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CASE REPORT

Syncope and Persistence of a Left Superior Vena Cava: Detailed Report on a Clinical Case

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ABSTRACT

BACKGROUND

Persistent left superior vena cava (pVSC) is a rare malformation characterised by lack of involution of the vein.

OBJECTIVE

We report a case of syncope revealing a persistent left superior vena cava.

CLINICAL OBSERVATION

A 27-year-old female patient with no cardiovascular risk was admitted for syncope with dyspnoea. The clinical evaluation noted good haemodynamics, an arrhythmia with a murmur of aortic and tricuspid insufficiency. The electrocardiogram showed atrial fibrillation (AF), while the X-ray showed significant cardiomegaly. On echocardiography, there was systolo-diastolic flow with patent ductus arteriosus (PCA), dilatation of the right cavities and two superior left and right vena cava draining into the left and right atria respectively, as confirmed on CT scan. Biological tests were normal. The diagnosis of PCA with persistent SVCG complicated by AF and syncope was accepted. Curative anticoagulation with enoxparin and amiodarone was instituted. The course was satisfactory, with improvement in dyspnoea and control of the cardiac rhythm.

CONCLUSION

Persistence of the left superior vena cava, although very often discovered by chance, can be revealed by serious symptoms, in particular syncope. These forms require early and appropriate management to avoid a fatal outcome.

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KEYWORDS

Superior vena cava; Left; Syncope; Burkina Faso

BACKGROUND

Persistent left superior vena cava (LSVC) is a congenital malformation in which the left superior vena cava persists instead of being reabsorbed during embryonic development [1]. This generally asymptomatic anomaly, which is often discovered accidentally, can also lead to a variety of clinical symptoms, ranging from minor signs to more severe manifestations, such as syncope [2,3]. Persistent LSVC is often associated with other cardiac and vascular anomalies such as septal defects, tetralogy of Fallot, patent ductus arteriosus or coarctation of the aorta, making the clinical diagnosis complex [4]. The pathophysiological mechanisms underlying syncope in these cases are mainly related to compression of the left superior vena cava, which disrupts venous return to the heart, leading to cerebral hypoperfusion [5]. Despite the rarity of this condition, management must be rapid and appropriate to prevent serious complications [5]. In this report, we detail the clinical case of a patient with a persistent left superior vena cava. We will examine the diagnostic aspects, therapeutic strategies, and implications of this anomaly, highlighting the challenges encountered in the management of this rare condition.

CASE REPRESENTATION

This is a 27-year-old mechanic with no known cardiovascular risk factors. He was admitted for syncope of sudden onset with no prodromal or accompanying signs. The patient had been suffering from permanent palpitations and dyspnoea on exertion for several months. On physical examination, consciousness was clear, blood pressure 124/74 mmHg, tachycardia 133 beats per minute and xiphoid tingling. Auscultation revealed irregular heart sounds, with a tricuspid insufficiency murmur of intensity 4/6 and an aortic insufficiency murmur of intensity 3/6. Examination of the other equipment was normal. The electrocardiogram showed fat-mesh atrial fibrillation with a ventricular response of 140 cycles per minute (Figure 1). The chest X-ray showed cardiomegaly (cardiothoracic index =0.75), a right inferior arch protrusion (dilatation of the right atrium), and a convex middle arch with an outward point (Figure 2). On Doppler echocardiography, there was significant dilatation of the right cavities, persistence of the ductus arteriosus, pulmonary hypertension (PAPS=56mHg) and a major dilation of the coronary sinus in favour of a left superior vena cava (Figure 3). The thoracic angioscan also showed dilation of the right cavities and confirmed the presence of two superior vena cava, one on the right draining into the right atrium and the other on the left draining into the coronary sinus (Figure 4). The biology work-up was normal apart from moderate anaemia ç 11 g/Dl. The diagnosis of PCA and persistent LSVC complicated by AF was accepted. The patient was treated with curative enoxaparin followed by rivaroxaban and amiodarone. The outcome was favourable, with a reduction in heart rate and improvement in dyspnoea and palpitations.

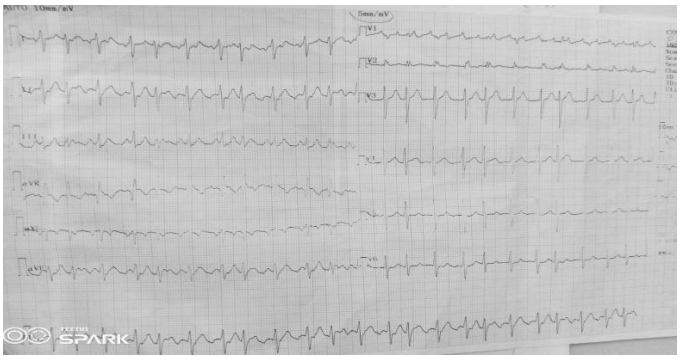

Figure 1: 12-lead surface electrocardiogram showing a complete arrhythmia due to atrial fibrillation with a ventricular response of 140 cycles per minute.

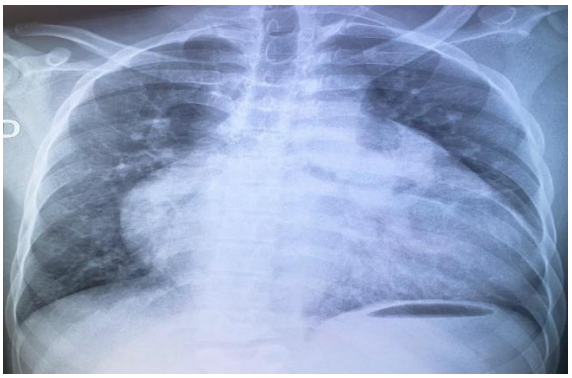

Figure 2: Front thoracic radiograph showing an enlarged cardiac silhouette with a cardiothoracic index of 0.75 (with a right inferior arch overhang, a convex left middle arch, a supra-diaphragmatic peak and bilateral interstitial syndrome.

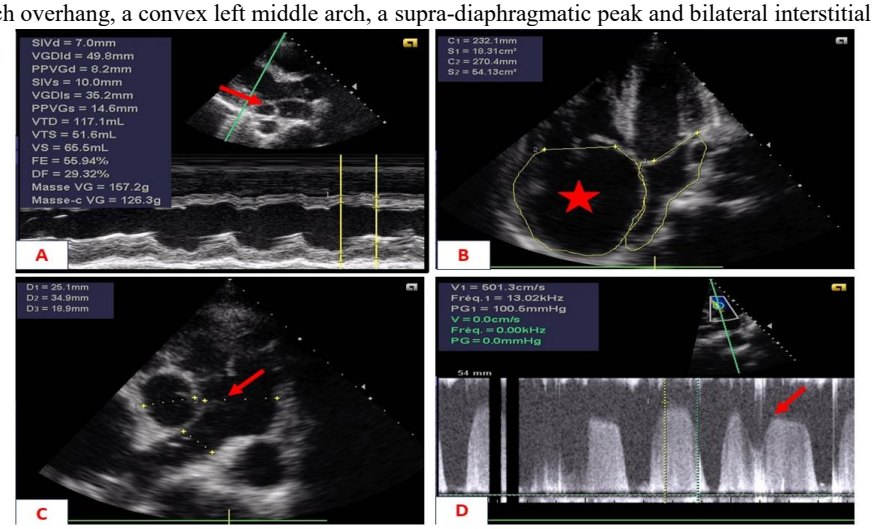

Figure 3: Transthoracic Doppler echocardiogram showing. **A:** long axis para-sternal section, TM dilation of the coronary sinus (red arrow) **B:** apical 4 cavity section, significant dilation of the right atrium (red arrow). **C:** short axis, significant dilation of the pulmonary artery measured at 35 mm (red arrow). **D:** short axis, persistence of a ductus arteriosus characterised by positive high-velocity systolo-diastolic flow.

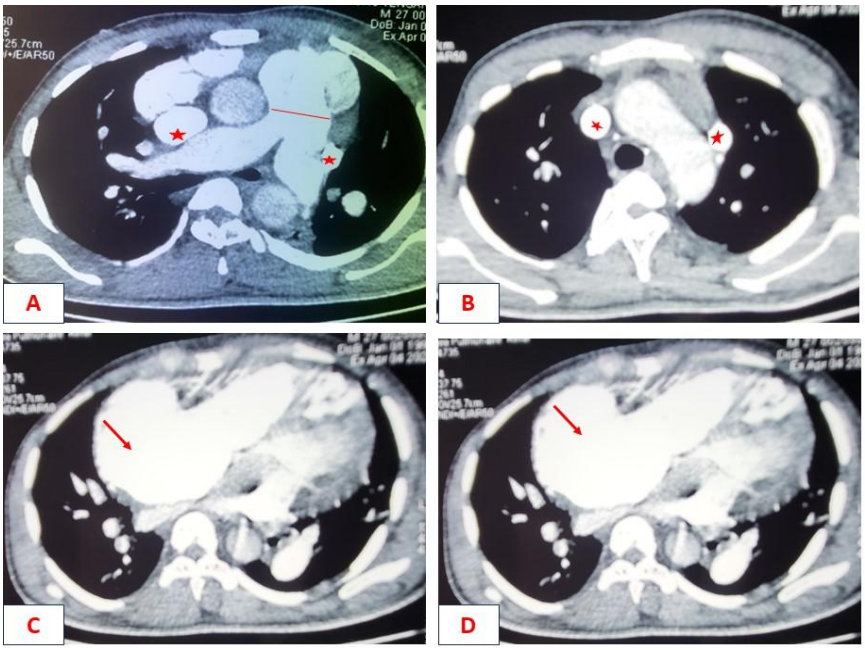

Figure 4: Thoracic angioscan showing. **A:** dilatation of the trunk of the pulmonary artery measured at 39 mm (red line), **C and D:** dilatation of the right heart chambers (red arrow), **A and B:** persistence of two superior vena cava draining on the right into the right atrium and on the left into the left atrium (red star).

DISCUSSION

The persistence of the left superior vena cava is a rare congenital anomaly, observed in approximately 0.3% to 0.5% of the normal population and 10% of subjects with congenital heart disease [2]. Although the majority of

patients are asymptomatic, in some cases persistent LSVC may be responsible for severe symptoms, including syncope, mainly related to disturbed venous return [6]. Persistent LSVC can lead to compression of the coronary sinus and right superior vena cava, reducing venous return to the heart. This impaired blood flow to the right atrium and right ventricle can lead to cerebral hypoperfusion, which is responsible for the transient loss of consciousness observed during syncope [3].

The clinical symptoms of persistent LSVC vary according to the severity of compression and the presence of other associated malformations. However, in asymptomatic forms, persistent LSVC is often discovered incidentally during routine examinations [7]. Other symptoms may include signs of venous congestion or cardiac symptoms such as dyspnoea, chest pain or palpitations associated with rhythm disturbances, malaise or even syncope [3].

Diagnosis of persistent LSVC is based on imaging. Transthoracic or transoesophageal echocardiography allows direct visualisation of the left superior vena cava and assessment of its impact on blood flow [8]. It can be combined with cardiac MRI, which offers better resolution of vascular structures and can confirm the persistence of LSVC [9]. In addition, a chest CT scan may be useful to assess the topography and anatomical relationships of LSVC to other vascular and cardiac structures [10]. These techniques are essential to assess the extent of the malformation and its impact on the circulatory system.

Treatment of persistent LSVC is often conservative in asymptomatic cases. However, in cases where syncope or other cardiovascular complications occur, more active treatment may be required. Treatment options include endovascular ablation or ligation of the persistent LSVC in some severe cases, particularly if the compression causes significant symptoms [11]. In other cases, medical treatment may be considered. This treatment aims to alleviate the clinical symptoms and includes heart failure drugs and anti-arrhythmic drugs, particularly amiodarone. In the case of severe conductive disorders, pacemaker implantation is the treatment of choice [12]. Surgical intervention is often reserved for patients with serious complications or who are refractory to medical treatment [13].

The prognosis for persistent LSVC is generally favourable, especially in asymptomatic forms [14]. However, symptomatic cases, particularly those with frequent syncope, may require more intensive management. The prognosis of patients who undergo surgery depends on the nature of the malformation and the response to treatment [14]. Surgery can improve patients' quality of life by reducing the frequency of syncope and associated symptoms.

CONCLUSION

Persistent left superior vena cava is a rare but clinically significant malformation. Although often asymptomatic, it can cause severe symptoms, such as syncope, due to disruption of venous return. Diagnosis is based primarily on echocardiographic and CT imaging, while treatment ranges from monitoring to surgical intervention in severe forms. Early and appropriate treatment generally results in a favourable prognosis, with targeted interventions depending on the severity of symptoms and complications.

METHODS

Criterion is not applicable for this manuscript.

CONSENT FOR PUBLICATION

No applicable.

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REFERENCES

1. Hana D, Wahba D, Schwartzman D, et al. (2023) Persistent left superior vena cava draining directly into the left atrium with occluded coronary sinus. JACC: Case Rep 8: 101731.
2. Batouty NM, Sobh DM, Gadelhak B, et al. (2020) Left superior vena cava cross-sectional imaging overview. Radiol Med (Torino) 125(3): 237-246.
3. Moorthy N, Kapoor A, Kumar S (2013) Isolated persistent left-sided superior vena cava giant coronary sinus atrial tachycardia and heart failure in a child. Indian Heart Journal 65(5): 603-606.
4. Dave V, Sesham K, Mehra S, et al. (2022) Persistent left superior vena cava: An anatomical variation. Medical journal, Armed Forces India 78(Suppl 1): S227-S281.
5. Russell JBW, Koroma TR, Conteh V, et al. (2022) Persistent left superior vena cava in a 29-year-old lady with Ebstein's anomaly and complete heart block a case report and literature review. Annals of Medicine and Surgery 78: 103884.
6. Ejima K, Shoda M, Hagiwara N (2009) Placement of an ICD lead through a small innominate vein identified by a selective retrograde venogram in a case with a persistent left superior vena cava. EP Europace EHJ Arrhythmias and Electrophysiology 11(4): 399.
7. Savu C, Petreanu C, Melinte A, et al. (2020) Persistent left superior vena cava - Accidental finding. *In Vivo* Athens Greece 34(2): 935-941.
8. Horvath SA, Suraci N, D'Mello J, et al. (2019) Persistent left superior vena cava identified by transesophageal echocardiography. Reviews in Cardiovascular Medicine 20(2): 99-100.
9. Dong SZ, Zhu M (2017) Magnetic resonance imaging of fetal persistent left superior vena cava. Scientific Reports 7(1): 4176.
10. Lopes V, Almeida PC (2022) Diagnostic incident de la veine cave supérieure gauche persistante isolée. BMJ Case Reports 15(7): e251371.
11. Peregud-Pogorzelska M, Zielska M, Zakrzewski M, et al. (2018) Cryoablation of pulmonary veins for the treatment of paroxysmal atrial fibrillation coexisting with isolated persistent left superior vena cava. Kardiologia Polska 76(11): 1572.
12. Bizhanov K, Baimbetov A, Sarsenbayeva A, et al. (2023) Persistent left superior vena cava in a patient with an implanted dual-chamber pacing system in atrial fibrillation with tachycardia-bradycardia syndrome. Bratislava Medical Journal 124(2):121-127.
13. Zhong YL, Long XM, Jiang LY, et al. (2015) Surgical treatment of dextroversion isolated persistent left superior vena cava draining into the left atrium. Journal of Cardiac Surgery 30(10): 767-770.
14. Akhtar Z, Sohal M, Starck CT, et al. (2022) Persistent left superior vena cava transvenous lead extraction a European experience. Journal of Cardiovascular Electrophysiology 33(1): 102-108.