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STUDIUM PRZYPADKU / *CLINICAL VIGNETTE*

Single persistent left superior vena cava compressed by an aortic graft on the route for lead insertion — difficulties in attempted pacemaker implantation

Ucisk protezy łuku aorty na pojedynczą lewostronną żyłę główną górną — utrudnienie w przeprowadzeniu elektrody podczas implantacji stymulatora serca

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We present a case of a 63-year-old male with a history of surgically repaired aortic coarctation by means of biological aortic valve prosthesis (Epic 25 mm, SJM) (2014) placement and vascular stent graft implantation in the segment between the aortic arch inferior to the subclavian artery and the descending aorta (Fig. 1A). A computed tomography (CT) scan of the chest conducted at the time revealed also the presence of persistent left superior vena cava (PLSVC) and absence of right SVC (RSVC). After a six-month outpatient follow-up, the patient developed atrial fibrillation with a complete atrioventricular block, which prompted cardiac implantable electronic device (CIED) implantation (2015). A follow-up CT scan of the chest showed the PLSVC compressed by the aortic arch prosthesis, with the remaining lumen reduced to < 4 mm (Fig. 1B). Intra-procedure contrast venography demonstrated occlusion of the right innominate vein (IV) with a developed compensatory collateral venous network draining the upper right side of the chest (Fig. 1C) as well as significant segmental stenosis of PLSVC (Fig. 1D). The occluded right IV bridge eliminated this route of cardiac lead insertion into the left SVC (LSVC). Moreover, the extent of LSVC lumen compression impeded cardiac lead passage and satisfactory ventricular placement. The lead was introduced into the right ventricle with an alpha-shaped guidewire, and its final position in the anterior-posterior projection is shown in the Figure 1E. Persistent left superior vena cava occurs in approximately 0.3–0.5% of the population, usually coexisting with congenital heart diseases (3–10%). Impaired prenatal development is reflected in three main forms: double SVCs, differentiated by the presence or absence of IV connecting them, and the rarely observed form of a single PLSVC associated with RSVC malformations. In 10–20% of PLSVC cases the development of the right cardinal vein is disrupted, leading to RSVC defects. This rare congenital systemic vein anomaly in the form of single PLSVC can significantly impede CIED placement. The challenge increases considerably in patients with additional spatial and morphometric alterations in major vessels due to previous cardiothoracic surgery. Patients who have indications for CIED require a morpho-anatomical assessment of the possible venous routes for cardiac lead insertion.

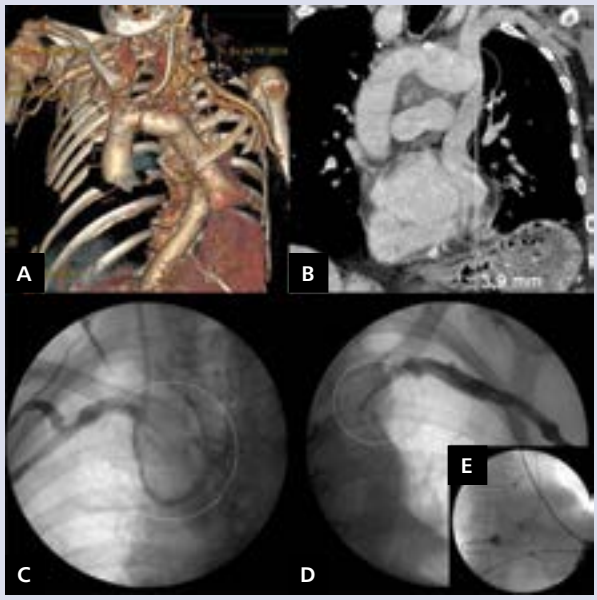

Figure 1. **A**. The position of the implanted aortic prosthesis in the chest; **B**. Persistent left superior vena cava (PLSVC) compressed by the aortic graft (white circle) on the route for lead insertion; **C**. Partially occluded right innominate vein with contrast-enhanced venous drainage from the subclavian vein into the azygos vein (white circle); **D**. Contrast-enhanced PLSVC stenosis on the route used for lead insertion (white circle); **E**. Final ventricular lead placement forming the characteristic "alpha" (α) shape

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