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**Answer: Persistent Left Superior Vena Cava (PLSVC)**

PLSVC is a thoracic venous anomaly and the incidence is approximately 0.3%-0.5%.<sup>1</sup> It can be associated with congenital heart disease (up to 12%). It is postulated that the patient with PLSVC will have a higher risk of developing cardiac arrhythmia than the normal individual.<sup>1</sup> Most cases are categorized as incidental findings without symptoms.

The aetiology of PLSVC is due to a failure of development of the connection between the left and right superior cardinal veins (SCV) which will form the future innominate vein. As a result, the left SCV failed to regress and persist.<sup>2</sup>

PLSVC can occur in isolation or coexist with the right SVC; up to 90%.<sup>1</sup> PLSVC can either drain into the right atrium, which occurs in approximately 80% to 92% of cases; or the left atrium, which occurs in approximately 10% to 20% of cases.<sup>2</sup>

Large left sided single venous collateral vessel may mimic PLSVC. This large collateral is seen in the patient with thrombosed left brachiocephalic vein especially in patients with functioning upper extremity left dialysis fistula. It is postulated that this large collateral is formed due to higher venous return in the presence of dialysis fistula. It is extreme-

ly difficult to differentiate congenital PLSVC from large left central vein collateral in dialysis fistula cases. A conventional digital subtraction central venography usually provides information regarding the anatomical position and also the dynamic flow of the vessel of interest. Congenital PLSVC has a smooth border, less irregular and the contrast is seen flowing smoothly to the heart. Collaterals are usually tortuous, irregular and usually communicate with the azygous, hemi-azygous or intercostal veins.

Fatal complications could potentially occur if the PLSVC is draining into the left atrium due to theoretical increase risks of developing systemic embolic shower iatrogenically. Cardiogenic shock, cardiac tamponade and cardiac arrhythmia are also known complications.<sup>2</sup> Cardiac device insertions such as pacemaker or defibrillator implantation are potentially hazardous.<sup>3</sup> Reports suggested that patients with PLSVC have 4.8 times higher risk of developing supraventricular tachycardia (SVT) during catheter placement as compared to the right-sided superior vena cava patient.<sup>4, 5, 6, 7</sup> Even a minor simple procedure such as peripheral insertion of central catheter (PICC) in PLSVC can result in complications such as cerebrovascular ischemic event and deep vein thrombosis of the lower limb.<sup>4</sup> Thus, it is mandatory to insert any central venous catheter/device under image guidance with support from interventional radiologist.<sup>3</sup>

**REFERENCES**

- 1: Povoski SP, Khabiri H. Persistent left superior vena cava: Review of the literature, clinical implications, and relevance of alterations in thoracic central venous anatomy as pertaining to the general principles of central venous access device placement and venography in cancer patients. *World Journal of Surgical Oncology.* 2011; 9:173.
  - 2: Goyal SK, Punnam SR, Verma G, Ruberg FL. Persistent left superior vena cava: a case report and review of literature. *Cardiovasc Ultrasound.* 2008; 6:50.
  - 3: Yousaf M, Malak SF. Left Atrial Drainage of a Persistent Left Superior Vena Cava. *Radiology Case Reports.* 2008;3 (4):225.
  - 4: Akshiv M, Boppana VS, Carlos MB, Anna O. Persistent Left Superior Vena Cava Leading to Stroke, Persistent Left Superior Vena Cava Leading to Stroke. *CHEST,* 2012;142(4): 1007A.
  - 5: Fraser RS, Dvorkin J, Rossall RE, Eidem R. Left superior vena cava: a review of associated congenital heart lesions, catheterization data and roentgenologic findings. *Am J Med.* 1961; 31:711-716.
  - 6: Rose M, Gross L, Protos A. Transvenous pacemaker implantation by way of an anomalous left superior vena cava. *J Thorac Cardiovasc Surg.* 197; 62:965-966.
  - 7: Cooper CJ, Gerges AS, Anekwe E, Hernandez GT. Double superior vena cava on fistulogram: A case report and discussion. *The American Journal of Case Reports.* 2013; 14:395-397.
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