

Nadir Bir Öksürük Nedeni: Trakeal Divertikül

A Rare Cause Of Cough: Tracheal Diverticulum

Özgür KATRANCIOĞLU¹, Mehmet ÖZGEL², Ahmet ERBEY², Muhammed KALKAN²

Özet: Trakea duvarının invajinasyonu ile karakterize, paratrakeal hava kistlerine neden olan trakeal divertikül nadir görülen bir durumdur. Sigara içme hikayesi olmayan erkek hasta kliniğimize yaklaşık üç aydır süren öksürük şikâyeti ile başvurdu. Fizik muayenesinde akciğer sesleri doğal ve solunum fonksiyon testi normaldi. Toraks bilgisayarlı tomografisinde, sağ paratrakeal alanda trakeanın posterolateralinde trakea ile bağlantılı bir hava dansitesinin olduğu görüldü. Hastaya trakeal divertikül ön tanısı ile Fiber-optik bronkoskopi (FOB) işlemi yapıldı. Trakeal divertikül hastamızda da olduğu gibi genelde trakeanın sağ duvarında yerleşir. Hastaların çoğunluğu asemptomatiktir. Literatürde nadir olarak bildirilse de öksürük nedeniyle değerlendirilen, özellikle akciğer grafisi ve spirometrenin normal olduğu hastalarda trakeal divertikül tanısını akılda tutmak gerekir.

Anahtar Kelimeler: Fiber-Optik Bronkoskopi, Öksürük, Trakeal Divertikül.

Abstract: Tracheal diverticulum, which is characterized by invagination of the tracheal wall and causes paratracheal air cysts, is a rare condition. A male patient without a history of smoking was admitted to our clinic with the complaint of a cough lasting for about three months. Physical examination, chest X-ray, and pulmonary function test were normal. In the thorax computerized tomography, it was observed that there was an air density associated with the trachea in the posterolateral aspect of the trachea in the right paratracheal area. FOB was performed on the patient with the preliminary diagnosis of tracheal diverticulum. Tracheal diverticulum is usually located on the right wall of the trachea, as in our patient. The majority of patients are asymptomatic. Although it is rarely reported in literature, the diagnosis of tracheal diverticulum should be kept in mind in patients evaluated for cough, especially in patients with normal chest X-ray and spirometry.

Keywords: Fiber-Optic Bronchoscopy, Cough, Tracheal Diverticulum.

¹ Departments of Thoracic Surgery, Malatya Turgut Ozal University School of Medicine, Malatya / Türkiye

² Departments of Thoracic Surgery, Malatya Education and Research Hospital, Malatya / Türkiye



INTRODUCTION

Tracheal diverticulum (TD) is a rare and benign anomaly defined by a focal outpouching or invagination of the tracheal wall. It most commonly arises on the right side of the trachea and may be either congenital or acquired in origin. The primary variation is in the histological properties of the wall. The acquired type can be seen when there are failed intubations, chronic obstructive pulmonary disease that increases intratracheal pressure, and tracheal muscle weakness (Pinot et al., 2009; Kokkonouzis et al., 2008). Most patients remain asymptomatic throughout their lives. Perhaps this is the reason for the lack of published literature. Due to its rarity, we aimed to present our case with a diagnosis of tracheal diverticulum by evaluating it in the context of existing literature.

CASE REPORT

With a complaint of a cough persisting for approximately three months, a 49-year-old male patient presented to our outpatient clinic. The patient did not have a history of smoking, gastroesophageal reflux, using any medication, or previous surgery, which could have caused coughing. Occupational and familial histories were not included. There was no evident exposure to either organic or inorganic substances. On physical examination, the lung sounds were normal. The pulmonary function test was normal. No pathology was observed in the chest X-ray. To investigate the etiology, a thorax computed tomography (CT) examination was requested of the patient. CT scans showed an air density associated with the trachea in the paratracheal area on the right posterolateral aspect of the trachea (Figure 1).

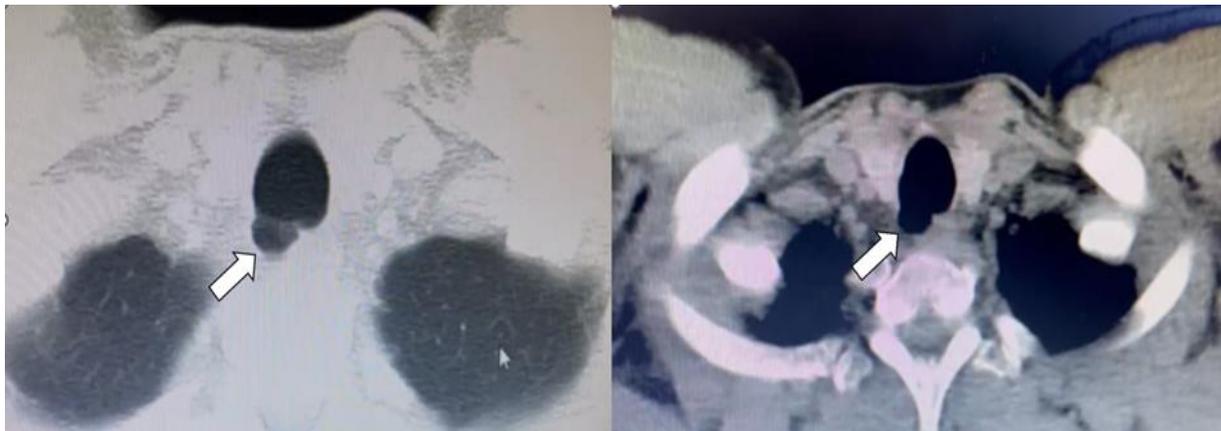


Figure 1: CT scan outlining tracheal diverticulum (arrow) at the right posterolateral trachea on parenchymal and mediastinal views.

FOB was performed on the patient for diagnosis. During bronchoscopy, an opening was observed on the right posterolateral aspect of the trachea,

approximately 2–3 cm inferior to the vocal cords, from which air bubbles and mucous secretions were noted to emerge (Figure 2).

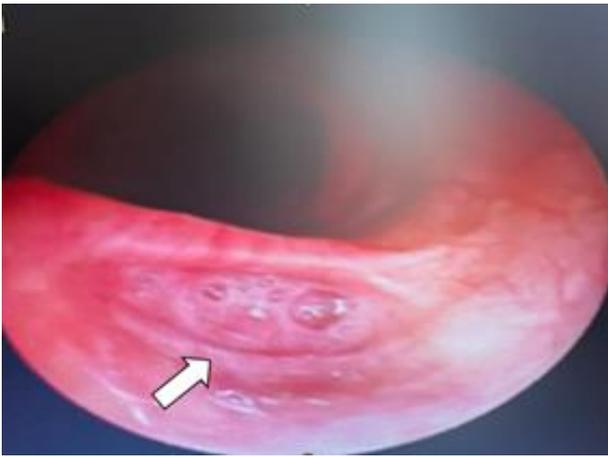


Figure 2. Tracheal diverticulum (arrow) visualized on bronchoscopy at the right posterolateral trachea.

A diagnosis of tracheal diverticulum was made. Since the patient's symptoms were not frequent, the case was followed up clinically. Ethics committee approval is not required for this case report, and written informed consent was obtained from the patient.

DISCUSSION

Chronic and recurring cough is a prevalent respiratory issue. Common reasons include bronchial asthma/hypersensitivity, postnasal drip (PND), sinusitis, and gastric reflux (Takhar et al., 2016). One of the rare causes is TD with a paratracheal air cyst. The mechanism of formation of the diverticulum is unclear; however, it is thought to occur during tracheal budding in the embryological development of the trachea and, therefore, the diverticulum histological structure mirrors that of the trachea. (Restrepo et al., 2004).

TDs are typically discovered during post-mortem examinations; however, they may also be incidentally detected during routine imaging studies such as chest X-ray, computed tomography (CT), or bronchoscopy (Takhar et al., 2016; Grassi

et al., 2000). According to existing reports, the incidence of this condition ranges between 0.3% and 2%, varying across studies and largely influenced by the diagnostic modality employed (Takhar et al., 2016). It is most commonly situated on the right posterolateral aspect of the trachea, approximately 4 to 5 cm distal to the vocal cords. It is more common in men than in women (Yüce & Ulaşlı, 2012). In our case, a tracheal diverticulum was identified on the right posterolateral wall of the trachea.

Tracheal diverticula are generally categorized into congenital and acquired types. It can be observed together with other congenital anomalies (Restrepo et al., 2004; Tian & Johnson, 2021). Unsuccessful intubations, prolonged increases in intratracheal pressure, and herniation from a weak area in the trachea occurs as a result of weakening tracheal wall muscles. Histologically, the wall is lined with respiratory epithelium and contains mucous glands but lacks smooth muscle and cartilage (Takhar et al., 2016; Yüce & Ulaşlı, 2012). The acquired type typically exhibits a wide opening, which may facilitate effective drainage of secretions. Most patients with either congenital or acquired tracheal diverticula remain asymptomatic or present with nonspecific clinical symptoms (Takhar et al., 2016). Diverticula can sometimes act as reservoirs for secretions, causing recurrent infections. Patients may present with complaints of chronic lung infections, cough, dyspnea, chest pain, hemoptysis, and stridor (Yüce & Ulaşlı, 2012). Our patient also applied with a complaint of cough.

If tracheal diverticulum is not considered in the evaluation of chronic cough, it may lead to diagnostic delays. Patients may be mistakenly diagnosed with more common conditions such as asthma, postnasal drip, or reflux, which can result in unnecessary treatments. In cases where routine imaging and pulmonary function tests are normal, considering tracheal diverticulum as a possible cause may help avoid misdiagnosis and guide appropriate management.

There are two types of TD treatment: medical and surgical treatment. Patients with tracheal diverticulum are usually asymptomatic, and therefore no specific treatment is required. In symptomatic cases, physiotherapeutic measures aimed at diverticular drainage, along with interventions to prevent secondary infection, may prove beneficial. Patients with infections can be treated with antibiotics and mucolytic drugs. Surgical interventions can be performed in young

patients whose diverticulum causes recurrent respiratory problems. These can be done in two ways: laser cauterization via rigid bronchoscope and open repair with lateral cervical approach (Pinot et al., 2009). Since our patient did not have recurrent respiratory problems, surgical interventions were not considered.

CONCLUSION

Despite its infrequent documentation in clinical practice and literature, the incidence of tracheal diverticulum may reach as high as 2% (Pinot et al., 2009). Therefore, the diagnosis of tracheal diverticulum should be kept in mind in patients who are evaluated for chronic cough, especially in patients with normal chest X-ray and spirometry. It can be easily diagnosed with FOB and thorax CT. Treatment options include surgical resection and conservative treatment, whether symptomatic or not.

REFERENCES

Grassi, R., Rea, G., Scaglione, M., Brunese, L., & Scialpi, M. (2000). Imaging of tracheocele: Report of three cases and review of the literature. *Radiologia Medica*, 100, 285–287.

Kokkonouzis, I., Haramis, D., Kornezos, I., Moschouris, H., Katsenos, S., & Bouchara, S. (2008). Tracheal diverticulum in an asymptomatic male: A case report. *Cases Journal*, 1, 181. <https://doi.org/10.1186/1757-1626-1-181>

Pinot, D., Breen, D., Pelsoni, J. M., Gaubert, J. Y., Dutau, H., & Vervloet, D. (2009). An incidental finding in a 34-year-old male under investigation for haemoptysis. *European Respiratory Journal*, 33, 1227–1229. <https://doi.org/10.1183/09031936.00140408>

Restrepo, S., Villamil, M. A., Rojas, I. C., Lemos, D. F., Echeverri, S., & Triana, G. (2004). Association of two respiratory congenital anomalies: Tracheal diverticulum and cystic adenomatoid malformation of the lung. *Pediatric Radiology*, 34, 263–266. <https://doi.org/10.1007/s00247-004-1112-6>

Takhar, R. P., Bunkar, M., Jain, S., & Ghabale, S. (2016). Tracheal diverticulum: An unusual cause of chronic cough and recurrent respiratory infections. *Tuberkuloz ve Toraks*, 64(1), 77–82. <https://doi.org/10.5578/tt.9963>

Tian, T., & Johnson, B. P. (2021). Tracheal diverticulum diagnosed following blunt thoracic trauma. *The American Surgeon*, 27, 313.

Yüce, G. D., & Ulaşlı, S. S. (2012). Chronic cough due to tracheal diverticulum. *Respiratory Case Reports*, 1(2), 62–64.