

Case Report**LYMPHOVENOUS COMMUNICATIONS BETWEEN THE THORACIC DUCT AND THE AZYGOS VENOUS SYSTEM****Naief Dahran^{1,2}, Roger Soames¹**¹*Centre for Anatomy and Human Identification, College of Art, Science and Engineering, University of Dundee, Dundee, UK*²*Department of Anatomy, College of Medicine, King Abdul-Aziz University, Jeddah, Kingdom of Saudi Arabia***RESUMEN**

Las venas del tronco venoso de ázigos son altamente variables en lo que se refiere a orígenes, trayecto, afluentes y terminaciones. Las comunicaciones linfovenosas entre el conducto torácico y el sistema venoso de ázigos, fueron halladas en una disección de un cadáver embalsamado de 92 años de edad. El conducto linfático estaba dividido en dos pequeños vasos linfáticos los cuales, drenaban la vena hemiciázigos accesoria en los niveles de T9 y T8. Estas comunicaciones son clínicamente importantes debido a que pueden actuar como vías metastásicas desde la parte más inferior del cuerpo hasta los pulmones.

Palabras Clave: *ázigos, hemiciázigos accesoria, vasos linfáticos, torácico*

ABSTRACT

Veins of the azygos venous system are highly variable in terms of their origins, course, communications, tributaries and termination. Lymphovenous communications between the thoracic duct and the azygos venous system were revealed during dissection of a 92-year-old female Thiel-embalmed cadaver. The thoracic duct branched into two small lymph vessels which drained into the accessory hemiazygos vein at the levels of T9 and T8. These communications are clinically important as they might act as metastatic pathways from the lower part of the body to the lungs.

Keywords: *Azygos, accessory hemiazygos, lymph vessels, Thiel-embalmed, thoracic.*

INTRODUCTION

The azygos vein (AV) and the hemiazygos system, formed during development by the right azygos and left azygos lines respectively form the azygos venous system (Standring et al, 2008). The hemiazygos system is connected to the AV by retroaortic venous communications. These veins are highly variable in terms of their origins, tributaries, communications and terminations. These variations are believed to occur during development (Kutoglu et al, 2012). The thoracic duct is closely related to the azygos system anterior to the thoracic vertebral bodies, ascending between the azygos vein and descending aorta anterior to the retroaortic venous communications (Snell, 2004). Typically, the thoracic duct drains the lower limbs, perineum, pelvis, abdominal walls and viscera, left side of the thorax, left side of head and neck and left upper limb into the venous system at the junction of the left internal jugular and subclavian veins (Snell, 2004; Drake et al, 2005).

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Lymphovenous communications (LVC) were identified in many different aspects of the body such as in upper and lower limbs but none of them where in the thorax (Malek et al, 1965; O'Mahony et al, 2010; Szuba et al, 2007; Tosatti et al, 1978). The azygos system and the thoracic duct may communicate as they are closely

related to each other. If present such communications may act as metastatic pathways from the lower part of the body to the lungs. Thus, it is important for surgeons and clinicians to be aware of these communications, as well as azygos system variations.

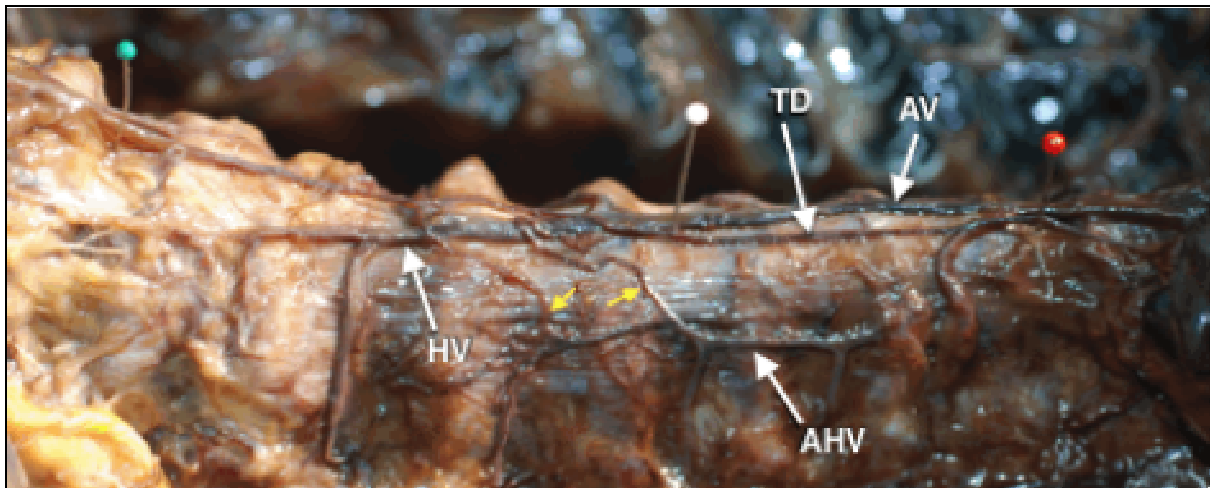


Figure 1. Lateral view of the thoracic vertebrae showing the lymphovenous communications (LVC) between the thoracic duct (TD) and accessory hemiazygos vein (AHV) (yellow arrows). Three pins indicating the levels T12 (green pin), T8 (white pin) and T5 (red pin). HV, hemiazygos vein.

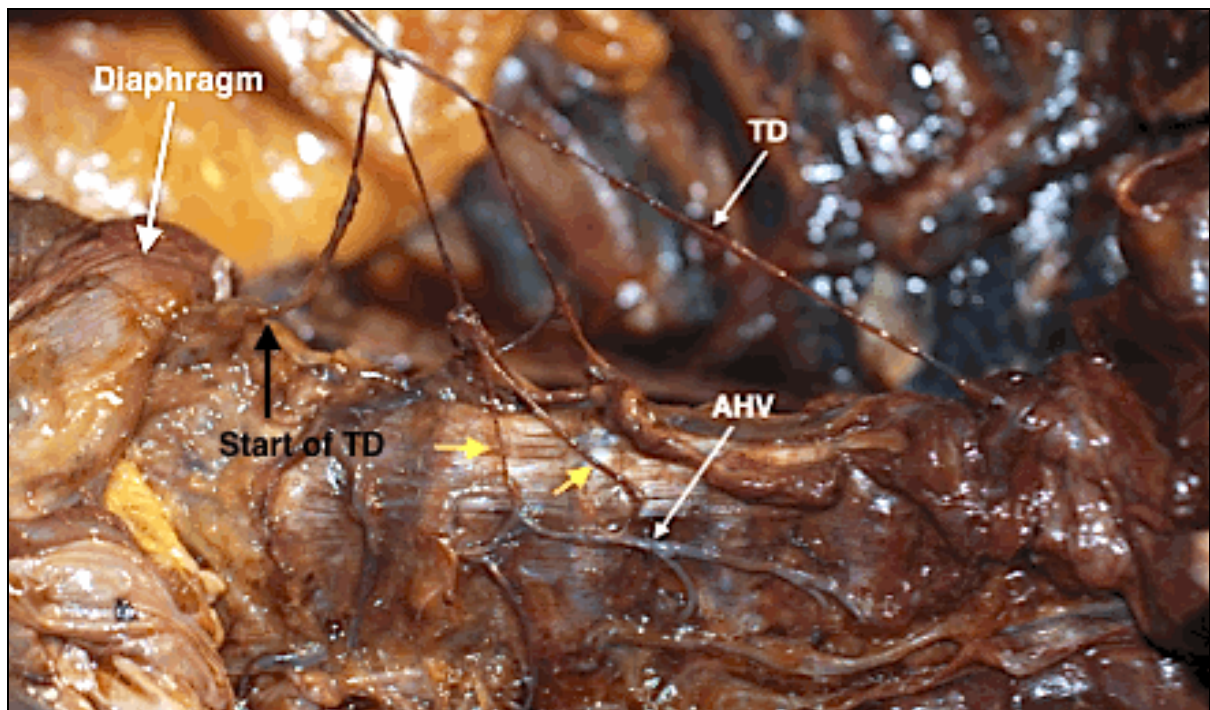


Figure 2. Raised thoracic duct (TD) and the associated lymphovenous communications (LVC, yellow arrows) with the accessory hemiazygos vein (AHV).

CASE REPORT

During the dissection of a 92-year-old female Thiel-embalmed cadaver LVC between the thoracic duct and the azygos venous system were observed. As the thoracic duct ascended between the AV and the accessory hemiazygos vein (AHV), it gave two branches which drained into the AHV at the levels of T9 and T8 (Figures

1, 2, 3). These LVC were very small, being less than 1 mm in diameter. This case also had atypical anatomical features of the AHV as it drained the sixth to ninth left posterior intercostal veins into the AV at the level of T5.

It is thought that these LVC may also exist as the thoracic duct approaches its classical termination. This observation does not appear to have been previously reported in the literature.

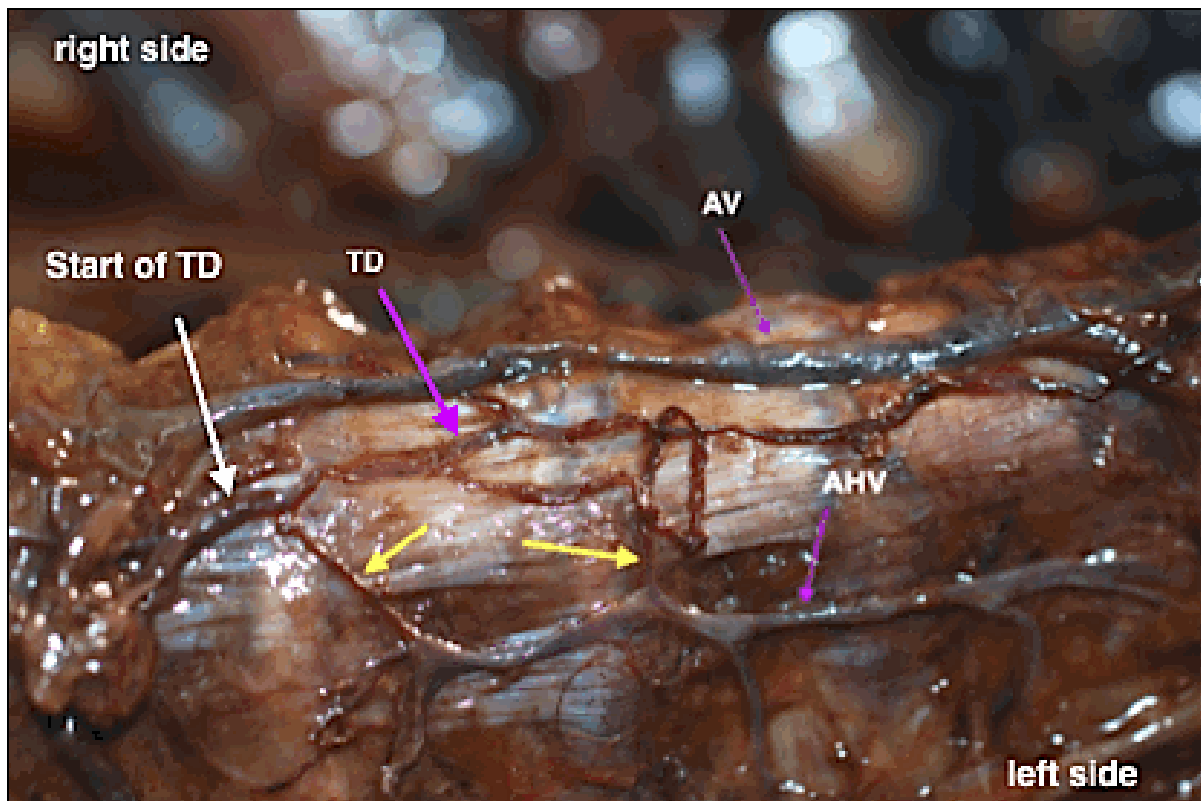


Figure 3. Lymphovenous communications (LVC, yellow arrows) between the thoracic duct (TD) and accessory hemiazygos vein (AHV).

DISCUSSION

The thoracic duct may give branches in the posterior mediastinum which drain into the azygos system, in this case the accessory hemiazygos vein, before its classical termination: the observed LVCs were very small. It is hypothesized that such LVCs may also exist between the thoracic duct and the azygos venous system at other levels within the thorax and neck. These LVC's were less than one millimeter in diameter and might be invisible in some radiological investigations as they were very small.

Tossati et al (1978) have reported multiple lympholymphatic and LVC's were observed in

lower limbs in patients with post-phlebitic syndrome. An evidence of LVC's in the popliteal region behind the knee has been reported by Malek et al (1965). Some other LVC's were found in the upper limb. According to O'Mahony et al (2010), LVC's can be found in the upper limbs of patients with breast cancer.

It has been reported in the literature that the thoracic duct termination is variable in the cervical region. LVC's in the thorax does not appear to have been reported previously. If present such communications between the thoracic duct and the azygos venous system may act as metastatic pathways from the lower part of

the body to the lungs. It is important for radiologists, surgeons and clinicians to be aware of these communications.

Conflict of Interests

None of the authors have any conflict of interest with the material of this manuscript.

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Ethical Approval:

None declared

Contributions

Dissection, design, analysis and interpretation of data were done by Dahrn N. Drafting and critical revision were done by Dahrn N. and Soames R. Supervision by Soames R..

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