Case Report

Role of Endoscopic Ultrasonography in Intramural Bronchogenic Cysts: Case Reports and Review of the Literature

Alexandre Klamt, Adriana Di Loreto, Raquel Del Valle, Hannah Pitanga Lukashok, Carlos Robles-Medranda

Instituto Ecuatoriano de Enfermedades Digestivas, University Hospital Omni, Universidad De Especialidades Espíritu Santo, Guayaquil, Ecuador

Abstract:
The differentiation between a solid and cystic lesion is not always easy. EUS has provided a minimally invasive approach to the diagnosis of benign mediastinal cysts. Our report describes two cases of intramural bronchogenic cysts and reviews the role of EUS in dealing with such cases. We conclude that the bronchogenic cysts are still a challenge despite evolution of the imaging studies.

Keywords: endoscopic ultrasonography; intramural bronchogenic cyst

INTRODUCTION

The differential diagnosis of mediastinal masses includes primary lung cancer, metastatic cancer, neurogenic tumor, cysts and infections.1,2 The bronchogenic cysts are the most common cystic lesions of the mediastinum.3 In some cases, these lesions could mimic solid masses.4 Most patients with posterior mediastinal cysts are asymptomatic, and the cysts are discovered incidentally during other imaging studies. The possible symptoms include chest pain, cough, dyspnea and dysphagia.3,5,6 The differentiation between a solid and cystic lesion by the imaging modalities available, such as computed tomography (CT), magnetic resonance imaging (MRI) and endoscopic ultrasonography (EUS), is not always easy.4,7

EUS has provided a minimally invasive approach to the diagnosis of benign mediastinal cysts.8 In the largest retrospective study done to date, it has been demonstrated that a hypoechoic EUS pattern does not exclude the diagnosis of a cyst.8 Our report describes two cases of intramural bronchogenic cysts and reviews the role of EUS in dealing with such cases.

CASE REPORTS

Case 1
An 80-year-old female was admitted to our hospital due to retrosternal pain, fever, coughing and weight loss of 20 pounds in a month. The initial diagnosis was pneumonia, and antibiotic treatment was started. X-rays and CT-scan (Fig. 1) showed a paraesophageal mediastinal mass, with suspected diagnosis of lymphoma. A EUS-guided fine needle aspiration (FNA) of this lesion was indicated. The EUS (Fig. 2) showed a paraesophageal anechoic round mass with a starry-sky pattern, negative Doppler and posterior acoustic enhancement. The aspirated material from the EUS-FNA showed grayish white mucus. Histological study showed ciliated columnar cells with mucoid cystic background. The patient was discharged 6 days after her admission under antibiotic treatment. The follow-up showed good evolution and diminution of the cyst size 1 month later in the
A 42-year-old male was referred to our institution due to a submucosal lesion in the distal third of the esophageal wall. On EUS examination (Fig. 3) the lesion appeared to originate in the fourth layer. It had a homogenous, hypoechoic aspect, with well defined borders, posterior acoustic enhancement, and measured 5 cm in its largest diameter. EUS-FNA (Fig. 4) was performed and the aspirated material had a mucous aspect. The patient was discharged on the same day without treatment of antibiotics, and no infectious complications were observed during follow-up. Histological investigation showed ciliated columnar cells with mucoid cystic background.

**DISCUSSION**

About 46% to 67% of all mediastinal lesions are malignant. Reported accuracy of diagnosis for malignant lesions in the mediastinum is only about 83%. Therefore, it is important to perform a good evaluation of these lesions to avoid unnecessary surgical procedures.

Bronchogenic cysts originate from the aberrant development of the ventral primitive foregut during embryonic development. They share a similar developmental background with esophageal duplication cysts. About 85% percent of bronchogenic cysts arise in the mediastinum in close relationship to the trachea, main bronchi, and carina. Occasionally, bronchogenic cysts become “engulfed” in the growing esophagus.

EUS can accurately distinguish a solid from a cystic lesion, and with FNA it’s possible to collect materials from suspicious or atypical lesions. In comparison with the other imaging modalities (CT and MRI), EUS is better at differentiating solid from cyst lesions. CT and MRI may misdiagnosed a cystic duplication lesion as a solid lesion in about 70% of cases.

The feature that distinguishes a cyst in EUS is a round or tubular anechoic structure with a negative Doppler signal and posterior acoustic enhancement. Sometimes in EUS examinations, bronchogenic cysts may resemble smooth muscle tumors and gastrointestinal stromal tumors (GIST) due to their round or oval shape with well-defined borders and homogeneous and hypoechoic internal echo pattern. The echogenicity can be attributed to the mucoid content of the cyst.

In the first case, weight loss, fever and an apparent mediastinal solid lesion on CT raised the possibility of a lymphoma. The starry-sky pattern on EUS probably correlated with the mucoid content of the cyst. This EUS pattern has not been previously reported. In the second case, the lesion was hypoechoic and apparently with its origin at the fourth layer, raising the possibility of a GIST. Mediastinal cyst biopsy is not always necessary and the literatures report cases of severe infection after EUS-FNA.

The use of antibiotics before and after the procedure has already been evaluated in small clinical studies with
promising results. However, another study shows infectious complication after EUS-FNA despite the use of a prophylactic antibiotic. At the moment, there is no consensus regarding antibiotic prophylaxis use before EUS-FNA.

In our cases, just the first patient received antibiotics and none of them had infectious complications after EUS-FNA.

There is little description in the literature about the macroscopic appearance of the material obtained from EUS-FNA. The macroscopic appearance of the material collected from bronchogenic cysts with EUS-FNA was often described to be like mucoid/mucinous, grayish white mucus, thick, brownish fluid, or yellowish fluid. In our cases, both patients had a mucous content in the material obtained by EUS-FNA. The presence of mucoid material should raise the suspicion of a bronchogenic cyst. Bronchogenic cysts could be managed conservatively and/or by surgery depending on the clinical aspects of patients with this problem.

Finally, there is also controversy in the literature regarding the need to perform EUS drainage of the cyst content. Based on the infection risk related to EUS-FNA, some studies favored drainage, but not all of them. In our two cases, we did not perform EUS drainage and the patients did not develop infectious complications related to EUS-FNA.

In conclusion, the bronchogenic cysts are still a challenge despite evolution of the imaging studies. They are rarely mediastinal lesions, which can explain the lack of more satisfying clinical trials and of more useful guidelines to assist physicians. Current literatures are still controversial about some points such as the need of EUS-FNA, EUS-drainage and the use of antibiotic prophylaxis during interventional EUS (FNA or drainage).

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