



Case Report

Cases of Multiple Tracheobronchial Diverticulosis Characterized by Recurrent Pneumonia Episodes

Tekrarlayan Pnömoniler ile Karakterize Çoklu Trakeobronşiyal Divertikülozis Olguları

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ABSTRACT

Tracheal diverticulosis is a rare tracheal pathology that occurs in approximately 1-2% of the population. In order to draw attention to this rare tracheal pathology, we would like to present two cases in which tracheal diverticula were accompanied by bronchial diverticula. Case 1: A 58-year-old male patient presented to our outpatient clinic with a weight loss of approximately 7 kg in 1 month. Computed tomography (CT) revealed multiple tracheal diverticula in the trachea and bilateral main bronchi. Case 2: A 52-year-old male patient was admitted with complaints of right-sided pain and fever. CT and fiberoptic bronchoscopy revealed multiple diverticula in the bilateral bronchial system. Tracheal diverticula are paratracheal air cysts protruding from the tracheal wall. They are usually detected incidentally on imaging because patients are usually asymptomatic. Approximately 97% of the lesions are located in the right posterolateral wall and are usually solitary. The association between multiple and bronchial diverticula is very remarkable.

Keywords: Multiple, tracheal, bronchial, diverticulosis

ÖZ

Trakeal divertikülozis, toplumun yaklaşık %1-2'sinde görülen, konjenital veya edinsel nedenlere bağlı olabilen nadir bir trakeal patolojidir. Bu nadir trakeal patolojiye dikkat çekmek amacıyla, trakeal divertiküllere, bronşiyal divertiküllerinin de eşlik ettiği iki olguyu sunmak istiyoruz. Olgu 1: Elli sekiz yaşında erkek hasta 1 ay içinde yaklaşık 7-8 kg kilo kaybı ile polikliniğimize başvurdu. Hastanın, son 2 yıl içinde 2 pnömoni atağı öyküsü vardı. Toraks bilgisayarlı tomografi (BT)'sinde trakea ve bilateral ana bronşlarda multipl trakeal divertiküller görüldü. Olgu 2: Elli iki yaşında erkek hasta sağ tarafta ağrı ve ateş şikayetleriyle başvurdu. BT'sinde trakea ve bronşların, geniş ve divertiküler yapıda olduğu görüldü. Fiberoptik bronkoskopi'de bilateral bronşiyal sistemde çok sayıda divertikül ve divertiküllerin orifislerinden gelen sekresyonlar izlendi. Trakeal divertiküller, trakeal duvardan çıkıntı yapan paratrakeal hava kistleridir ve hastalar genellikle asemptomatik olduğu için genellikle görüntülemelerde tesadüfen tespit edilirler. Yaklaşık %97'si sağ posterolateral duvarda bulunur ve genellikle soliterdirler. Multipl ve bronşiyal divertikül ile birlikteliği çok dikkat çekicidir.

Keywords: Multiple, trakeal, bronşiyal, divertikülozis

Introduction

Tracheal diverticulosis is a rare tracheal pathology that occurs in approximately 1-2% of the population and may be due to congenital or acquired causes. Most cases are asymptomatic and are detected incidentally (1). In order to draw attention to this rare tracheal pathology, we would like to present two cases in which tracheal diverticula were accompanied by multiple bronchial diverticula.

Case Reports

Case 1: A 58-year-old male patient was admitted to our outpatient clinic with a weight loss of approximately 7-8 kg within 1 month. He was admitted to an external center with left chest pain and cough 1 month ago, and he had received quinolone treatment for pneumonia. He also had a medical history of other 2 pneumonia episodes in the last 2 years. On physical examination, he had no active respiratory findings

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other than weight loss and a smoking history of 15 packs/year. Chest Computed tomography (CT) revealed multiple tracheal diverticula in the trachea and bilateral main bronchi (Figure 1 A,B), in addition to findings compatible with airway disease in bilateral lungs. During follow-up, the acute phase reactants became negative, weight loss was stopped, and the patient was discharged with a follow-up plan.

Case 2: A 52-year-old male patient was admitted with right-sided pain and fever. Pleural fluid was detected in the right hemithorax, and thoracentesis was performed. Pleural fluid was determined to be an exudate, and microbiological cultures of the fluid were negative. CT revealed that the trachea and bronchi were wide and diverticular (Figure 1C,D). The patient had a history of tuberculosis for 40 years and pneumonia for 2 years. Subsequently, fiberoptic bronchoscopy (FOB) was performed. The FOB revealed multiple diverticula in the bilateral bronchial system and secretions coming from the orifices of the diverticula (Figure 1 E,F) and *Klebsiella pneumoniae* was isolated in the bronchial lavage culture. After antibiotherapy, the patient's symptoms regressed, and he was discharged. Informed consent was obtained from both patients.

Discussion

Tracheal diverticula are paratracheal air cysts protruding from the tracheal wall. They are usually detected incidentally on imaging because patients are usually asymptomatic (2). Although often confused with the tracheocele, the tracheocele is considered to be the presence of a single sac with a wide opening, whereas the tracheal diverticulum is defined as the presence of multiple sacs with narrow openings (3). Approximately 97.9% of the tracheal diverticula are located on the right posterolateral wall and are usually solitary (4). This finding is believed to be related to the position of the trachea, esophagus, or aorta. The supporting effect of the esophagus or aorta on the trachea is more pronounced on the left posterolateral side, whereas the right side remains partially unsupported (5).

There are two types of tracheal diverticula; congenital and acquired. In adults, tracheal diverticula are mucosal herniations that occur in weak areas of the tracheal wall due to increased intraluminal pressure and are generally thought to be caused by conditions such as chronic obstructive pulmonary disease and chronic cough. Congenital tracheal diverticula are narrower, small-necked air sacs resulting

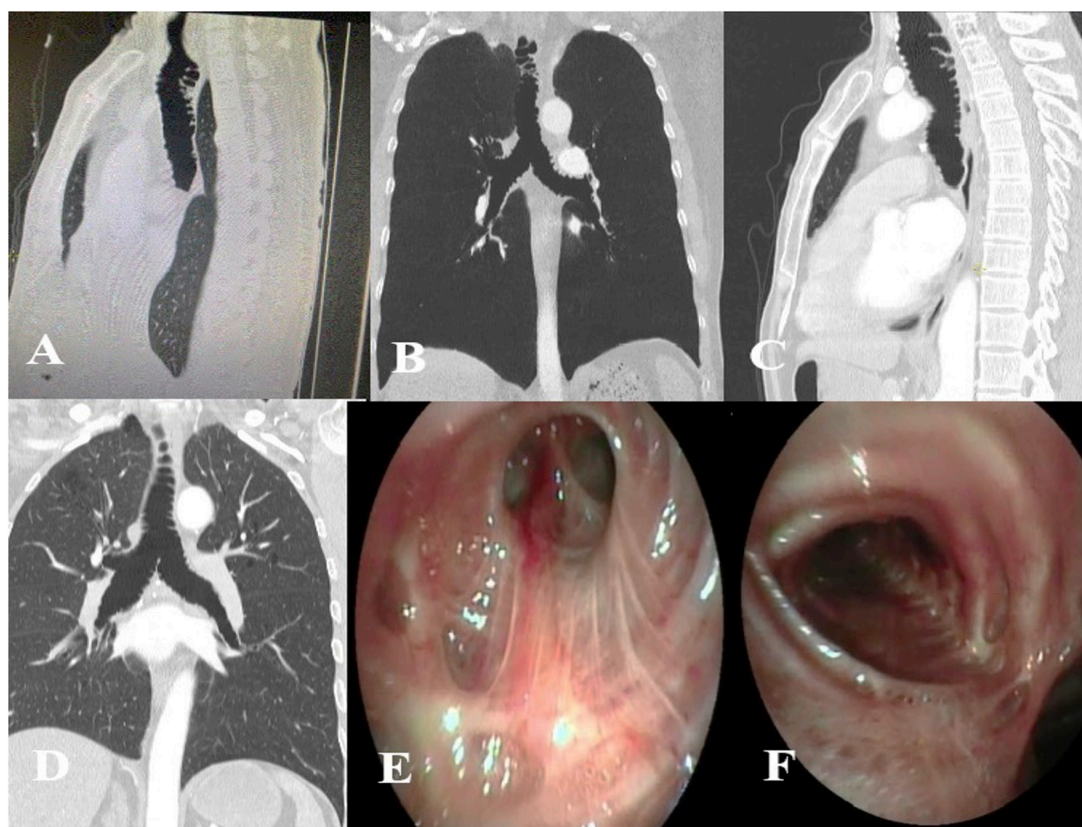


Figure 1. (A,B) Sagittal and coronal sections tomography of the first case. (C,D) Sagittal and coronal sections tomography of the second case. (E) Multiple infected diverticular orifices at the entrance to the right upper lobe. (F) Multiple diverticular orifices in the left main bronchus.

from defects in endodermal differentiation of the tracheal cartilage in six weeks of age. Congenital diverticula are typically filled with mucus, and they are also known as true diverticula because they involve all layers of the tracheal wall. (6). Diverticula may cause a number of complications, including recurrent infections, chronic cough, purulent sputum, hemoptysis, recurrent tracheobronchitis, and symptoms such as dysphagia, hoarseness, and odynophagia due to compression. In some cases, life-threatening abscesses may occur (7, 8).

Bronchial diverticula are less well known. In a study of thoracic CT scans of approximately 12512 patients, a total of 412 tracheal diverticula were identified in 299 patients, of which 84 (20.4%) were associated with bronchial DV (4).

CT scan and bronchoscopy are preferred for diverticulum diagnosis. CT can help determine whether the diverticulum is congenital or acquired based on the presence or absence of cartilage and the size of the diverticulum neck. Acquired diverticula tend to be larger and have more communication with the lumen. CT can also help the clinician identify various complications arising from the diverticulum and distinguish it from conditions that should be considered in the differential diagnosis, such as pharyngoesophageal (Zenker) diverticulum, blebs or bullae, or pneumomediastinum (9).

Most diverticula can be treated with mucolytic, antibiotics, or pulmonary rehabilitation. Rarely, depending on patient characteristics, symptoms, and complications, bronchoscopic laser or electrocoagulation and surgery may be required (10).

In conclusion, the tracheal diverticula were mostly single, and the association between multiple and bronchial

diverticula was remarkable. During our literature search we found 2-3 studies reporting tracheobronchial diverticula (8, 9, 11). The fact that both of our patients had a history of recurrent pneumonia and originated from many different localisations as well as the right posterolateral wall may provide important information in the differential diagnosis of patients with similar clinical presentation and history.

References

1. Martinez SAH, Ruiz-Mojica CA, Rivera-Rivera G, Perez-Ortiz G, Morrero JP, Lopez PP. Incidental Tracheocele as an Unusual Presentation of Pneumomediastinum in the Trauma Setting. *Am J Case Rep.* 2023;24:937916.
2. Polverosi R, Carloni A, Poletti V. Tracheal and main bronchial diverticula: the role of CT. *Radiol Med.* 2008;113:181-9.
3. Madana J, Yolmo D, Saxena SK, Gopalakrishnan S. Giant tracheocele with multiple congenital anomalies. *Ear Nose Throat J.* 2012;91:13-5.
4. Kurt A, Sayit AT, Ipek A, Tatar IG. A Multi Detector Computed Tomography Survey of Tracheal Diverticulum. *Eurasian J Med.* 2013;45:145-8.
5. Early EK, Bothwell MR. Congenital tracheal diverticulum. *Otolaryngol Head Neck Surg.* 2002;127:119-21.
6. Tanrivermis Sayit A, Elmali M, Saglam D, Celenk C. The diseases of airway-tracheal diverticulum: a review of the literature. *J Thorac Dis.* 2016;8:1163-7.
7. Srivastava A, Guitron J, Williams VA. Tracheal diverticulum: an atypical presentation. *J Thorac Cardiovasc Surg.* 2014;148:3244-5.
8. Tanaka S, Takizawa H, Yoshiike F, Hirai K. Multiple Tracheobronchial Diverticula Presenting with Mediastinitis. *Intern Med.* 2023;62:309-10.
9. Thibodeau R, Warn K, Jafroodifar A, Goel A, Scalzetti E, Dshmane S. Tracheal and main bronchial diverticula simulating pneumomediastinum following a motor vehicle collision. *Radiol Case Rep.* 2021;16:3250-4.
10. Timilsina B, Pangen RP, Khadka S, Regmi PR, Dhakal B. Multiple tracheobronchial diverticula in a post-TB patient: A case report. *Clin Case Rep.* 2022;10:6787.