

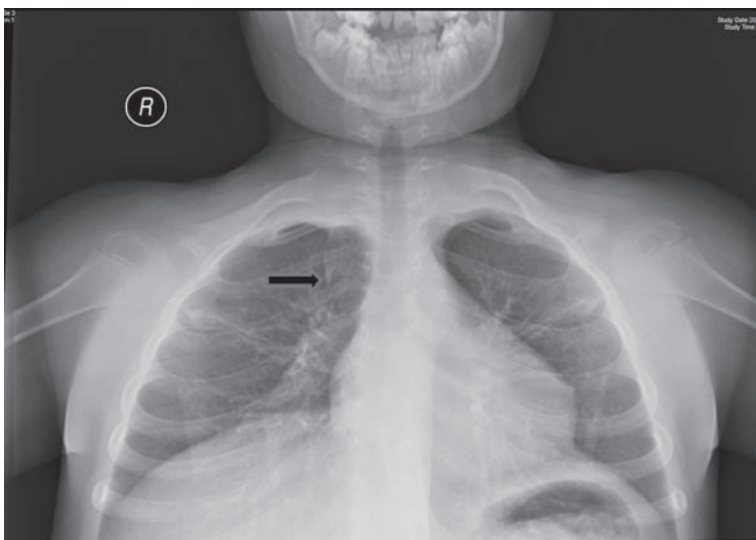
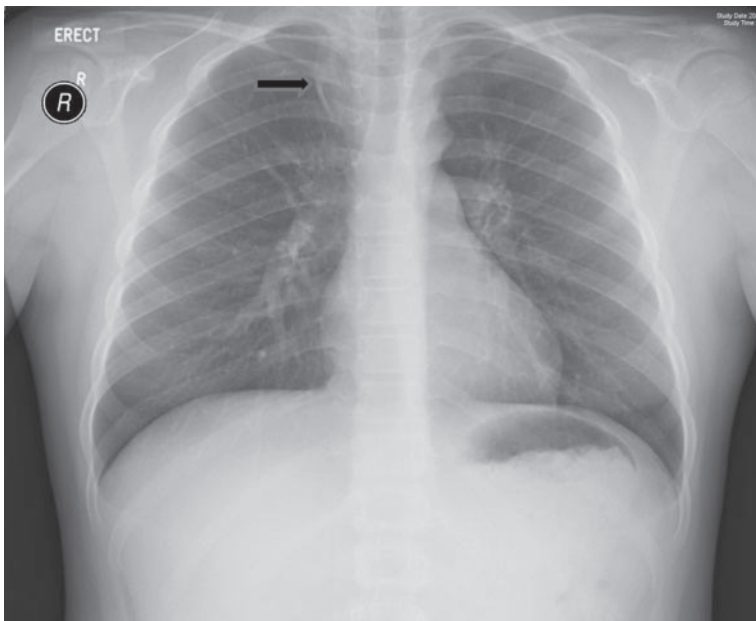


X-Ray Quiz

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A 10-year-old girl presented to Accident & Emergency Department with protracted cough for over one month after an episode of upper respiratory tract infection which had been treated in out-patient clinic with symptomatic medications. Chest X-ray was taken and an empirical course of antibiotics was given. Her cough improved but repeat chest X-rays showed persistent shadow (arrow) amongst clearing up chest infection changes. She was referred for further respiratory assessment. On physical examination she was pink, afebrile, with normal growth and no finger clubbing. There was no chest deformity and trachea was central. Air entry was symmetrical and there were no added sounds on chest auscultation. Cardiovascular, abdominal and ENT examination were unremarkable.



Question

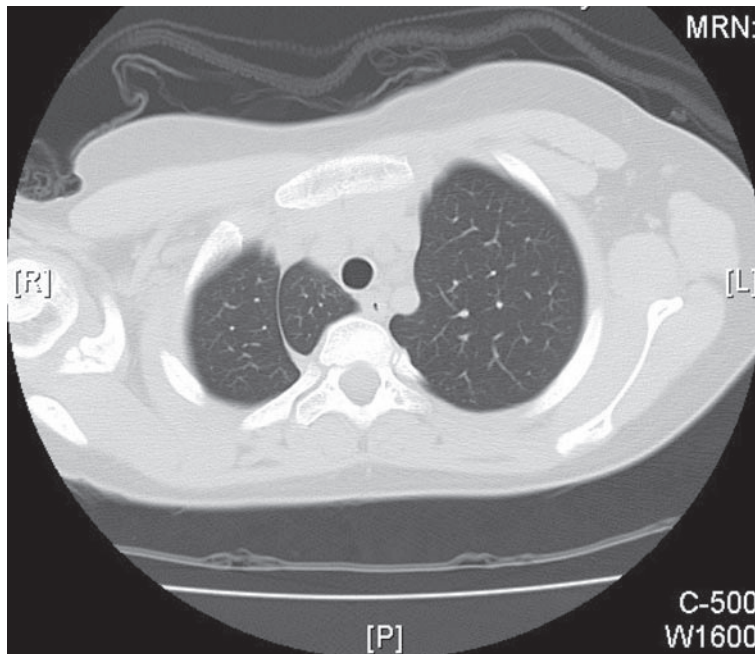
What is the radiological diagnosis ?

(Answer on pages 28-29)



Answers to X-ray Quiz on page 26

The chest X-rays showed azygos lobe in the right lung apex. The curvilinear shadow, which is similar in shape to an inverted comma, represents the azygos fissure with the azygos vein lying inside, which is often described assuming a characteristic tear-drop appearance. Thoracic CT scan confirms the findings and the rest of the lungs are normal.



Discussion

The azygos lobe is a normal anatomical variant, resulting from partial segmentation of the normal right upper lobe by an abnormally placed azygos vein whose arch splits the upper lobe, creating an azygos fissure with the azygos vein wrapped by pleura hanging it to the apico-posterior wall of the thorax. Depending on the way of medial sliding of the azygos vein development, the azygos fissure could adopt a vertical to more or less horizontal position. Reported incidence of azygos lobe varies from 0.1-1.1% in autopsy series and 0.01-2.6% in radiological series. It is more frequent on the right side but a few cases have been reported on the left side or on both sides.¹⁻³

The azygos lobe itself usually causes no pathology but it may be confused with a pathological air space such as abscess or bulla. A consolidated azygos lobe may be confused with a lung mass and the abnormally located azygos vein may be mistaken as a pulmonary nodule.² Some cases of azygos lobe have been reported to be associated with abnormal position of great veins in the superior mediastinum e.g. anomalous brachiocephalic vein,⁴ superior vena cava⁵ or with other congenital abnormalities e.g. congenital lobar emphysema,⁶ pulmonary sequestration,⁷ oesophageal atresia.⁸ Rarely, malignancies have been described in adults arising from azygos lobe.⁹⁻¹¹ Interestingly, there have been case reports of vanishing azygos lobe and / or migratory azygos vein, which are thought to indicate occurrence of previous pneumothorax or associated with kyphosis.¹²⁻¹⁶

Presence of azygos lobe should be alerted to cardiothoracic surgeons as it may confound certain surgical approaches or causing potential problems during operations.^{8,17,18}



References

1. Cimen M, Erdil H, Karatepe T. A cadaver with azygos lobe and its clinical significance. *Anat Sci Int* 2005;80(4):235-7.
2. Chabot-Naud A, Rakovich G, Chagnon K, Ouellette D, Beauchamp G. A curious lobe. *Can Respir J* 2011;18(2):79-80.
3. Ndiaye A, Ndiaye NB, Ndiaye A, Diop M, Ndoye JM, Dia A. The azygos lobe: an unusual anatomical observation with pathological and surgical implications. *Anat Sci Int* 2012;87(3):174-8.
4. Mata JM, Caceres J, Llauger J, Palmer J. CT demonstration of intrapulmonary right brachiocephalic vein associated with an azygos lobe. *J Comput Assist Tomogr* 1990;14(2):305-6.
5. Agrawal GG, Gandhi MS, Gandhi SD. Excessive anteriorisation of the superior vena cava associated with an azygos lobe. *Surg Radiol Anat* 1995;17(2):173-5.
6. Hill RC, Mantese V, Spock A, Wolfe WG. Management of an unusual case of congenital lobar emphysema. *Pediatr Pulmonol* 1988;5(4):252-4.
7. Koksall Y, Unal E, Aribas OK, Oran B. An uncommon extrapulmonary sequestration located in the upper posterior mediastinum associated with the azygos lobe in a child. *J Thorac Cardiovasc Surg* 2007;133(4)S:1110-1.
8. Eradi B, Cusick E. Azygos lobe associated with esophageal atresia: a trap for the unwary. *J Pediatr Surg* 2005;40(11):e11-2.
9. Sen S, Barutca S, Meydan N. Azygos lobe small cell carcinoma. *Eur J Cardiothoracic Surg* 2004;26(5):1041.
10. Fukuhara S, Montgomery M, Reyes A. Robot-assisted azygos lobectomy for adenocarcinoma arising in an azygos lobe. *Interact Cardiovasc Thorac Surg* 2013;16(5):715-7.
11. Delalieux S, Hendriks J, Valcke Y, Somville J, Lauwers P, Schil PV. Superior sulcus tumor arising in an azygos lobe. *Lung Cancer* 2006;54(2):255-7.
12. Betschart T, Goerres GW. Azygos lobe without azygos vein as a sign of previous iatrogenic pneumothorax: two case reports. *Surg Radiol Anat* 2009;31(7):559-62.
13. Maldjian PD, Phatak T. The empty azygos fissure: sign of an escaped azygos vein. *J Thorac Imaging* 2008;23(1):54-6.
14. Villanueva A, Caceres J, Ferreira M, Broncano J, Pallisa E, Bastarrika G. Migrating azygos vein and vanishing azygos lobe: MDCT findings. *AJR Am J Roentgenol* 2010;194(3):599-603.
15. Drakonaki EE, Voloudaki A, Daskalogiannaki M, Karantanas AH, Gourtsoyiannis N. Migratory azygos vein: a case report. *J Comput Assist Tomogr* 2008;32(1):99-100.
16. Internullo E, Migliore M. Pneumothorax and mediastinal emphysema due to an air leak from a bulla in an azygos lobe. *Eur J Cardiothoracic Surg* 2005;28(4):641.
17. Kauffman P, Wolosker N, de Campos JRM, Yazbek G, Jatene FB. Azygos lobe: a difficulty in video-assisted thoracic sympathectomy. *Ann Thorac Surg* 2010;89:e57-59.
18. Reisfeld R. Azygos lobe in endoscopic thoracic sympathectomy for hyperhidrosis. *Surg Endosc* 2005;19(7):964-6.