Where is the central line?

S Venkatram, S Arias

Citation

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Abstract

Persistent left superior vena cava is an uncommon anatomical variation. It is usually hidden until procedures requiring left side approach to the central circulation are necessary. Although is the most common thoracic venous vascular anatomical variation limited medical personnel in training are aware of it. We report a case of left superior vena cava after left internal jugular catheterization.

CASE PRESENTATION

A 36-year-old male was admitted to the intensive care unit due to altered mental status, sepsis, acute renal failure. The internal jugular vein was canalized after unsuccessfully left subclavian approach. A chest x-ray shows the passage of the catheter following a left paramediastinal course without crossing the midline. The thoracic computed tomography (CT) scan showed catheter following the classic trajectory of a persistent left superior vena cava (PLSVC). Figure 1. All three ports of the line were normally functioning and the blood gas analysis was suggestive of venous blood sampling.

Figure 1

Figure 1: Anteroposterior chest radiograph and chest computed tomography shows left paramediastinal catheter (Arrow at the level of the catheter tip.)

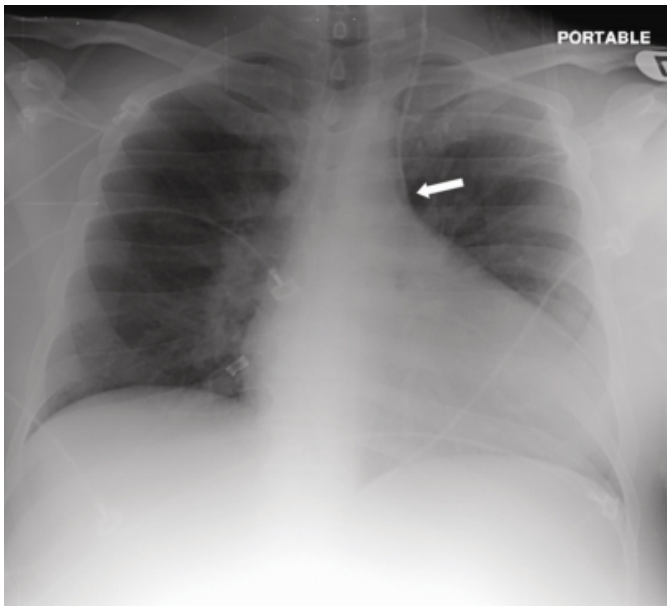
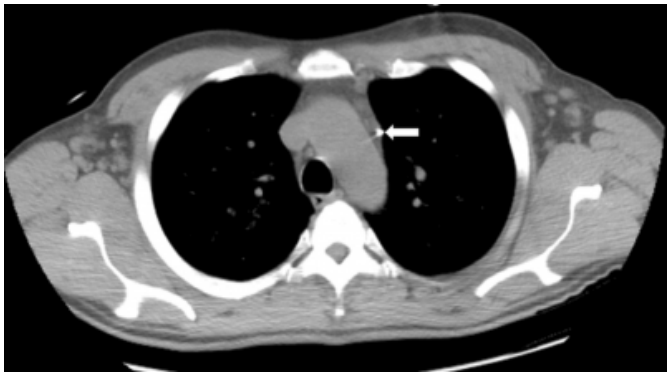


Figure 2



DISCUSSION

Persistence of LSVC has been reported to occur in approximately 0.3% of the general population [1] and is higher ranging from 2.8 to 4.3%.[2] in patients with congenital cardiac abnormalities. A left-sided superior vena cava is caused by the failure of regression of the left anterior, common cardinal veins and left sinus horn during embryogenesis. After the left-sided cardinal system disappears leaves the coronary sinus and the ligament of Marshall.

The usual anatomical course starts at junction of left subclavian vein and left internal jugular passes lateral to aortic arch receives the left superior intercostal vein passes in front of the root of the left lung and, turning to the back of the heart draining ninety-two percent of the time into the right atrium via the coronary sinus. Smaller percentages of PLSVC drain into the left atria and cause a right-to-left shunt that may present with clinical manifestations.

Besides being associated with congenital disorders, its most relevant clinical implication is the association with

disturbances of cardiac impulse formation and conduction. [3]

PLSVC can cause difficult left-sided central line insertion of pulmonary artery catheters or pacing wire attributable to orientation.[4] Aberrant visualization of a central line on a simple PA chest roentogram would raise the concern of possible intra arterial or extravascular insertion. Multiple maneuvers can be use to quickly determine the possible location of the line, transthoracic echocardiography with microbblue test, chest roentogram with contrast injection, pressure determination with transducers, blood gas analysis, enhance contrast CT, MRI or fluoroscopy. Election of the most appropriate tests is based on the clinical scenario. In conclusion physicians should be aware of this anatomical abnormality and be able to confirm it using the most appropriate paraclinical tool.

References

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Author Information

Sindhaghatta K. Venkatram, M.D.
Assistant Professor of Clinical Medicine, Director, MICU, Weill Cornell College of Medicine (Lincoln Medical and Mental Health Center)

Sixto A. Arias, M.D.
Resident, Internal Medicine, Lincoln Medical and Mental Health Center