Published online: 2020-04-24

NUJHS Vol. 4, No.1, March 2014, ISSN 2249-7110

Nitte University Journal of Health Science

Case Report

VARIOUS ANOMALIES OF THE THORAX

Vrinda Hari Ankolekar[1], Antony Sylvan D'Souza[2], Lydia S. Quadros[3], Mamatha H.[4], Suhani S.[5], Hemalatha S. Bangera[6] & Radhakrishnan[7]

[1] Assistant Professor, [2] Professor & HOD, [3] Lecturer, [4] Assistant Professor, [5] Lecturer, [6,7] P.G. Students, Department of Anatomy, Kasturba Medical College, Madhavnagar, Manipal University, Manipal, Karnataka, INDIA

Correspondence:
Vrinda Hari Ankolekar
Department of Anatomy, Kasturba Medical College, Madhavnagar, Manipal University, Manipal, Karnataka, India - 576 104.
E-mail : vrindahari@rediffmail.com

Abstract :

During routine dissection of the thoracic region of a 55-year old male cadaver, in the department of Anatomy, Kasturba Medical College, Manipal, various anomalies were noticed in the thoracic region.

a) The arch of aorta gave rise to four branches, the right common carotid artery, left common carotid artery, left subclavian artery and a right subclavian artery. The origin of the right subclavian artery was to the left of the midline and in order to reach the right arm, the artery coursed behind both the trachea and oesophagus.

b) Cervical rib was present on both the sides.

c) Thoracic duct coursed on the same side without crossing to the left at the T5 vertebral level.

d) Hemiazygos vein was underdeveloped.

Keywords : Hemiazygos vein, aortic arch, aberrant subclavian artery, thoracic duct, cervical rib

Introduction :

An aberrant origin of right subclavian artery is the commonest aortic arch anomaly that occurs in approximately 0.4 to 1% of the population. [1,2] The patient is usually asymptomatic. [1] This aberrancy is a rare cause of dysphagia in adults and is known as dysphagia lusoria. Physical examination is usually normal and upper endoscopic examination may miss the lesion.

The azygos system drains blood from the back and from the thoracic and abdominal walls. Normally, the azygos vein on right side receives all the posterior intercostals veins except the first vein. On the left side, the accessory azygos vein, a tributary of azygos vein receives the blood from left 5th, 6th and 7th posterior intercostal veins, whereas the left lower four posterior intercostals veins (8th, 9th, 10th and 11th) opens into hemi azygos vein, which is an another tributary of azygos vein.[1]

Access this article online
Quick Response Code

Unilateral or bilateral rudimentary ribs arising from the 7th cervical vertebra is found in 0.5% of population & more common in females than males.

Thoracic duct commences at the upper end of the cisterna chyli, on a level with the body of T12 vertebra. Passes upwards to the right of the aorta.Inclines to the left, passing behind the oesophagus at the superior mediastinum. Pass vertically upwards; it then arches forwards across the dome of left pleura to enter at the confluence of the left internal jugular and subclavian veins.

It drains all the lymph of the body, except from right arm and right halves of thorax and the head and neck

Case Report :

During the routine dissection of the thoracic region of a 55 year old male cadaver, in the department of Anatomy, Kasturba Medical College, Manipal, various anomalies were noticed in the thoracic region.

a) Aberrant right subclavian artery arose from the arch of aorta and was retrooesophageal in its course.

b) Cervical rib was present on both the sides.

c) Thoracic duct coursed on the same side without crossing to the left at the T5 vertebral level.

d) Hemiazygos vein was underdeveloped.

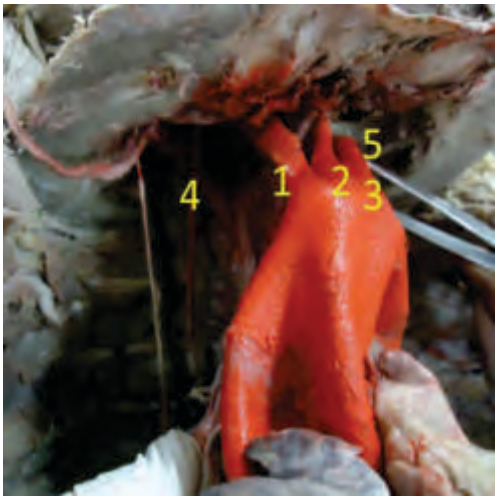

Figure 1 : A shows 1.Right common carotid artery. 2. Left common carotid artery. 3. Left subclavian artery. 4. Right subclavian artery. 5. cervical rib (left). 6. Thoracic duct.

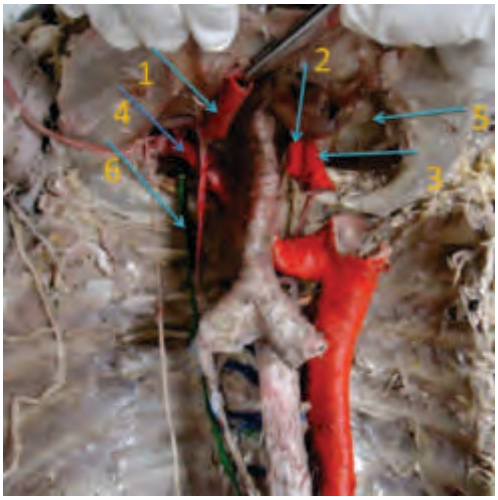

Figure 2 : B shows 1. Right common carotid artery. 2. Left common carotid artery. 3. Left subclavian artery. 4. Right subclavian artery. 5. cervical rib (left).

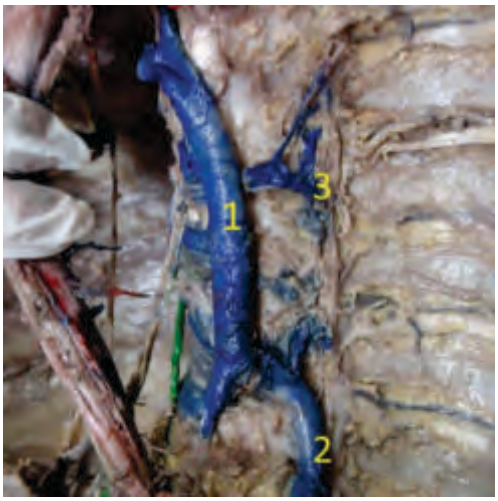

Figure 3 : C shows 1. Azygos vein. 2.Hemiazygos vein. 3. Accessory hemiazygos vein.

Discussion :

Anatomical variations in the aortic arch and its branches are well documented. Aberrant origin of right subclavian artery is the commonest aortic arch anomaly in adults and occurs in approximately 0.4 to 1% of the population.[1-3]

The specific embryologic abnormality of the aortic arch responsible for an aberrant right subclavian artery is the involution of the fourth vascular arch, along with the right dorsal aorta, leaving the seventh inter-segmental artery attached to the descending aorta. Since the persisting right aortic arch forms the root of the aberrant artery, the artery often has a broad base, referred to as a 'Kommerell's diverticulum.

Presentation include physiologic & anatomic changes that may occur with the aging process such as increased esophageal rigidity, rigidity of the vessel wall due to atherosclerosis, elongation of the aorta and aortic aneurysm formation, especially in the presence of a Kommerell's diverticulum.[2-3]

Azygos veins embryologically generate from subcardinal veins. The right subcardinal vein forms azygos vein and the left subcardinal vein forms hemiazygos vein. A transverse anastomosis is formed between them at sixth and seventh thoracic vertebrae in adults. At the left side, cranial part of this anastomosis remains as accessory hemiazygos vein. It is very important to identify the anomalies of azygous system especially in the computed tomography and magnetic resonance imaging of mediastinum. The abnormal azygos venous system may easily be confused with aneurysm, lymphadenopathy and other abnormalities like tumor. [4,5]

Perhaps not more than 10% of people who have cervical ribs develop Thoracic Outlet Syndrome and the syndrome may well occur in the absence of ribs.[6] Diagnosis may be difficult as a fibrous band that acts like a rib but is not calcified does not show on X-rays. The syndrome involves irritation or compression of the neurovascular bundles in

the lower neck (usually the lower trunk or medial cord of the brachial plexus).[7]

The anlage of the thoracic duct appears in the 6-7th week of fetal life as lymphatic clefts surrounded with mesenchyme near large veins. Channels that join the jugular lymph sacs to the cisterna chyli become the thoracic duct and the right lymphatic duct. [8]

Conclusion :

Knowledge of this variational anatomic picture is essential in surgical procedures related to the posterior mediastinum.

It may also be of practical importance for correct interpretation of radiological examinations in angiographic procedures

References :
1. Fockens P. EUS imaging of the arteria lusoria: case series and review. Gastroenterol Endosc 2000; 52:670-3.
2. Levitt B, Richter JE. Dysphagia lusoria: a comprehensive review. Dis Esophagus 2007; 20:455-60.
3. Janssen M, Baggen MGA, Veen HF. Dysphagia lusoria: clinical aspects, manometric findings, diagnosis, and therapy. Am J Gastro enterol 2000; 95:1411-6.
4. Coscina WF, Arger PH, Mintz MC, Coleman BG. Concurrent duplication and azygos continuation of the inferior vena cava. J Comput Tomogr. 1986;10:287–90.
5. Takasugi JE, Godwin JD. CT appearance of the retroaortic anastomoses of the azygos system. AJR Am J Roentgenol. 1990;154:41–4.
6. Fisher MS. Eve's rib. Radiology 1981; 140:841.
7. Oestreich AE. Cervical rib simulating fracture of the first rib in suspected child abuse. Radiology 1996; 199(2): 582.
8. Krutsiak VN, Polianskii IIu. Development of the thoracic duct in the prenatal period of human ontogeny. Arkh Anat Gistol Embriol. 1983;85(11):79-84.