Abbreviations: SVC, superior vena cava; LSVC, left superior vena cava

Introduction

Although an infrequent variation, the LSVC constitutes the most common congenital anomaly of the thoracic venous system.\(^1\) It is usually found incidentally during diagnostic procedures such as echocardiography, computed tomography or magnetic resonance,\(^2\) or it may be seen during left subclavian and jugular vascular access.\(^3\) The reported prevalence is of 0.5% in the general population, and up to 10% of them have associated congenital heart disease.\(^2\) We report a radiologic finding of a LSVC.

Case report

A 55-year-old female patient with a right lateral neck mass was studied by a contrast-enhanced tomographic scan of both neck and thorax. Regardless of the mass that turned out to be an inflammatory lymph node, the patient was asymptomatic. Analyzing the veins of the region, it was noticed that the junction of both right and left innominate veins was in the upper mediastinum to the left side (Figure 1). At this point a vertical venous trunk originated and run vertically downwards in direction to the heart anterior to the aortic arch (Figure 2) (Figure 3), reaching the coronary sinus where it ended. The superior vena cava on the right side was absent. Although a rare variation, the presence and the anatomical features of the left superior vena cava should not be omitted due to its implications in both percutaneous and surgical approaches to the veins of the neck and thorax.

Discussion

During the embryological stage, the right and left anterior cardinal veins drain into the sinus venosus. The latter is eventually absorbed into the structure of the right atrium, with the bridging connection between the anterior cardinal veins forming the left innominate vein.\(^2\) The right cardinal vein forms the SVC, whereas the left cardinal vein typically obliterates. If occlusion of the left cardinal vein fails to occur, then the vessel persists as the LSVC.\(^4\) As mentioned in the case presented here, typically LSVC descends vertically, anterior, and to the left of the aortic arch (Figure 2) (Figure 3). It runs adjacent to the left atrium before turning medially to reach the posterior atrio-ventricular groove.\(^5\) In about 90% of the cases the LSVC drains into the coronary sinus as here reported, alternative sites include the inferior vena cava, hepatic vein and the left atrium.\(^2\) In the majority of individuals with
LSVC, a right SVC is present, although this may be smaller than usual and the innominate vein is typically absent or small. As before stated, in this case a right SVC was absent. The presence of the LSVC may impact procedures which require upper limb or neck venous access. Complications have been reported during transvenous pacing for bradycardia and advanced device implantation. Central venous cannulation may result in unusual catheter position and inadvertent coronary sinus cannulation may result in cardiac perforation. Cannulation of the heart for cardiopulmonary bypass may result in ineffective retrograde cardioplegia.

**Conclusion**

As a product of an infrequent embryologic variation, the anatomy of the LSVC should not be omitted in order to make a proper diagnosis on radiologic studies as well as avoiding complications in procedures that require central venous access.

**Acknowledgements**

None.

**Conflict of interest**

Author declares that there is no conflict of interest.

**References**