

## Finding of Large Accessory Hemiazygos Vein Draining into the Left Brachiocephalic Vein in a Neonate

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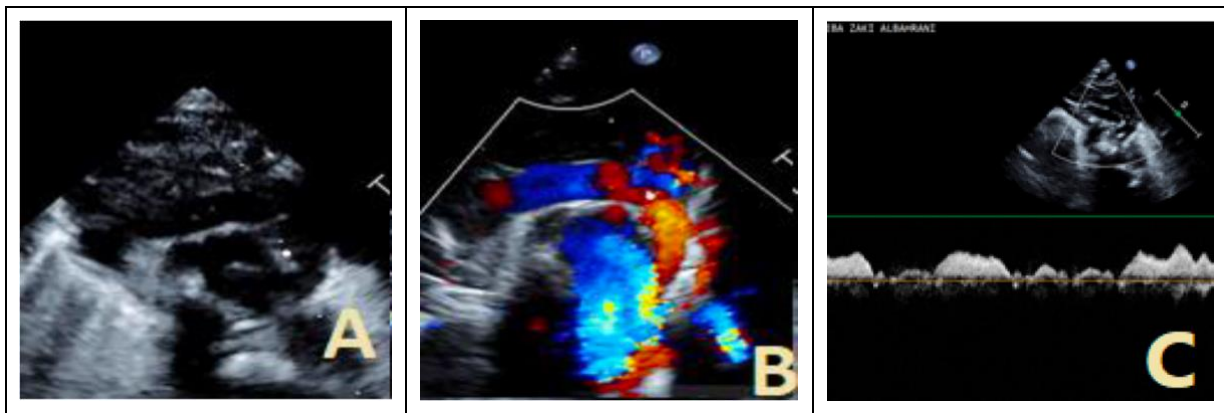
**Keywords:** Accessory hemiazygos vein; Left brachiocephalic veins

### Introduction

Systemic venous drainage may show many variations due to its complex development. Identification and recognition of these venous vessels is important, as may misinterpret as abnormal in neonate or pediatric patients. Contrast enhanced computed tomography provides fast, noninvasive, and comprehensive diagnosis of venous anomalies. We present an uncommon but important venous variant depicted in neonate which found accidentally while screening with echocardiography for cardiac murmur.

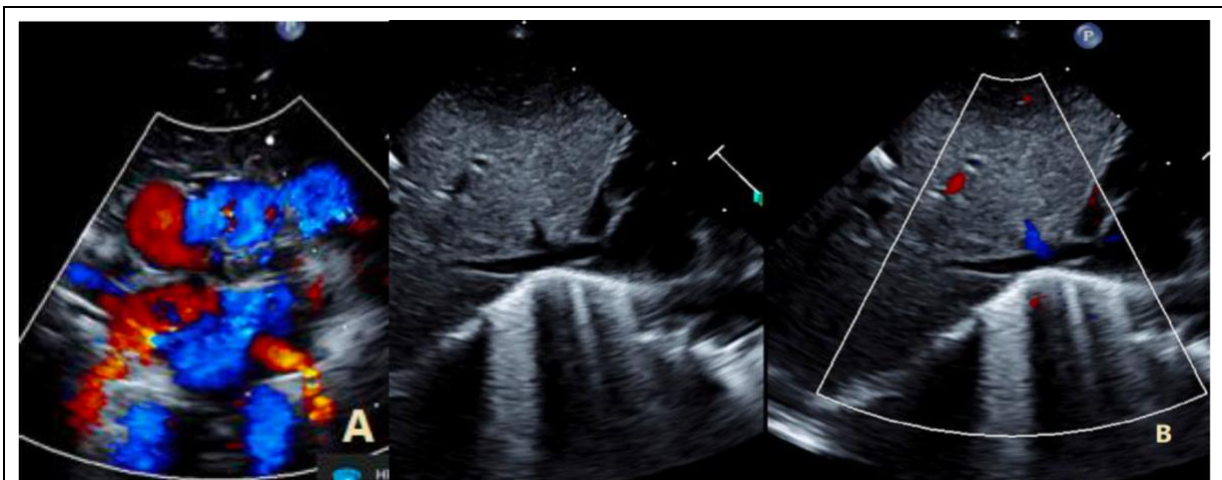
### Case Report

A cardiac murmur was found in examination for a 4 weeks old baby girl (Preterm 31 weeker), a member of twin. The patient was clinically stable with normal saturation and maintained normal blood pressure with normal perfusion. On reviewing echocardiography an abnormal venous flow was seen draining to left innominate vein with no obstruction (Figure 1).

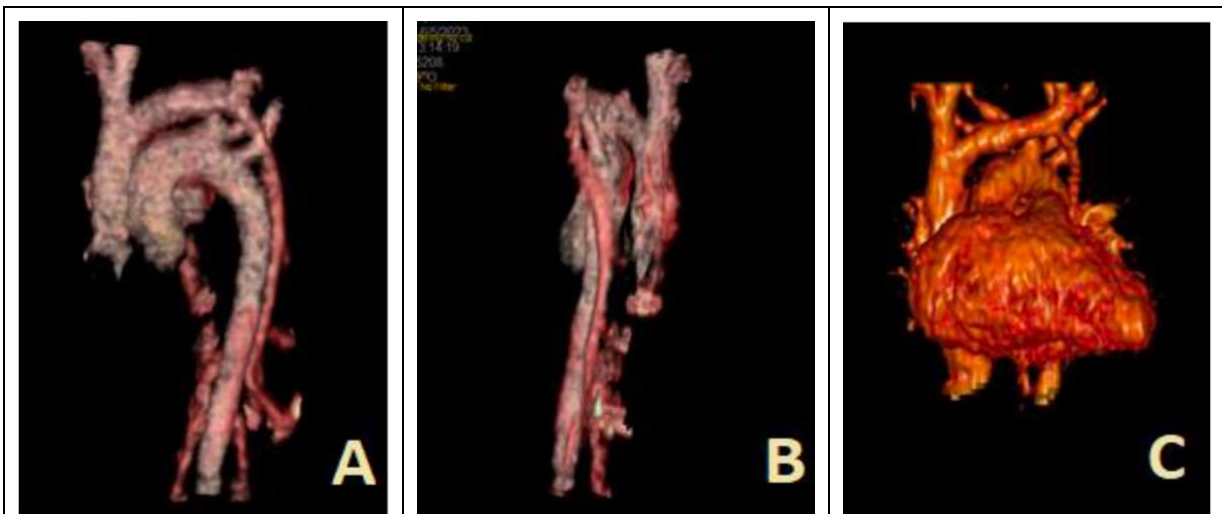


**Figure 1(A):** Two dimensional suprasternal short axis view showing the abnormal dilated vein as it joint left brachiocephalic vein with laminal flow. **(B):** And with color Doppler **(C):** Dopplering this venous structure suggestive of systemic venous flow.

Subsequent loops showed that all pulmonary veins seen draining normally to left atrium (Figure 2), so the initial suspicion was of persistent Levoatrial cardinal vein Vs systemic vein abnormalities. So further imaging was requested (cardiac CT angiography). It showed there is a large prominent vessel lying laterally to the aortic arch and connecting the accessory hemiazygos vein to the left brachiocephalic vein representing left superior intercostal vein (Figure 3). The other thoracic vessels and cardiac chambers are within normal limits.



**Figure 2:** All pulmonary veins were seen draining normally to Left atrium. Inferior vena Cava, (IVC) seen joining right atrium with no interruption.

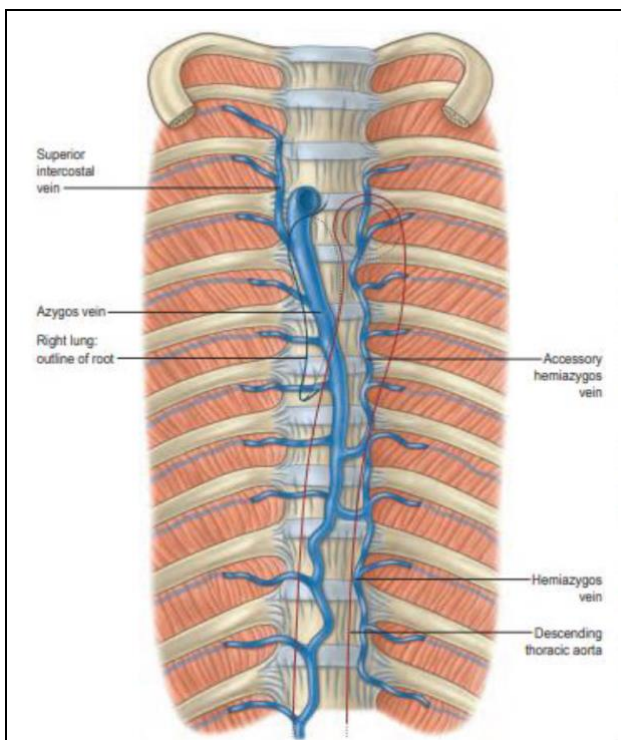


**Figure 3:** The 3 Dimensional CT showing the very prominent accessory Hemiazygos vein draining through superior intercostal vein. **(A):** Left Sagittal view, **(B):** Posterior view and anterior posterior view on **(C):** CT Computerized topography.

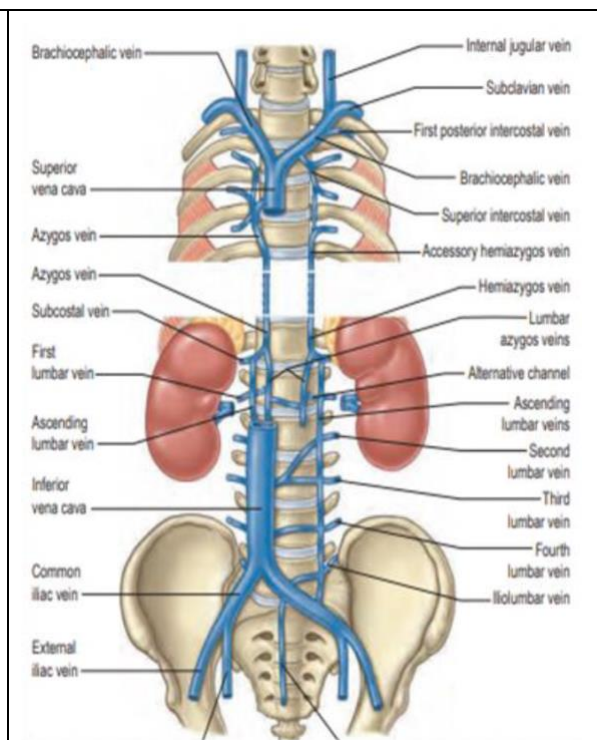
## Discussion

The accessory hemiazygos vein functions as the left-sided mirror image of the superior portion of the azygos vein. It drains the fifth to eighth posterior intercostal veins and occasionally the left bronchial veins, and usually terminates in the azygos vein after crossing the seventh thoracic vertebra (Figure 4). The first posterior intercostal vein drains directly into the left brachiocephalic vein, while the second to the fourth drain indirectly to the accessory hemiazygos vein via the left superior intercostal vein [1]. The origin, course, tributaries, anastomoses, and termination of the azygos system of veins are all highly variable. The arrangement shown in (Figure 5) represents the most common pattern with a right sided azygos vein. The left channel may be absent or underdeveloped, allowing direct drainage of the left intercostal veins into the azygos and/or the termination of the accessory hemiazygos into the left brachiocephalic vein. In such cases, the azygos vein is in median position.

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 [2].



**Figure 4:** A common course followed by the intrathoracic azygos, hemiazygos and accessory azygos veins.



**Figure 5:** Showed the most common topography of the azygos venous system.

## Conclusions

This report illustrates the importance of multimodality imaging in reaching a diagnosis and excluding venous abnormalities that might need intervention.

## Videos Highlights

**Video 1 and 2:** TTE suprasternal short axis view showing the prominent accessory hemizygus vein.

**Video 3:** CT coronal view showing this prominent accessory hemi-azygous vein.

**Note:** Videos related to this article can be found online at: <https://www.cardiologycasereportsjournal.org/archive/Finding-of-Large-Accessory-Hemiazygos-Vein-Draining-into-the-Left-Brachiocephalic-Vein-in-a-Neonate.html>

## REFERENCES

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