Official Case Reports Journal of the Asian Pacific Society of Respirology
Respirology Case Reports
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Mediastinitis of bronchogenic cyst caused by endobronchial ultrasound-guided transbronchial needle aspiration

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Keywords
Bronchogenic cyst, endobronchial ultrasound-guided transbronchial needle aspiration, mediastinitis.

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Received: 16 January 2014;
Accepted: 04 February 2014

Respirology Case Reports **2014; 2(2): 73–75**

doi: 10.1002/rcr2.53

Abstract

Here, we describe the case of a 56-year-old female patient who was diagnosed with an anterior mediastinal cyst measuring 26 × 16 mm in size. An endobronchial ultrasound-guided transbronchial needle aspiration was performed, and punctures occurred three times. The patient was then prescribed cefditoren pivoxil. Three days after the procedure, the patient developed infective mediastinitis. Panipenem/betamipron, clindamycin, and human immunoglobulin were administered, and her symptoms improved over 2 weeks. Five months after developing mediastinitis, surgical resection of the cyst was performed with inverted L-shaped mini-sternotomy. The cystic lesion strongly adhered to the surrounding tissues. The final pathological diagnosis was a bronchogenic cyst. Endobronchial ultrasound-guided transbronchial needle aspiration is not a completely sterile procedure and can lead to severe infective complications in the mediastinum. Although this procedure may not be contraindication for use with mediastinal cystic lesions, physicians must take into account the risk of severe infective complications.

Introduction

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) has become a standard procedure used in conjunction with bronchoscopy in order to obtain biopsies for mediastinal disorders. Here, we describe a case that presented with a cyst in the anterior mediastinum; after EBUS-TBNA, the patient developed infective mediastinitis.

Case Report

A 56-year-old female nonsmoker was referred to our institute with an anterior mediastinal cyst. She received contrast chest computed tomography (CT), and the cyst was found to measure 26 × 16 mm (Fig. 1A). Our pretherapeutic diagnosis was a benign mediastinal cyst, such as a bronchogenic cyst. We performed an EBUS-TBNA aimed at therapeutic diagnosis using BF-UC260FW (Olympus, Tokyo, Japan) and its exclusive 22-gauge needle (Fig. 1B). The intracystic fluid was white and viscous, and a very small amount of sample was obtained. Although the visual performance of the EBUS did not change, we performed three punctures during the TBNA procedure. The fluid sample contained no malignant cells, but *α-Streptococcus* was detected from its culture. Oral administration of cefditoren pivoxil was initiated immediately after the examination in order to prevent post-EBUS-TBNA infection. Three days after the EBUS-TBNA, the patient felt neck pain and was feverish. Five days after the procedure, she was admitted to the emergency room, and a contrast chest CT showed mediastinitis (Fig. 1C). Her white blood cell count was 15,000/mm^3, with 84.7% neutrophils. The level of C-reactive protein had increased to 6.25 mg/dl. The diagnosis was infective mediastinitis after EBUS-TBNA. Treatment with panipenem/betamipron (2 g/day), clindamycin (1200 mg/day), and human immunoglobulin (5 g/day) was initiated. The ninth day after beginning the antibacterial regimen, her clinical symptoms along with an additional inspection revealed that the mediastinitis was resolved. On the 13th day, she was discharged.

Five months after EBUS-TBNA and the mediastinitis diagnosis, we performed a resection of the cyst with

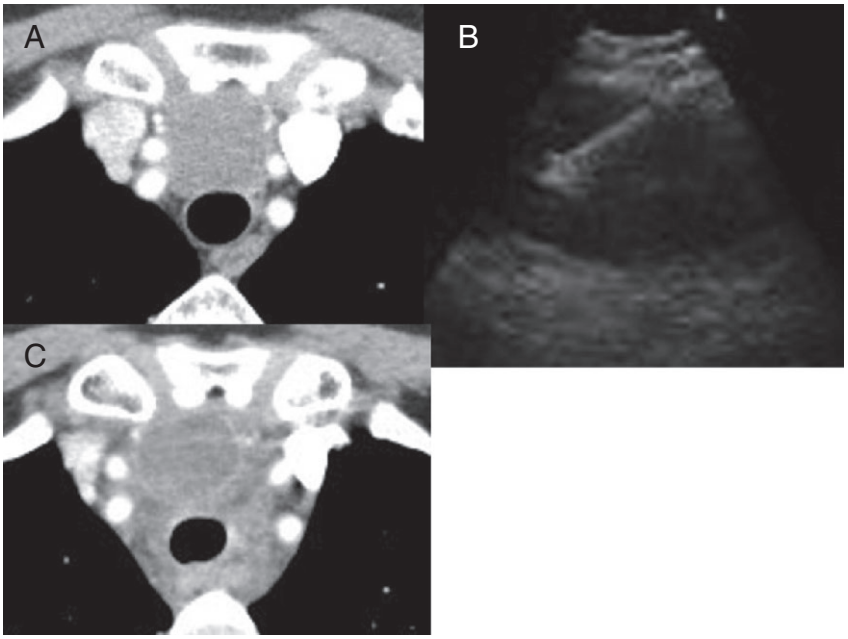

Figure 1. Computed tomography (CT) and endobronchial ultrasound (EBUS) of the mediastinal cyst. (A) The CT image before EBUS revealing an anterior mediastinal cyst. (B) The EBUS-TBNA on the cyst showing the aspiration needle. (C) The CT image showing mediastinitis after EBUS-TBNA.

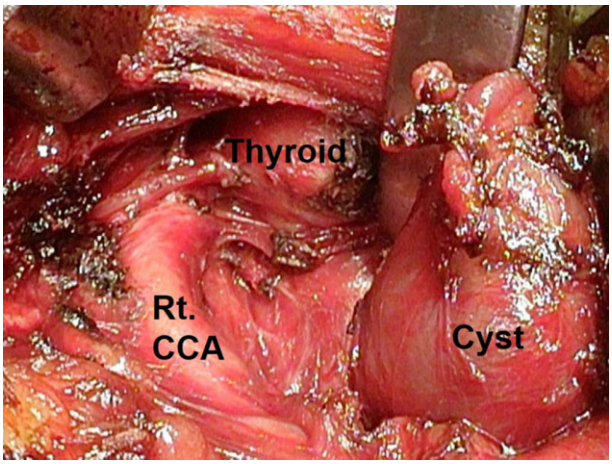

Figure 2. The operative findings. The cyst was exfoliated from thethyroid and common carotid artery (CCA).

patient's consent. We elected to perform a partial median sternotomy, namely the inverted L-shaped mini-sternotomy. The tough cystic lesion and the adhering neighboring structures were broken by surgical intervention, and the cyst was resected completely (Fig. 2). The cream-colored fluid was drained, and a bacterial culture using the obtained fluid showed no evidence of bacteria. The final pathological diagnosis of the cyst was a bronchogenic cyst.

Discussion

Here, we presented a case with complete resection of a bronchogenic cyst that became infective mediastinitis after EBUS-TBNA. Although the standard strategy for bronchogenic cysts is surgical resection, a few previous case studies have shown the effectiveness of EBUS-TBNA for therapeutic diagnosis for this disorder [1]. Therefore, we performed EBUS-TBNA for therapeutic diagnosis for our patient as described here.

The complication rate of EBUS-TBNA is very low, indicating that it is a safe procedure [2]. On the contrary, there have been recently published case reports that describe the occurrence of infective mediastinitis after EBUS-TBNA [3]. Moreover, a nationwide survey by the Japanese Society for Respiratory Endoscopy revealed the occurrence rate of infective mediastinitis after EBUS-TBNA as 0.09% [4].

The EBUS-dedicated bronchoscopy passes through the oral cavity and pharynx. Therefore, it is easy to suspect that EBUS-TBNA is not completely sterile and can result in an infective disorder. Over many years, so-called "the conventional transbronchial needle aspiration (TBNA) using common bronchoscopy" has been performed for biopsy of the mediastinal lymph nodes, and few cases of infective mediastinitis after this method have been reported [2]. It is not clear why EBUS-TBNA can lead to mediastinitis, but conventional TBNA does not. We suspect that (1) many physicians have recently performed EBUS-TBNA after the worldwide spread of the EBUS system

and (2) the small or deep lymph nodes, which cannot be biopsied by conventional TBNA, can be shown clearly by EBUS. In addition, physicians may puncture the tissue while observing real-time EBUS imaging.

The primary biopsy targets for previous cases that developed mediastinitis were mediastinal lymph nodes [3, 4]. Our case had an anterior mediastinal cyst, a fact that differentiates our case from those cases [3, 4]. One previous report described three cases of mediastinal infections occurring after endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) for mediastinal cysts [5]. Because there is limited blood flow in mediastinal cysts, they may be more susceptible to infection compared to lymph nodes or nodules. In other words, use of EBUS-TBNA for mediastinal cysts may be more likely to lead to mediastinal infection than its use for mediastinal lymph nodes.

Are any antibiotics needed after EBUS-TBNA? If antibiotics are needed, when should they be prescribed, and what type of antibiotics will be most effective? Our case received an oral prescription of cefditoren pivoxil beginning immediately after the examination. However, such a light prescription of antibiotics may not prevent infections. Additional research on the need for antibodies after EBUS-TBNA is warranted.

While we cannot declare that EBUS-TBNA is contraindicated for mediastinal cysts, it is necessary to recognize this severe complication of infective mediastinitis. Furthermore, the risk for infection may be higher when this procedure is used for mediastinal cysts rather than for mediastinal lymph nodes.

Disclosure Statements

No conflict of interest declared.

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

References

1. Galluccio G, and Lucantoni G. 2006. Mediastinal bronchogenic cyst's recurrence treated with EBUS-FNA with a long-term follow-up. Eur. J. Cardiothorac Surg. 29:627–629.
2. Du Rand IA, Barber PV, Goldring J, et al. 2011. British Thoracic Society guideline for advanced diagnostic and therapeutic flexible bronchoscopy in adults. Thorax 66(Suppl. 3):iii1–iii21.
3. Parker KL, Bizekis CS, and Zervos MD. 2010. Severe mediastinal infection with abscess formation after endobronchial ultrasound-guided transbrochial needle aspiration. Ann. Thorac. Surg. 89:1271–1272.
4. Asano F, Aoe M, Ohsaki Y, et al. 2013. Complications associated with endobronchial ultrasound-guided transbronchial needle aspiration: a nationwide survey by the Japan Society for Respiratory Endoscopy. Respir. Res. 14:50.
5. Diehl DL, Cheruvattath R, Facktor MA, et al. 2010. Infection after endoscopic ultrasound-guided aspiration of mediastinal cysts. Interact. Cardiovasc Thorac. Surg. 10:338–340.

