bleeding [3], pneumothorax [1, 4], intramural hematoma [5], pneumomediastinum [6], hemopneumomediastinum [5], bacteremia [7] and mediastinitis [8]. Steinfort et al. [7] reported a 7% incidence of bacteremia following EBUS-TBNA, comparable to that detected after conventional bronchoscopy. Despite a low complication rate, mediastinal infections are considered to be potentially serious, with a mortality of 12–50%, depending on the series [8]. The germs involved are of oropharyngeal origin and include Klebsiella pneumoniae, Actinomyces odontolyticus, Streptococcus mutans, S. pneumoniae and S. viridans [9, 10]. We were unable to find a report of a localized adenitis secondary to EBUS-TBNA.

In this case, CT (fig. 1b) showed a lymph node with a necrotic core, which was an adenitis that included a necrotic area and an inner abscessification. It is not a mediastinitis because a mediastinitis is an inflammation of the mediastinum with evidence of mediastinal and subcutaneous air. A mediastinal abscess is driven by the evolution of the previously described process with an enclosed collection of liquefied tissue. Therefore, if mediastinitis has occurred recently, we can see it along with a liquid density of the inner area. As the mediastinitis progresses, a
mediastinal edema with an infiltrative region of soft-tissue attenuation, which obliterates normal mediastinal fat, planes and encases or invades adjacent structures, where-
as the liquid will increase in the periphery as the capsule develops. Nevertheless, a mediastinal abscess is never found inside a lymph node, yet outside.

Epstein et al. [11] quantitatively cultured samples by conventional (or blind) TBNA in 7 consecutive patients; all samples showed the growth of polymicrobial aerobic and anaerobic bacteria. They postulated that as the bronchoscope passes through the oropharyngeal region, and subsequently the TBNA needle passes through its interi-
or, they might be contaminated by germs that could be drugged along and inoculate the region during puncture. In this sense, Gemella morbillorum is a Gram-positive, anaerobic bacterium that can colonize the oropharynx and rarely causes disease in humans. It would not be neces-
ser, therefore, for the patient to experience infectious complications. Because of this case, we reviewed the 705 EBUS-TBNAs performed in 504 patients during the past 6 years at our hospital. In 51 cases (7.2%), signs of bron-
chial infection were observed during bronchoscopy. However, after the procedure, no infectious complica-
tions were detected in any case.

Serious adverse events have been more frequently re-
ported in patients undergoing endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA; 0.3%) than in patients undergoing EBUS-TBNA (0.05%). Patients with cystic lesions are bound to have infectious complications because an inoculation of bacteria might path the way to a local uninhibited bacterial growth, as the immune sys-
tem cannot reach the lesion, and cystic lesions are avas-
cular. In patients with sarcoidosis, however, the low anti-
microbial response in the lymph nodes may be the reason for the infectious complications [12].

For all these reasons, we report the first localized ad-
enitis as a rare complication of EBUS-TBNA and, from the experience gained so far, we would postulate that the presence of bronchial infection during EBUS should not preclude performing EBUS-TBNA.

References

chial ultrasound-guided transbronchial needle aspiration for staging of lung cancer: a sys-

tematic review and meta-analysis. Eur J Can-

2. Varela-Lema L, Fernández-Villar A, Ruano-
Ravina A: Effectiveness and safety of endo-
bronchial ultrasound-transbronchial needle aspiration: a systematic review. Eur Respir J 

cessful real-time endobronchial ultrasound-

4. Eapen GA, Shah AM, Lei X, et al: Complica-
tions, consequences, and practice patterns of endobronchial ultrasound-guided transbron-

5. Botana-Rial M, Nuñez-Delgado M, Pallares-
Sanmartin A, et al: Intramural hematoma of the pulmonary artery and hemopneumome-
diastinum after endobronchial ultrasound-guided transbronchial needle aspiration. Respi-


7. Steinfort DP, Johnson DF, Irving LB: Inci-

tions associated with endobronchial ultra-
sound-guided transbronchial needle aspira-

9. Haas AR: Infectious complications from full 
extension endobronchial ultrasound trans-

10. Steinfort DP, Johnson DF, Irving LB: Infec-
tive complications from endobronchial ultra-


12. von Bartheld MB, van Breda A, Annema JT: Complication rate of endosonography (endobronchial and endoscopic ultrasound): a sys-
tematic review. Respiration 2014;87:343–351.