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A CONTINUOUS LEFT AZYGOS VENOUS CHANNEL AND AORTIC NIPPLE ENLARGEMENT-A CASE REPORT

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ABSTRACT

The left superior intercostal vein often referred to as an “Aortic Nipple” is commonly visualized along the margin of the aortic knob on posteroanterior chest radiographs. In many cases, the aortic nipple may become enlarged and simulate lymphadenopathy or focal aneurysmal dilatation of the aorta. In the present case, a continuous left longitudinal channel formed by the hemiazygos vein, accessory hemiazygos vein and left superior intercostal vein draining into the left brachiocephalic vein, was found which was associated with the aortic nipple enlargement. There was no transvertebral communication with the azygos vein leading to the drainage of the whole blood from the left side of the body by this channel causing the dilatation of the left superior intercostal vein. On the right side, azygos vein was found normal in its formation and termination. The hemiazygos vein after its formation immediately drained into the common channel formed on the left side. It is important to know these variations in order to interpret CT and MRI scans and also during mediastinal surgery.

Key Words: *Azygos Vein, Accessory Hemiazygos Vein and Hemiazygos Vein*

INTRODUCTION

The left superior intercostal vein is formed by the union of the second to fourth left posterior intercostal veins and drains into accessory hemiazygos vein (Williams *et al.*, 1995). The left superior intercostal vein gives the appearance of an aortic nipple on front chest radiographs in upto 10% of normal subjects (Ball and Proto, 1982). The dilated left superior intercostal vein may not be distinguished from mediastinal tumor, lymphadenopathy or small aneurysm of the aortic arch on the basis of the finding on plain films (Friedman *et al.*, 1978). Azygos veins are important cavo-caval and porto-caval junctions thus forming collateral circulation in caval vein occlusion and in portal hypertension (Arslan *et al.*, 2000). It is important to report and document the different variations of the azygos venous system that may occur as these can easily be confused with the pathological conditions such as aneurysms, tumors and the enlarged lymph nodes (Ozbek *et al.*, 1999). In this report, we described the anatomical appearance of the enlarged left superior intercostal vein and associated variations of the azygos venous system and its embryological cause.

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Out of the 30 cadavers dissected in the Department of Anatomy under this study, single case was found to have such variation. The azygos vein was dissected from its origin, its course in the posterior mediastinum and its termination in the superior vena cava. The left side of the posterior mediastinum was dissected for the left superior intercostal vein, accessory hemiazygos vein and hemiazygos vein. A continuous left channel mirror image of the azygos vein was found draining 2nd to 11th left posterior intercostal veins, formed by left superior intercostal vein, accessory hemiazygos vein and hemiazygos vein. There was no transvertebral anastomosis between the azygos vein and this left sided channel. Superiorly opposite the 3rd left posterior intercostal space, there was a huge dilatation of the left superior

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intercostal vein and after this it drained into the left brachiocephalic vein. The hemiazygos vein formed by the union of the left ascending lumbar vein and left subcostal vein immediately joined the left longitudinal channel. The superior and inferior venae cavae were normal.

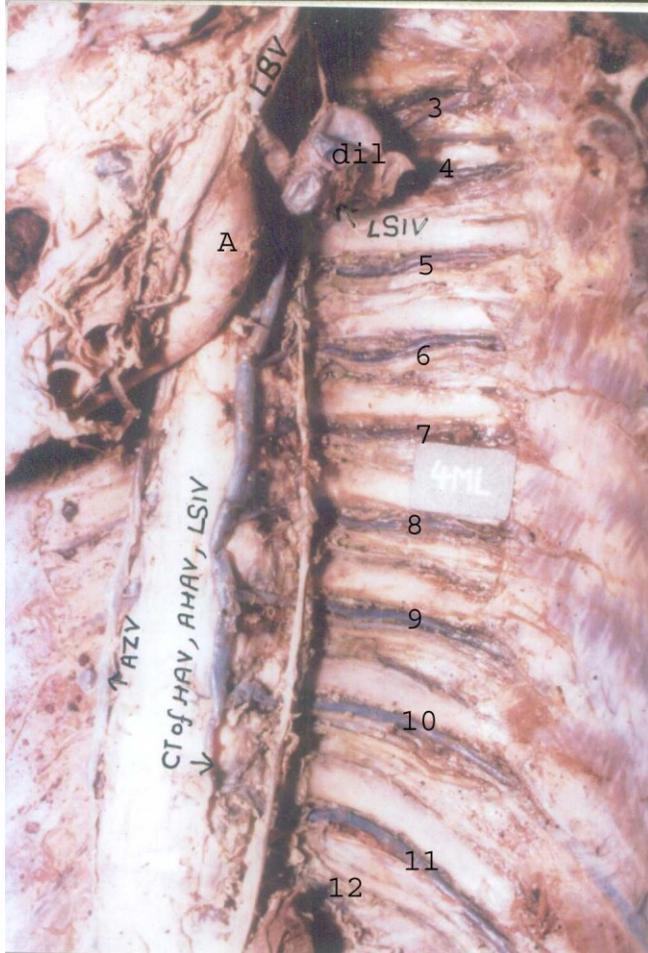


Figure 1: Common trunk on left side with aortic nipple enlargement.

1. LBV-Left Brachiocephalic vein
2. LSIV-Left Superior Intercostal Vein
- 3 AZV-Azygos vein
- 4.-CT of HAV, AHAV, LSIV-Connecting trunk of hemiazygos vein, Accessory hemiazygos and Left superior intercostal vein
- 5.-dil-Dilatation

DISCUSSION

Venous abnormalities often complicate mediastinal surgery with intraoperative haemorrhage. Accidental damage to large vessels may have life-threatening consequences. Prior knowledge possible anatomical variants may help the surgeon reduce the risk of such events. Pre-operative radiographic scanning may also be of benefit. It has also been suggested that large venous vessels in unusual locations following oblique courses may lead to misinterpretation of a computed tomography (CT) image by mimicking aneurysms, tumours or enlarged lymph nodes (Gilkeson *et al.*, 1997) and (Takasugi and Godwin, 1990)

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In the present study, there were no transvertebral connections (Seib, 1934) in his study on 100 American whites and 100 American negroes found an average of 3 transvertebral anastomoses. 79 cases out of 200 having such longitudinal channel were detected by Seib, 1934 in his study. One possible embryologic explanation for this case is as follows; during development, bilateral longitudinal channels form dorsolateral to the aorta and medial to the sympathetic chain. These channels are referred as azygos line vein or medial sympathetic line chain. These are connected by the subcentral vein. In this case, there was persistence of the left azygos line. And there was formation of no subcentral veins (Williams *et al.*, 1995) The dilatation of the left superior intercostal vein opposite the 3rd intercostal space will produce a prominent bulge adjacent to the aortic knob in the frontal view of the radiological examination. Clinically it should be differentiated from the enlarged lymph nodes or focal aneurysmal dilatation (Arslan *et al.*, 2000). It was reported by Hatfield *et al.*, 1987 associated with congenital absence of the azygos vein. Causes of the enlarged aortic nipple are congenital absence of the inferior vena cava and left innominate vein, congestive heart failure, portal hypertension, Budd chiari syndrome and the obstruction of the superior vena cava and inferior vena cava (Lane *et al.*, 1976). In the present case, inferior vena cava and left brachiocephalic vein was found normal. History of medical causes was unavailable in the present cadaver. It can be due to drainage of whole of left side of posterior abdominal wall and posterior thoracic wall to the left brachiocephalic vein through the common channel may or may not be associated with some medical reason leading to the dilatation of the aortic nipple.

Conclusion

The present report identifies the variable position and course of the veins related to the azygos system. It is important to keep in mind that different courses of the azygos system do exist, so that extra caution is required during surgery of the mediastinum and also in appropriately interpreting the radiographs. The aortic nipple enlargement and its correct interpretation in the radiological examination is important both for surgeons and physicians.

REFERENCES

- Arslan G, Cebuk M, Ozkaynak C, Sindel T and Luleci E (2000). Absence of the azygos vein. *Journal of Clinical Imaging*; **24**: 157-8.
- Ball JB and Proto AV (1982). The variable appearance of the left superior intercostal vein. *Radiology* **144**: 445-52.
- Friedman AC, Chambers E, Sprayregen S (1978). The normal and abnormal left superior intercostal vein. *American Journal of Roentgenology* **131**: 599-602
- Gilkeson RC, Goodman PC and McAdams HP (1997). Anomalous azygous-hemiazygous anastomosis: radiographic findings. *American Journal of Roentgenology*. **168**: 285-6.
- Hatfield MK, Vyborny CJ, MacMohon H, Chessare JW (1987). Congenital Absence of the Azygos vein: A Cause for Aortic Nipple Enlargement. *Indian Journal of Roentgenology*; **149**: 273-74.
- Lane EJ, Heitzman ER, Dinn WM (1976). The radiology of the superior intercostal veins. *Radiology* **120**: 263-67
- Özbek A, Dalçik C, Çolak T, Dalçik H (1999). Multiple variations of the azygos venous system. *Surgery Radiology Anatomy* **21**: 83-5.
- Seib GA (1934). The azygos system of veins in American whites and American negroes, including observations on the inferior caval venous system. *American Journal of Physical Anthropology* **19**: 39-163.
- Takasugi JE and Godwin JD (1990). CT appearance of the retroaortic anastomoses of the azygos system. *American Journal of Roentgenology* **154**: 41-4.

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Williams JB et al., (1995). The cardiovascular system, Embryology and development. In: Gray's Anatomy. Vol **326**, 38th Edn (Churchill Livingstone, London) 1593, 1594.