Radiology Forum

Tracheal Diverticulum

Mehul Shah and J.M. Joshi

Department of Pulmonary Medicine, T.N. Medical College, B.Y.L. Nair Hospital, Mumbai, India

[Indian J Chest Dis Allied Sci 2012;54:39-40]

CLINICAL SUMMARY

A 26-year-old male, an occasional smoker without any precedent significant medical or surgical illness, presented to us with a one-year history of symptoms that were suggestive of recurrent respiratory tract infections associated with intermittent episodes of streaky haemoptysis. On physical examination, he was overweight with a body mass index (BMI) of 28 Kg/m^2 but no other remarkable findings.

INVESTIGATIONS

The haemogram and serum biochemistry parameters were in the normal range. Sputum smear examination for acid-fast bacilli was negative. Chest radiograph showed no abnormality. High resolution computed tomography (HRCT) of the chest (Figure 1) showed few areas of fibrosis in the left lower lobe and a diverticulum arising from the right posterolateral wall of upper trachea at the level of second/third dorsal vertebra. Fibreoptic bronchoscopy showed an opening in the right posterior wall of trachea (Figure 2). Two-dimensional echocardiography was within normal limits. Spirometry showed normal lung functions.

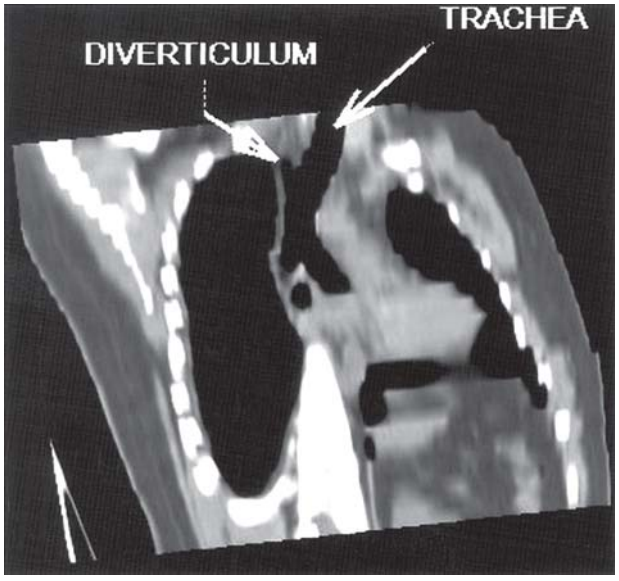

Figure 1. Coronal section of contrast enhanced computed tomography showing a diverticulum (white arrow) arising from the right posterolateral wall of the trachea.

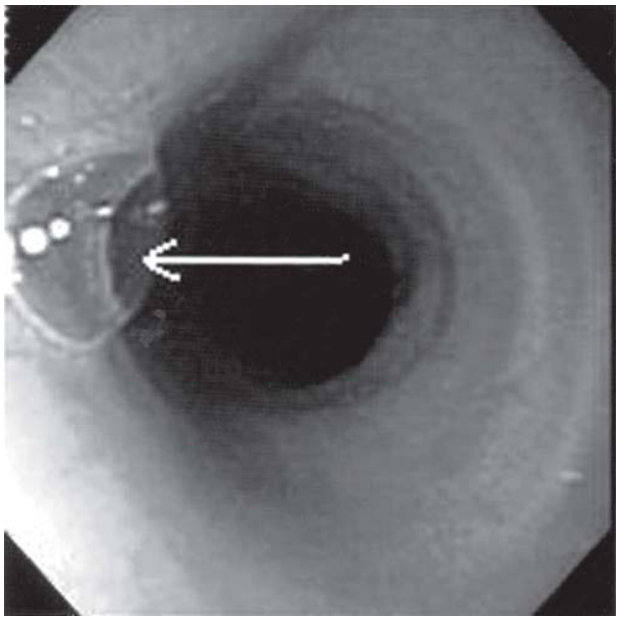

Figure 2. Bronchoscopy showing opening of the tracheal diverticulum (white arrow).

DIAGNOSIS

Tracheal diverticulum causing recurrent respiratory tract infections.

DISCUSSION

Paratracheal air cyst, as an entity, was first described by Rokitansky in 1838.[1] Tracheal diverticulum is one of the differential diagnosis, others being a laryngocoele, a pharyngocoele, a Zenker's diverticulum, an apical hernia of the lungs and apical bullae/blebs.[2] Tracheal diverticulum is rare and usually found post-mortem.[3] Katz *et al*[4] described

[Received: January 18, 2011; accepted after revision: June 2, 2011]

Correspondence and reprint requests: Dr J.M. Joshi, Professor and Head, Department of Pulmonary Medicine, T.N. Medical College and B.Y.L. Nair Hospital, Mumbai-400 008, India; Phone: 91-022-23027642/43; E-mail: drjoshijm@gmail.com

four types of tracheal diverticuli-rudimentary bronchus, cystic dilatation of mucus gland duct, tracheocoele and diverticulum associated with tracheobronchomegaly. Tracheal diverticuli may be congenital or acquired. Both the varieties are lined by ciliated columnar epithelium. The congenital variety, which is thought to represent a malformed supernumary branch of the trachea,[5] has cartilaginous rings in its wall that are similar to the tracheal wall. These usually arise 4 to 5 centimeters below the true vocal cords, are relatively small and narrow-mouthed and may occur in isolation or in association with other congenital anomalies within the tracheobronchial tree. In the acquired variety, that is thought to be due to increased intra-luminal pressure causing out-bulging of a weak part in the tracheal wall, the wall is devoid of any cartilaginous rings. Another mechanism that has been proposed for its development is cystic distension of the mucous gland ducts.[3] It can arise at any level and is wide-mouthed and larger in size.[6] Majority of the tracheal diverticuli arise at the D2 vertebral level.[2] The supportive presence of oesophagus and aortic arch on the left side of the tracheal wall makes it less susceptible to the development of diverticula explaining the preponderant right sided location of the diverticula.[1] These patients are commonly asymptomatic. However, they may present with chronic productive cough, dyspnoea, stridor, haemoptysis and repeated episodes of tracheobronchitis.[7] A small air cyst orifice is usually difficult to visualise on bronchoscopy. In previous studies,[8,9] even in surgically proven tracheal diverticula, no mucosal orifices were detected on pre-operative bronchoscopy. Hence, a computed tomography of the trachea with reconstruction in the coronal plane is considered the needed modality for diagnosis.[5] Since most of the tracheal diverticula are either asymptomatic or do not cause significant symptoms, a conservative symptomatic medical treatment with antibiotics, mucolytics and physiotherapy usually suffices and very rarely a surgical resection is required.[6,8]

The duration of symptoms in our patient was only one year and no other anomaly of the tracheo-bronchial tree was found. Thus, it is most likely that the tracheal diverticulum was of an acquired variety. The patient was managed conservatively with physiotherapy and vaccinations to reduce the frequency of infections and prevent them.

REFERENCES

1. Soto-Hurtado EJ, Peñuela-Ruíz L, Rivera-Sánchez I, Torres-Jiménez J. Tracheal diverticulum: a review of the literature. *Lung* 2006;184:303-7.
2. Goo JM, Im JG, Ahn JM, Moon WK, Chung JW, Park JH, *et al*. Right paratracheal air cysts in the thoracic inlet: clinical and radiologic significance. *AJR Am J Roentgenol* 1999;73:65-70.
3. MacKinnon D. Tracheal diverticula. *J Pathol Bacteriol* 1953;65:513-7.
4. Katz I, Levine M, Herman P. Tracheobronchomegaly. *AJR Am J Roentgenol* 1962;88:1084-9.
5. Rahalkar MD, Lakhkar DL, Joshi SW, Gundawar S. Tracheal diverticula-report of 2 cases. *Indian J Radiol Imag* 2004;14:197-8.
6. Caversaccio M, Becker M, Zbären P. Tracheal diverticulum presenting with recurrent laryngeal nerve paralysis. *Ann Otol Rhinol Laryngol* 1998;107:362-4.
7. Early EK, Bothwell MR. Congenital tracheal diverticulum. *Otolaryngol Head Neck Surg* 2002;127:119-21.
8. Infante M, Mattavelli F, Valente M, Alloisio M, Preda F, Ravasi G. Tracheal diverticulum: a rare cause and consequence of chronic cough. *Eur J Surg* 1994;160:315-6.
9. Collins MM, Wight RG. Posterior tracheal wall diverticula: an expected finding. *J Laryngol Otol* 1997;111:663-5.