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CASE REPORT

Endobronchial mass formation after endobronchial ultrasound–transbronchial needle aspiration mimicking implantation metastasis

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Key Clinical Message

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) has been widely used for diagnosing intrathoracic lymphadenopathy. Here, we present two cases of endobronchial polyp formation after an EBUS-TBNA for suspicious malignant lymph nodes. An inflammatory polyp should be considered as a possible differential diagnosis for a newly developed mass after an EBUS-TBNA.

Keywords

Endoscopic ultrasound guided needle aspiration, implantation, metastasis, tumor.

Introduction

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is an effective and minimally invasive procedure in the evaluation of mediastinal and hilar lymphadenopathy [1, 2]. We report two cases of endobronchial mass formation after the performance of EBUS-TBNA to diagnose the cause of mediastinal lymphadenopathy. We discuss the clinical implications of endobronchial mass formation after an EBUS-TBNA by reviewing the current literature.

Case Report

Case 1

A 54-year-old male was admitted to his local hospital for evaluation of hematuria in 2011. He was a nonsmoker, and his occupation was boiler installation. After performing cystoscopy and abdominal pelvic computed tomography (CT), a diagnosis of bladder cancer was made. He underwent a transurethral resection of the bladder tumor, which revealed a high-grade urothelial carcinoma. The clinical stage was T3N2Mx, and he was then referred to the Division of Urology at the Asan Medical Center (Seoul, Korea) for further evaluation and treatment. Positron emission tomography showed additional high fluorodeoxyglucose uptake in the paratracheal lymph nodes and a right upper lung nodule (10.3 × 8.4 mm). To make a pathologic diagnosis, EBUS-TBNA of lymph node station 4R, 2R (Fig. 1A and B), and 11L was performed. The actual bronchoscopic findings of those lymph nodes showed an anthracotic pigment change with well demarcated lymph nodes and some calcification, while the final biopsy results also showed anthracofibrosis. These findings suggested that the lymphadenopathy was reactive, and it was likely to be due to his occupation. After reviewing all the results, neoadjuvant chemotherapy, followed by radical cystectomy, was planned.

He was admitted for radical cystectomy in January 2012 after chemotherapy and a chest CT was performed for follow-up of his previous lung lesions. The size of the previous right nodule decreased, while a new mass developed at the site of the EBUS-TBNA in the upper trachea

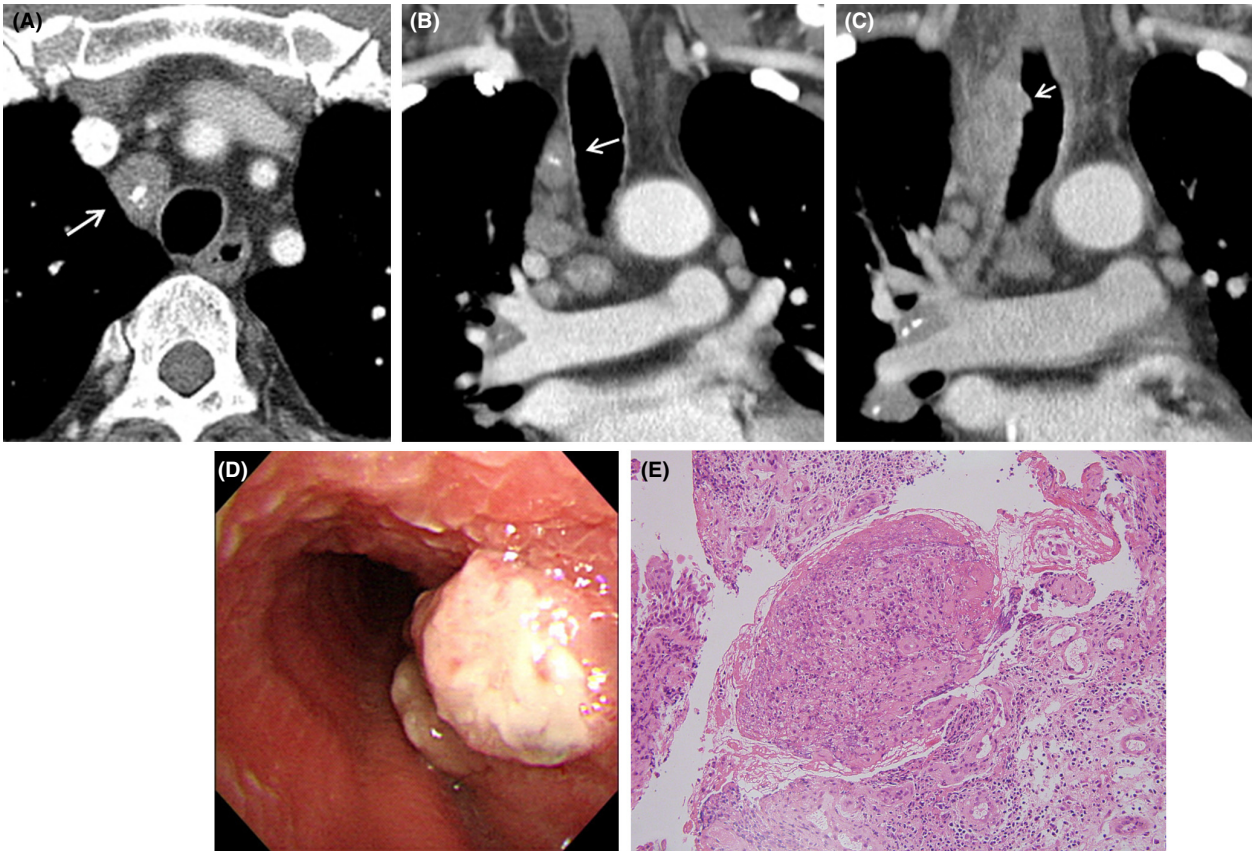

Figure 1. (A) Chest CT scan showing an enlarged right upper paratracheal lymph node (2R) with central calcification (arrow). (B) Coronal view of chest CT scan showing enlarged right upper paratracheal lymph nodes (2R) with central calcification (arrow). (C) A protruding, mass-like lesion newly developed on the trachea after an Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) on coronal view of chest CT scan (arrow). (D) Fiberoptic bronchoscopy revealing a round mass with irregular, friable surface partly obstructing the lumen of the upper trachea at the site of the EBUS-TBNA. (E) Histopathological examination of the biopsy tissue from the tracheal mass showing granulation tissue and squamous dysplasia (H&E stain, ×200).

(Fig. 1C). The bronchoscopy revealed a protruding mass with an irregular, friable surface on the right wall of the upper trachea, 7 cm above the carina (Fig. 1D). Histopathologic examination showed granulation tissue and squamous dysplasia, indicating an inflammatory polyp (Fig. 1E). The tracheal polyp was then removed by cryotherapy. In addition, antibiotics and steroids were administered. After management of the endobronchial polyp, he underwent surgery for bladder cancer and was discharged after recovery. Seven months later, a follow-up examination was performed, which showed complete resolution of the paratracheal lymphadenopathy and the endotracheal lesion.

Case 2

A 56-year-old male, ex-smoker (30 pack-years), with a history of pulmonary tuberculosis presented with a right upper lung mass on a routine medical checkup in November 2013. He was then referred to the Asan Medical Center (Seoul, Korea) for further evaluation. Chest CT showed a lung mass in the right upper lobe with enlargement of right hilar and paratracheal lymph nodes. An EBUS-TBNA was performed at 4R (Fig. 2A), 2R lymph node stations, and the biopsy result showed a metastatic squamous cell carcinoma. The clinical stage was T3N3M0, and concurrent chemoradiation therapy (CCRT) was planned. After 3 weeks of CCRT, he developed nausea, poor oral intake, and weight loss. He underwent esophagogastroduodenoscopy and it revealed radiation esophagitis. Further CCRT was warranted, but the patient and the medical team decided to go on a symptomatic treatment with clinical follow-up due to his poor general condition. A subsequent chest CT showed that the previously documented mass and lymph nodes were decreased, while a new nodular lesion developed in

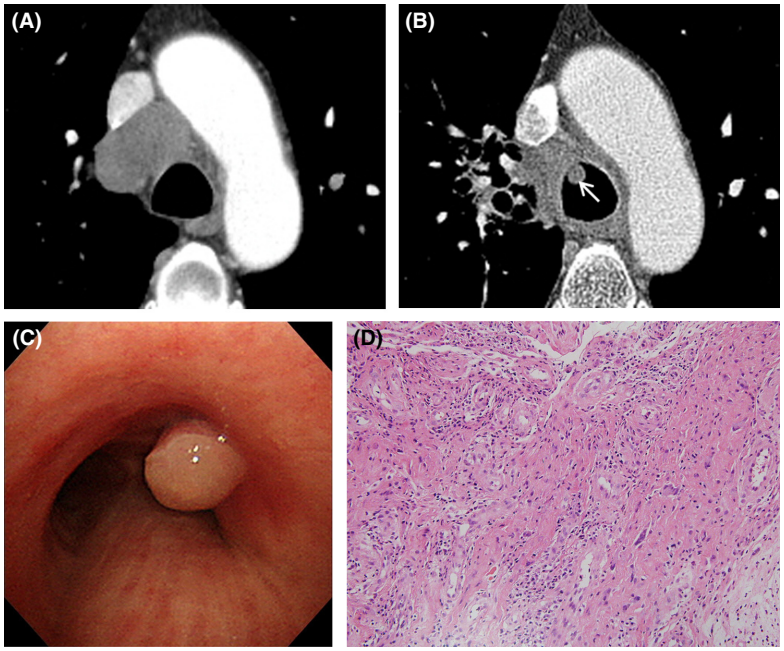

Figure 2. (A) Chest CT scan showing an enlarged right upper paratracheal lymph node (4R) before undergoing Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA). (B) After EBUS-TBNA, a new nodule was noted on chest CT scan (arrow). (C) Bronchoscopy showing a new, round mass with a smooth surface at the site of the EBUS-TBNA on the lower trachea. (D) Granulation tissue only was found upon histopathological examination of the mass (H&E stain, ×200).

the lower trachea (Fig. 2B). Bronchoscopy revealed a round mass with a smooth surface on the right anterior trachea, which was compatible with the previous EBUS-TBNA site for the 4R lymph node (Fig. 2C). The mass consisted of only granulation tissue on histopathologic examination (Fig. 2D). He was then discharged with oral antibiotics. After 4 months, the endobronchial lesion was no longer evident on a follow-up chest CT.

Discussion

EBUS-TBNA has become a common approach to the evaluation of intrathoracic lymphadenopathy owing to its minimally invasive nature, high accuracy, and ease of use [3, 4]. Nevertheless, complications arising from this method have also been reported such as pneumomediastinum, mediastinitis, bleeding, and transient bacteremias [5]. In our cases, an endobronchial mass was presented as an uncommon complication of an EBUS-TBNA.

We initially thought that the endobronchial mass could have been formed by an implantation metastasis after EBUS-TBNA. Previous articles have reported an implantation metastasis along the biopsy tract after a needle biopsy for malignant lung lesions. The usual sites of this metastasis include the chest wall, pleura, and pulmonary parenchymal tissues [6–8]. There have been some reports describing implantation of tumor or infection after a bronchoscopic procedure. Hu et al. [9] presented a case of nasopharyngeal metastasis of lung cancer after bronchoscopic therapeutic interventions. In other studies, an endobronchial granuloma was reported to have been formed after an EBUS-TBNA for mediastinal tuberculous lymphadenitis [5, 10]. However, we could not find any earlier reports showing tumor implantation after EBUS-TBNA as observed in our current analysis. Because the use of EBUS-TBNA is greatly increasing worldwide, cases of implantation metastasis may occur more frequently in the near future.

The final biopsy of the endobronchial mass in both of our current cases diagnosed with bladder and lung cancer, respectively, revealed inflammation and granulation tissue. This may be attributable to the chronic inflammatory process initiated by the mucosal break after an EBUS-TBNA. The formation of granulation tissue has been postulated to take place, followed by replacement with fibrous tissue and epithelialization [3].

Both of our cases were the only inflammatory polyps reported at our center in recent 3 years, where 500 cases of EBUS-TBNA were performed ever year. So we can assume that the incidence of inflammatory polyp after EBUS-TBNA is quite rare as it occurred in only 0.13% (2/1500). Although uncommon, it should always be

considered in patients with endobronchial mass after EBUS-TBNA.

Still, there has been no guideline or randomized controlled trial regarding the treatment of inflammatory polyp, but some previous cases have reported reduction in the size after use of antibiotics, steroids, and intervention [11–14]. Antibiotics and steroids were used in our cases as we assumed EBUS-TBNA might have caused mucosal disruption with infection which resulted in inflammatory process. Cryotherapy was performed in the first case to remove the polyp because the patient was earmarked to undergo a surgery for bladder cancer, and there was a possibility that the endobronchial polyp could grow and cause obstructive symptoms hindering the proper management of his bladder cancer. However, whether only supportive care with a steroid and an antibiotic would have been sufficient in this patient is not clear because spontaneous regression of inflammatory polyps can occur as we observed in our second case. Definite guidelines for the treatment of inflammatory polyp should be established.

Conclusion

An inflammatory polyp should be considered as a possible differential diagnosis for a newly developed endobronchial mass after an EBUS-TBNA procedure.

Conflict of Interest

No authors report any conflict of interest.

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