Localized subcarinal adenitis post endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA)

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'Established facts':

Complications associated with 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 insights':

We report the case of the first localized adenitis described in the literature as a rare complication of EBUS-TBNA.
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.
Localized subcarinal adenitis post endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA)

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 would like to report a case of the first localized adenitis described in the literature as a rare complication of EBUS-TBNA.

CASE REPORT

We report the case of a 51-year-old man, a former smoker who worked laying bricks and tarring roads. No significant medical history and neither following any treatment. A 5-year follow-up chest CT for lung nodules detected multiple bilateral hilar and mediastinal lymph nodes: right paratracheal, prevascular, in the aortopulmonary window and also subcarinals (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 postprocedure, 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 12,510^3/uL (80.5% neutrophils) and a PCR 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 morbillorum* was detected in two blood cultures. The patient had a favorable clinical, biochemical and radiological outcome and was discharged on amoxicillin/clavulanic acid, 2 grams every 12 hours for a month (Fig. 1C).

**DISCUSSION**

EBUS-TBNA is a safe diagnostic procedure, with few complications. In a meta-analysis including 1299 patients, complications were found in 0.07% of cases \(^{(1)}\). Another systematic review of 14 articles reported no complications \(^{(2)}\). The complications described in the literature have been minor bleeding \(^{(3)}\), pneumothorax \(^{(4)}\), intramural hematoma \(^{(5)}\), pneumomediastinum \(^{(6)}\), hemopneumomediastinum \(^{(5)}\), bacteremia \(^{(7)}\) and mediastinitis \(^{(8)}\). Steinford et al \(^{(7)}\) reported a 7% incidence of bacteremia post-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% to 50% depending on the series \(^{(8)}\). The germs involved are of oropharyngeal origin and include *Klebsiella pneumoniae*, *Actinomyces odontolyticus*, *Streptococcus mutans*, *Streptococcus pneumoniae* and *Streptococcus viridans* \(^{(9,10)}\). We were unable to find a report of a localized adenitis secondary to EBUS-TBNA.

In this case, the CT (Fig. 1B) shows a lymph node with a necrotic core, which is an adenitis that includes a necrotic area and an inner abscessification. It’s 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 liquefield tissue. Therefore, if mediastinitis has occurred recently, we could see the mediastinitis along with a liquid density inner area. As the mediastinitis progresses, mediastinal edema with infiltrative region of soft-tissue attenuation which obliterates normal
mediastinal fat planes and encases or invades adjacent structures, whereas the liquid will increase in the periphery as the capsul 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 seven consecutive patients; all samples showed 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 interior, they might become contaminated by germs that could be dragged 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 necessary, therefore, for the patient to experience infectious complications. Because of this case, we reviewed the 705 EBUS-TBNA performed in 504 patients during the past 6 years at our hospital. In 51 cases (7.2%), signs of bronchial infection were observed during bronchoscopy. However, after the procedure, no infectious complications were detected in any case.

Serious adverse events have been more frequently reported in patients undergoing an EUS-FNA (0.3%) than in patients undergoing an EBUS-TBNA (0.05%). Patients with cystic lesions are bound to have infectious complications because an inoculation of bacteria will probably path the way to a local uninhibited bacterial growth as the immune system cannot reach the lesion as cystic lesions are avascular, whereas in patients with sarcoidosis the low antimicrobial response in the lymph nodes may be the reason for the infectious complications (12).

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


Fig. 1: Sections of axial chest CT in mediastinal window subcarinal lymph node. A. subcarinal lymph node of 24 mm. (short axis), before endobronchial ultrasound B. subcarinal lymph node of 31 mm. (short axis), with hypodense center and peripheral uptake, probably related to abscessification, 72 hours after the endobronchial ultrasound with puncture C. subcarinal lymph node of 19 mm. (short axis), one month postprocedure.