Bronchocele: Two Cases

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Abstract

A bronchocele (bronchial mucocele) results from the mucoid impaction and dilatation of the proximal bronchus caused by congenital bronchial atresia (CBA) or bronchial obstruction. Bronchocele must be considered in the differential diagnosis of radiologic pathologies.

Keywords: Congenital bronchial atresia; Bronchocele; Congenital pulmonary disease

Introduction

Bronchial atresia is a rare variety. In this article we aimed to remind bronchocele clinically and radiologically in differential diagnosis by reporting two patients with bronchocele of which one presented with infection and the other was incidentally found.

Case Report

Case 1

An asymptomatic 34-year old woman applied for a health certificate which was required for job application. Her physical examination revealed no pathology. She wasn’t smoking and not taking any medicine for any disease either. Her chest radiography had been taken several times so far, yet she was informed that each of them was normal (Fig. 1). Computed thorax tomography was performed according to the findings at chest x-ray (Fig. 2, 3).

Case 2

A 30-year old woman had a three-week history of cough, fever and chest pain. The clinical findings lead to a pulmonary infection so antibiotic therapy was started. The electrocardiogram was normal. The symptoms slowed down but did not cease so the patient was referred to a chest disease spe-
Her physical examination was unremarkable except a few rales at the left hemithorax. Her white blood count was 8,800/mm³, erythrocyte sedimentation rate: 15 mm/hour and C-reactive protein was: 0.9 mg/dL. Computed tomography was performed on the basis of the opacity seen on posterio-anterior chest graphy (Fig. 4).

Chest computed tomography was performed from apical to basale with a 64-detector row CT scanner (Brilliance, Philips Healthcare) at supine position and inspirium. Parameters for helical scanning were: tube voltage, 120 kV; tube current threshold, 300 mAs; rotation time, 0.5 sec/rot; collimation, 64 × 0.625 mm; beam pitch, 0.64 - 1.06; reconstructed section thickness, 1.0 mm. CT angiography was done using a non-ionic iodinated contrast media of 35 mL injected through the antecubital vein at 5 mL/second rate (Fig. 5, 6).

High-resolution three-dimensional volume rendering-magnetic resonance technique (3-D VR) was conducted when the images were suggestive of bronchocele. The assessments were made with axial reconstruction of 1 mm and 5 mm at reformats obtained at coronal and sagittal planes using volume rendered 3-D imaging and 5 mm Minimum Intensite Projeksiyon (MIP) imaging techniques [1, 2].

MIP is a data visualization method that enables detection of highly intense structures and doesn’t give information about the depth of the image. At minimum intensity projection (Min IP) volume rendering technique, the images get information from each voxel. Min IP, as a computed tomography (CT) volumetric rendering technique provides added diagnostic capabilities as well as help better understanding three dimensional relationships of anatomic structures and determining the appropriate surgical approach in case [2].

It is important to assess the case with axially reconstructed images. Volume rendering may be internally or externally performed and it gives important information about the trachea-bronchial tree as detailed as bronchoscopy [1, 3].

So it is granted as a non-invasive method in patients who can not tolerate bronchoscopy or refuse to have it done [3, 4]. According to all of these evaluations bronchocele related to bronchial atresia was diagnosed radiologically. VR imaging of cases 1 and 2 are shown at Figures 7 and 8.
Discussion

Bronchocele is first defined at 1800’s. CBA is the most common reason of bronchocele and. It is a cystic formation caused by mucus impaction and dilatation at the proximal of obstructed or atresic bronchiol [2-4]. Congenital atresia, scartricial shrinkage of bronchial lumen, a foreign object or neoplasms may cause the obstruction. Nevertheless bronchial atresia is the most common reason and first defined at 1949 [1]. Although the obstruction or atresia may cause atelectasis at the lobar bronchus, it may not result with volume deple- tion at segmental or subsegmental bronchioles [1, 5]. Since we could not demonstrate any massive lesion, a foreign object or fibrotic sequel band which may cause the obstruction in none of our cases, bronchial atresia was considered to be the main reason of the obstruction. Bronchocele cases in literature are generally in association with an obstruction caused by a neoplasm [6, 7].

Bronchial atresia is a rare variety of chest anomaly. It generally results from a localized defect in normal broncho- pulmonary embryogenesis [5, 8]. The development of lung parenchyma is generally normal [9]. It has a male predominance. The estimated prevalence is 1.2 cases per 100,000 males [10]. The patients are generally asymptomatic and the disease is diagnosed coincidentally at the second or third decades.

The left upper lobe involvement is 64% while left lower lobe is 14% involved [9]. It is commonly demonstrated at a single segmental bronchiol, yet multiple segmental atresias are also reported [1, 6]. Our cases were diagnosed at their thirties. Raza and Aronberg’s cases were at their sixties. Bronchial atresia was at the left lower lobe in our first case while it was at the left upper lobe in the second one. In Raza, Yoon, and Aronberg’s cases bronchoceles were at the right upper lobe and lingula, in Gibson’s case it was at the left upper lobe similar to our case.

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Bronchocele is diagnosed radiologically or/and by bronchoscopy. Radiologically hyperinflation is reported commonly in the affected side as well as collapse at the affected lobe and mass image of the mucocele. Calcification may also be reported [5, 11]. In our first case, there was only osclulta- tive findings. In the second one radiologic infiltration was recorded. In differential diagnosis of cystic lesions of lungs; congenital abnormalities (pulmonary sequestration, bronchogenic cyst and bronchocele), tumoral masses (primary pulmonary mucinous adenocarcinosis or pulmonary metastasis of it) should be necessarily kept in mind. Bronchoscopically, blind ending may be demonstrated at the atresic bronchus yet it may be normal as well [10]. Bronchoscopy is also recommended for patients with bronchial atresia in literature in order to exclude other possible pathologies [4, 12, 13]. We performed bronchoscopy to the case who had findings of infection. The result was normal. The other patient refused to have bronchoscopy. On the basis of these information we diagnosed our patients with thorax CT.

Although it may be asymptomatic, dyspnea, recurrent infections, cough, fever and hemoptysis may be recorded. It may rarely cause pneumothorax [8]. Hyperinflation of the obstructed lung segment and check valve mechanism is held responsible [6, 11]. It may be associated with congenital cystic adenomatoid malformation and pectus excavatum [9, 14, 15].

In conclusion, bronchocele is benign and asymptomatic and may be diagnosed radiologically. Bronchoscopy may be done to exclude associating pathologies. Nevertheless an obstructing tumoral mass should be kept in mind in case an obstruction is determined.

References

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