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16-MDCT depiction of accessory hemiazygos vein draining into the left brachiocephalic vein

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Introduction

The venous system may show many variations due to its complex development. Identification and recognition of these venous vessels is important, as they may become dominant vessels if other major veins get obstructed. Contrast enhanced multidetector computed tomography (MDCT) provides fast, noninvasive and comprehensive diagnosis of venous anomalies.[1] We present an uncommon but important venous variant depicted on 16-slice MDCT.

Case Report

A routine contrast-enhanced computerized tomography (CT) scan of the chest and abdomen was performed, on a 35-year-old lady, known to have non-Hodgkin's lymphoma (NHL), to look for residual lymphadenopathy after chemotherapy. On reviewing the axial images, we observed a venous structure on the left side of the posterior mediastinum, which was arching anteriorly over the left lung apex and joining the left brachiocephalic vein. This was the accessory hemiazygos vein draining into the left brachiocephalic vein via the left superior intercostal vein [Figure 1].

On the right, the azygos vein was seen normally arching anteriorly over the root of the right lung and joining the superior vena cava (SVC) [Figure 2]. Both subclavian veins, internal jugular veins, brachiocephalic veins, SVC and inferior vena cava (IVC) were normal. The aorta, major arterial branches and pulmonary artery were normal. No mediastinal lymphadenopathy or collateral vessels were seen in the mediastinum.

Discussion

The accessory hemiazygos vein or superior hemiazygos vein is a left thoracic vein which normally drains predominantly the left posterior thoracic cage.[2] It usually courses on the left side of the thoracic vertebral column and joins the azygos vein at the T7 to T8 level by crossing over posterior to the aorta. Sometimes, it can form a common channel with the hemiazygos vein and then drain into the azygos vein.[2] Its tributaries include third to eighth left posterior intercostal

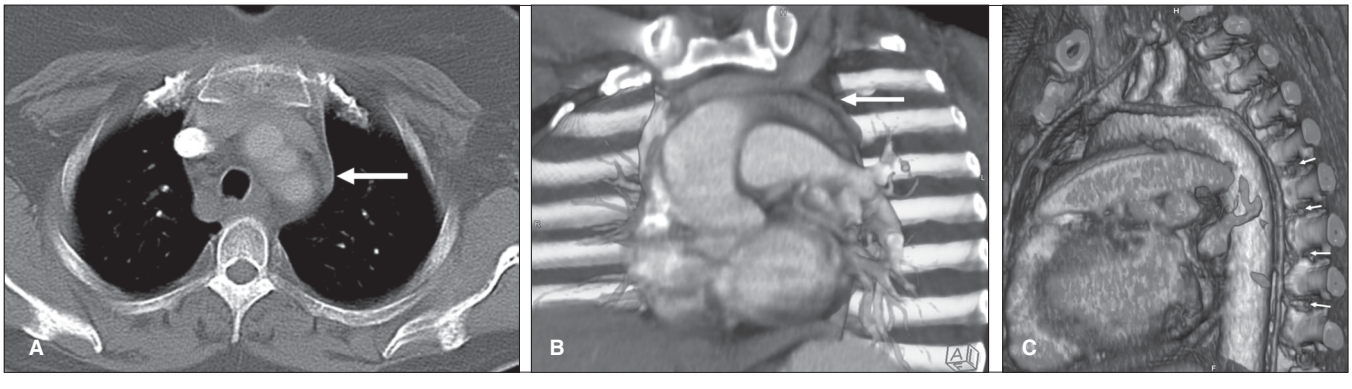

Figure 1: (A-C) Accessory hemiazygos vein. The axial (A) and left anterior oblique volume-rendered CT (B) images show the accessory hemiazygos vein (arrow) draining into the left brachiocephalic vein. The left lateral view (C) depicts multiple intercostal veins (small arrows) joining the accessory hemiazygos vein.

Figure 2: Right anterior oblique volume-rendered CT image shows the azygos vein (arrowhead) fed by multiple intercostal veins and joining the SVC.

veins, mediastinal veins, esophageal veins and sometimes left bronchial veins. The hemiazygos and azygos veins may drain into it.[2] In approximately 75% of cases, a small connection exists between the accessory hemiazygos vein and the left superior intercostal vein but only in 1-2% of cases this communication is large and former drain directly into brachiocephalic vein.

Embryologically, initial venous drainage of the posterior body wall is into the posterior cardinal veins. The drainage is then gradually taken over by the azygos line veins or medial sympathetic line veins on either side. On the left, this leads to the development of the hemiazygos and accessory hemiazygos veins. Initially, the left azygos line vein communicates with the cranial portion of the left posterior cardinal veins, which normally undergo retrogression with persistence of a small portion which develops into the left superior intercostal vein.

Normally, this anomaly is an incidental finding but may become clinically significant in cases of venous obstruction, where it forms a vital collateral pathway.[3,4] Before the advent of CT and MRI, venography (conventional or digital subtraction) was required to delineate the venous pathways. With advancements in imaging modalities, noninvasive depiction is now easily possible. MDCT imaging with post-processing of acquired data has made possible depiction of normal veins, various venous anomalies and normal variants.

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