

Case Report

TWO CASES OF AZYGOS LOBE WITH NORMAL AND ANEURYSMAL AZYGOS VEIN ON COMPUTED TOMOGRAPHY

Fuad AA, Mubarak MY.

Diagnostic Imaging Department, Serdang Hospital, Selangor, Malaysia.

ABSTRACT

Azygos lobe represents normal variation of the pulmonary anatomy. Aneurysmal of azygous vein is very rare and patient remains asymptomatic. Here we report two cases of azygos lobe; one with normal azygous vein diameter and another case with aneurysmal azygous vein. Both cases were incidental detected during Computed Tomography scan. Fusiform aneurysm of azygos vein within azygos fissure has never been reported.

KEY WORDS: Azygos Vein, Azygos Fissure, Azygos Lobe, Saccular, Fusiform, Aneurysm.

Address for Correspondence: Dr. Ahmad Fuad Ab Aziz, Diagnostic Imaging Department, Serdang Hospital, Puchong Road, 43000 Kajang, Selangor, Malaysia. Tel: +6013-7034991, Fax: +603-89475322 **E-Mail:** fuadabaziz86@gmail.com

Access this Article online

Quick Response code



DOI: 10.16965/ijar.2015.348

Web site: International Journal of Anatomy and Research
ISSN 2321-4287
www.ijmhr.org/ijar.htm

Received: 24 Dec 2015 Accepted: 18 Jan 2016
Peer Review: 24 Dec 2015 Published (O): 31 Jan 2016
Revised: None Published (P): 31 Jan 2016

INTRODUCTION

Aneurysm of the azygos vein is a rare anomaly and incidentally detected radiologically in asymptomatic patients. Aneurysms of the azygos vein may mimic the appearance of a mediastinal or paratracheal mass on a chest radiograph. Azygos lobe is the result of incomplete medial migration of the right posterior cardinal vein and separated from other lobe by azygous fissure. It might caused confusion with a pathological air space such as a bulla or abscess. Azygous vein lies within this azygous fissure. Dilatation of the azygos vein may occur on a congenital basis, or secondary to increased right heart flow.

Case 1: A 26 year-old man had Computed Tomography Pulmonary Angiography (CTPA) scan to look for pulmonary embolism. He involved in road traffic accident and suffered fracture of the left femur and tibia. He developed shortness of breath two days after the surgery for the fractures. His chest radiograph showed bilateral pleural effusions with consolidations of the left

lung and incidental finding of azygos lobe. The CTPA was negative for pulmonary embolism. The azygos lobe was confirmed with the presence of the azygos vein measuring 0.4cm to 0.7cm [Figure 1]. The azygos vein at the paravertebral area measured 0.4cm.

Case 2: A 69 year-old woman came for Computed Tomography (CT) scan of the thorax and abdomen as part of the investigation of anaemia. She had well-controlled hypertension and the current echocardiography was normal with ejection fraction of 73%. She was not in failure and did not have any constitutional symptoms. The chest radiograph revealed the presence of azygos lobe. The CT scan of the thorax and abdomen were unremarkable. The azygos vein within the azygos fissure was dilated measuring 1.6cm at the proximal and 1.9cm at the terminal ends. However, it has normal draining into the superior vena cava (SVC). There was no thrombosis in the azygos vein [Figure 2]. The azygos vein at the paravertebral thoracic region measures 0.6cm.

Fig. 1: (a) Chest radiograph showed the azygos lobe (long arrow), azygos fissure (short arrow) and azygos vein (arrowhead). (b) CT thorax in lung window clearly showed the azygos lobe (long arrow) and azygos fissure (short arrow). (c) CT thorax in mediastinal window to show the measurements of the azygos vein.

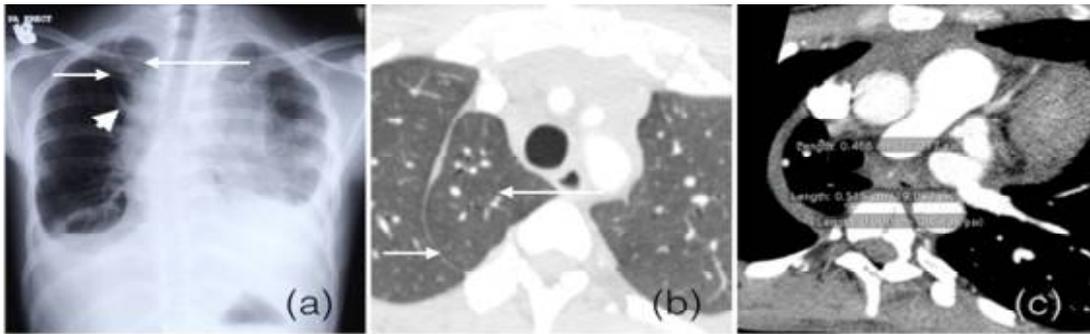
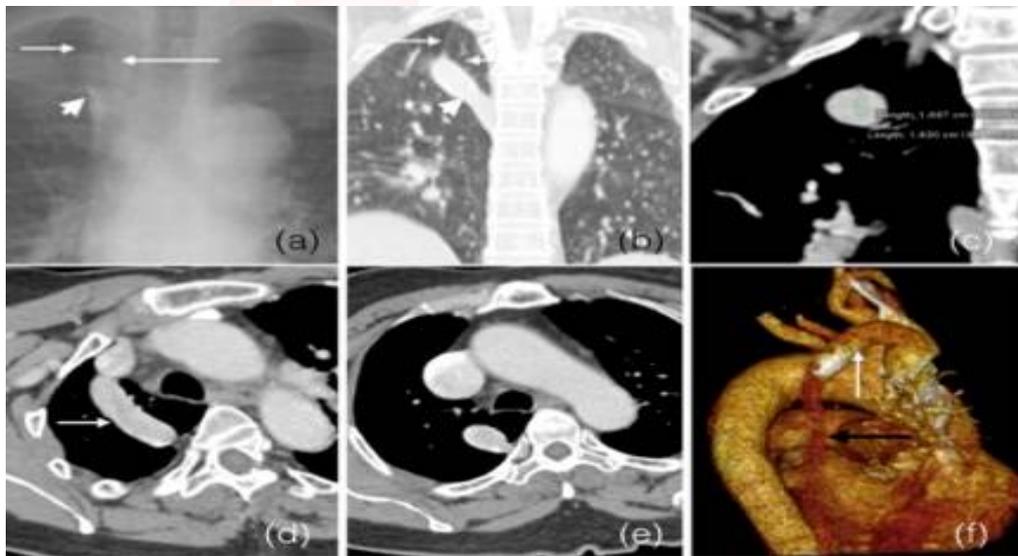


Fig. 2: Chest radiograph (a) and coronal image MPR CT in lung window (b) showed azygos fissure (short arrow), azygos vein (arrowhead) and azygos lobe (long arrow). (c) Coronal CT thorax image to show the measurement taken at the arch of the azygos vein was 1.6cm x 1.9cm. (d) Axial CT images of the course of the azygos vein at the arch (arrow) and at the proximal end (e). Volume rendering image (f) in lateral projection showed azygos vein along the paravertebral region (black arrow) and at the arch (white arrow).



DISCUSSION

Azygos system is a paired venous pathway at the paravertebral region in the posterior thorax [1, 2]. It is formed by the azygos vein on the right, and both hemiazygos vein and accessory hemiazygos vein on the left. The azygos vein is the continuation of the right ascending lumbar vein [3]. It enters the thorax through the aortic hiatus or posterior to the lateral aspect of right crus of diaphragm [1, 4]. It then ascends on the right anterolateral surface of the thoracic vertebrae and arches anteriorly immediately after the right main bronchus at the level of fourth thoracic vertebra to join the SVC [1-4].

Azygos lobe is the result of incomplete medial migration of the right posterior cardinal vein which is the precursor of the azygos vein [1,2,5]. As a result, the azygos vein becomes more laterally and ascends farther superior before

arching anteriorly and enters the SVC [1,2]. The azygos lobe is separated from the rest of upper lobe by azygos fissure which azygos vein lies within [6]. Azygos lobe was first reported by Heinrich Wrisberg in 1877 [6]. It is normal variant of pulmonary anatomy and is present in 0.4% to 1% population [1,2,7].

Azygos system acts as important venous collateral pathway when there is obstruction or anomaly of the major venous pathways [2,4]. The azygos vein is enlarged in various conditions: a). caused by pressure and volume overload from congestive heart failure, portal hypertension, obstruction of the superior and inferior vena cava by mediastinal tumours or nodes, anomalies of the IVC such as in azygos continuation of IVC and pregnancy; b). blunt trauma or catheter insertion to the azygos vein; and c) congenital if there is no identifiable cause

[3,8-12].

Choo JY et al. considered enlargement of the azygos vein if the diameter exceeded 5mm [9]. Kutoglu et.al showed that the mean diameter of the azygos vein at its origin and its termination were 4.05 ± 1.03 mm and 8.56 ± 1.26 mm respectively [4]. The azygos vein within the azygos fissure in our first case was normal with diameter of 4.5mm to 6.7mm. However, the second case showed fusiform enlargement of the azygos vein with diameter of 1.6cm to 1.9cm.

Azygos vein aneurysm was defined as a focal dilatation of the vein with a short-axis length of at least 2.5 times the diameter of the normal azygos vein at the midthoracic level by CT or MRI [8]. Saccular azygos vein aneurysm though is rare have been reported by many authors [9,12]. It mimics paravertebral mass in the right tracheobronchial angle [10, 11]. Saccular azygos vein aneurysm in azygos fissure has been once reported by Cordoba et.al [13]. Ko et. al defined fusiform azygos vein aneurysm as a circumferential short-segment spindle-shaped dilatation of the azygos vein [8].

Conflicts of Interests: None

REFERENCES

- [1]. Dudiak CM, Olson MC, Posniak HV. CT evaluation of congenital and acquired abnormalities of the azygos system. *RadioGraphics* 1991;11:233–246.
- [2]. Piciucchi S, Barone D, Sanna S, Dubini A, Goodman LR, Oboldi D, Bertocco M, Ciccotosto C, Gavelli G, Carloni A, Poletti V. The azygos vein pathway: an overview from anatomical variations to pathological changes. *Insights Imaging* 2014;5:619–628.
- [3]. Heitzman ER. Radiologic appearance of the azygos vein in cardiovascular disease. *Circulation* 1973;47:628-34.
- [4]. Kutoglu T, Turut M, Kocabiyik N, Ozan H, Yildirim M. Anatomical analysis of azygos vein system in human cadavers. *Rom J Morphol Embryol.* 2012;53:1051-6.
- [5]. Chabot-Naud A, Rakovich G, Chagnon K, Ouellette D, Beauchamp G. A curious lobe. *Can Respir J.* 2011;18:79-80.
- [6]. Gill AJ, Cavanagh SP, Gough MJ. The azygos lobe: an anatomical variant encountered during thoracoscopic sympathectomy. *Eur J Vasc Endovasc Surg* 2004;28:223–224.
- [7]. Karre PR, Cooper GB 2nd. The azygos lobe and vein: interesting and typical clinical image. *BMJ Case Rep* 2011;2011.
- [8]. Ko SF, Huang CC, Lin JW, Lu HI, Kung CT, Ng SH, Wan YL, Yip HK. Imaging features and outcomes in 10 cases of idiopathic azygos vein aneurysm. *Ann Thorac Surg.* 2014;97:873–8.
- [9]. Choo JY, Lee KY, Oh SJ, Je BK, Lee SH, Kim BH: Azygos vein aneurysm mimicking paratracheal mass: dynamic magnetic resonance imaging findings. *Balkan Med J.* 2013;30:111-5.
- [10]. Gallego M, Mirapeix RM, Castañer E, Domingo C, Mata JM, Marín A. Idiopathic azygos vein aneurysm: a rare cause of mediastinal mass. *Thorax* 1999;54:653–655.
- [11]. Mohajeri G, Hekmatnia A, Ahrar H, Hekmatnia F, Basiratnia R. Azygos Vein Aneurysm as a Posterior Mediastinal Mass Discovered After Minor Chest Trauma. *Iran J Radiol.* 2014;11:e7467.
- [12]. Lee DH, Keum DY, Park CK, Kim JB, Rho BH. Azygos Vein Aneurysm: A Case for Elective Resection by Video-assisted Thoracic Surgery. *Korean J Thorac Cardiovasc Surg.* 2011;44:304-306.
- [13]. Córdoba Rovira SM, Guedea Martin A, Salvador Adell I, Elias Artiga J. Saccular aneurysm of the azygos vein in a patient with azygos accessory fissure. *Radiologia.* 2015;57(2):167-70.

How to cite this article:

Fuad AA, Mubarak MY TWO CASES OF AZYGOS LOBE WITH NORMAL AND ANEURYSMAL AZYGOS VEIN ON COMPUTED TOMOGRAPHY. *Int J Anat Res* 2016;4(1):1843-1845. **DOI:** 10.16965/ijar.2015.348