KAWASAKI MED. J. VOL. 14 : NO. 3, 153-156 (1988)

Brief Note

Tracheal Bronchus

Accepted for publication on October 13, 1988

Key words: tracheal bronchus — bronchus — congenital malformation

Herein, we like to share our experience of tracheal bronchus, incidentally found in a 48-year-old man with liver cirrhosis who died of candidal sepsis.

On opening the trachea at autopsy, a right upper apical segment (right B 1) bronchus was found to directly arise from the right lateral wall of the trachea (Figs. 1 and 2), 0.5 cm above the orifice of the right main-stem bronchus and 2 cm from the top of the carina. This bronchus arising from trachea supplied only right apical segment without any communication with other branches of right upper bronchus, and this segment was not separated from the remainder of the upper lobe by a fissure. A branch of right pulmonary artery intervened between extrapulmonary right apical segmental bronchus and right main-stem bronchus.

An abnormal partition of the trachea occurs occasionally.[1,2] Some of them may be additive, others subtractive, and some others displaced. In addition

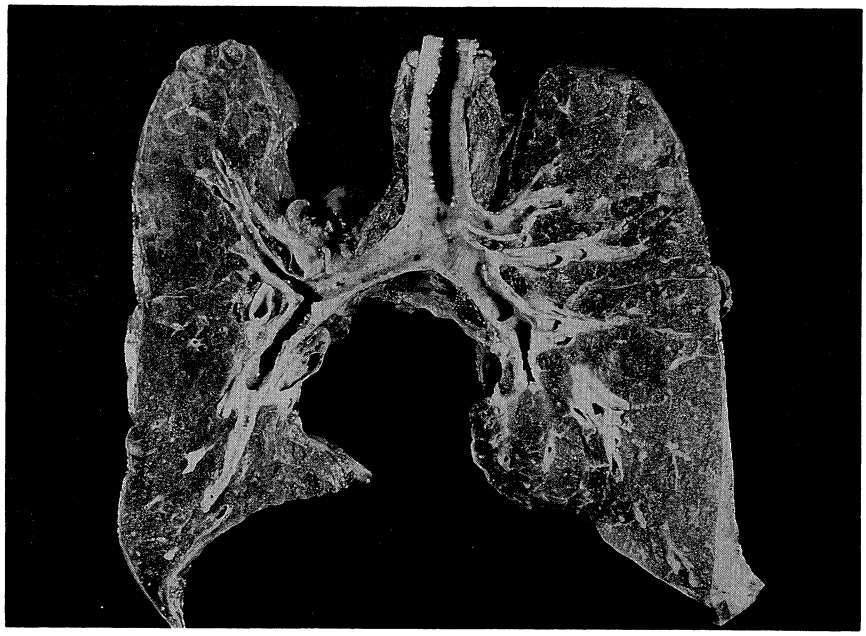

Fig. 1. Coronal section of the lungs, showing a tracheal bronchus on the right. Lungs are seen posteroanteriorly in this photograph. Note that no partitions of the lung parenchyma is seen between the segment supplied by this tracheal bronchus and those by the rest of the upper lobe bronchus.

真鍋俊明，原田美貴，杉原佳子，山下貢司

to the main bronchi, a small bronchial branch may originate from the trachea and this condition is referred to as "tracheal bronchus". It arises almost invariably from the right lateral wall of the trachea.

Normally, the bronchus to the right upper lobe arises from the lateral aspect of the main-stem bronchus approximately 3 cm from the carina (Fig. 3A).[3,4] The upper lobe bronchus divides at slightly more than 1 cm from its

Fig. 2. A tracheal bronchus. It is clear in this photograph that a tracheal bronchus enters into the lung separately from the right main-stem bronchus.

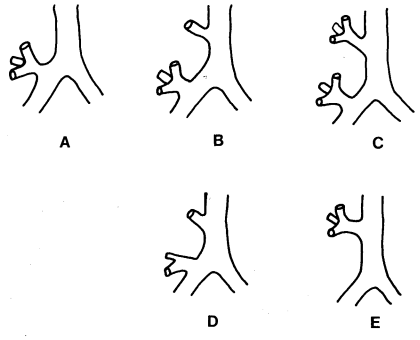

Fig. 3. Anatomic variations of tracheal bronchus
A. Normal branching of the right upper lobe bronchus
B. Supernumerary apical bronchus
C. Supernumerary lobar bronchus
D. Displaced apical bronchus
E. Displaced lobar bronchus

origin, most commonly into three branches; namely apical (B 1), posterior (B 2), and anterior (B 3) segmental bronchus.

There are several anatomic variations of the tracheal bronchus (Fig. 3B–E).[5–7] They may be divided into two types according to the number of bronchi ; namely, the supernumerary type in which the tracheal bronchus is, in fact, an additional airway, and the displaced type in which the bronchus to a certain segment arises from the trachea. The supernumerary variant may be found with the supernumerary apical lobe, separated from the remainder of the upper lobe. In contrast, the apical displaced variant is usually found to be connected to the right apical segment. The one which supplies all or a part of the apical segment and arises on the right side of the trachea or from the lateral wall of the right primary bronchus before the lobar bronchus is given off is also called pre-epiarterial bronchus. This type of apical tracheal bronchus is the more frequent form. Our case corresponds to a displaced apical tracheal bronchus. Moreover, tracheal bronchi may be classified in relation to the distance of the supernumerary or displaced bronchus from the carina ; namely (1) the carinal and (2) the tracheal type. The latter is usually defined by its origin more than 1 cm from the carina. In this sense, our case, having the lower margin of the tracheal bronchus 2 cm from the carina, should be included in true tracheal bronchus.

Tracheal bronchus is usually an incidental finding, with no clinical significance. They, however, may be associated with recurrent pneumonia, strider, and respiratory distress.[6,7] A case of congenital lobar emphysema with tracheal bronchus was also presented.[8] The incidence of a tracheal bronchus was reported to be 2% in children requiring bronchoscopy, and 0.1 to 0.3% in adults.[2] Other anomalies are frequently seen in infants and children with tracheal bronchus.

Lastly, the mechanism why this congenital malformation develops still remains unknown. Bremer[9] believed that tracheal bronchi were caused by failure of regression of tracheal buds in utero. Some investigators argued this concept, and suggested that a tracheal bronchus was a result of local disruption of normal embryogenesis.

Toshiaki MANABE, Miki HARADA,
Keiko SUGIHARA and Koshi YAMASHITA

Department of Pathology,
Kawasaki Medical School,
Kurashiki 701-01, Japan

REFERENCES

1) Boyden, E.A.: Development anomalies of the lungs. Am. J. Surg. **89** : 79-89, 1955
2) Atwell, S.W.: Major anomalies of the tracheobronchial tree. With a list of the minor anomalies. Dis. Chest **52** : 611-615, 1967
3) Warwick, R. and Williams, P.L.: Gray's anatomy, 34th ed. Edinburg, Longman. 1973, pp. 1183-1185
4) Fraser, R.G., and Pare, J.A.P.: Diagnosis of diseases of the chest. Vol. 1. Philadelphia, W.B. Saunders Co. 1970, pp. 12-13
5) Warkany, J.: Congenital malformations. Chicago, Year Book Medical Publishers. 1971, pp. 600-601
6) Iancu, T., Boyanover, Y., Eilam, N., Elian, E. and Levner, M.A.: Infantile sub-lobar emphysema and tracheal bronchus. Acta Paediatr. Scand. **64** : 551-554, 1975
7) McLaughlin, F.J., Strieder, D.J., Harris, G.B.C., Vawter, G.P. and Eraklis, A.J.: Tracheal bronchus: Association with respiratory morbidity in childhood. J. Pediatr. **106** : 751-755, 1985
8) Keller, M.S.: Congenital lobar emphysema with tracheal bronchus. J. Can. Assoc. Radiol. **34** : 306-307, 1983
9) Bremer, J.L.: Accessory bronchi in embryos; their occurrence and probable fate. Anat. Rec. **54** : 361-374, 1932