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STUDIUM PRZYPADKU / *CLINICAL VIGNETTE*

A hybrid treatment of Kommerell diverticulum saccular aneurysm in a patient with subclavian steal syndrome

Leczenie hybrydowe tętniaka uchyłka Kommerella u chorego z zespołem podkradania tętnicy podobojczykowej

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A 64-year-old male with a sudden onset of vertigo, dizziness, nausea, and reversal blood flow in the left vertebral artery (LVA) was diagnosed in a computed tomography (CT) examination with a right aortic arch (RAA), with both subclavian and both common carotid arteries (CCA) branching out independently from the aortic arch, 50 mm aortic dilatation in the place of the left subclavian artery (LSA) origin, and 4 mm-long 70% LSA stenosis without underlying atherosclerotic lesions. RAA is a rare anatomical phenomenon observed in 0.1% of the population, and the variant with aberrant LSA (RAA-aLSA or the N-type) is the most common, not connected with other abnormalities, with four vessels branching independently from the arch (Fig. 1). Kommerell diverticulum, a dilated part of the aortic arch from which aberrant LSA originates, forms a saccular aneurysm, which carries a significant risk of rupture and aortic dissection. Diameters of ruptured Kommerell diverticulum aneurysms reported in the literature range from 20 mm to 60 mm and from 25 mm to 70 mm in aortic dissection, and there is no consensus about when the surgical treatment should be introduced. Some authors suggest surgical treatment when the diameter from the diverticulum wall adjacent to the trachea to the opposite wall of aorta exceeds 50 mm or the diameter of the aberrant subclavian orifice exceeds 30 mm. For this reason, the thoracic endovascular aortic repair with TAG Gore aortic stent-graft implantation to the aortic arch, with the proximal landing zone located distally to the right subclavian artery (RSA) ostium, and simultaneous left subclavian-carotid transposition, were successfully executed. Due to the type I A endoleak the Valiant stent-graft was implanted as the proximal extension. Because of the symptoms of the right upper limb ischaemia that had developed after the previous procedure the CT scan was performed revealing proximal critical stenosis of the RSA with its ostium partially covered by the Valiant stent-graft proximal extension. RSA percutaneous transluminal angioplasty (PTA) with a following PROTEGE 8 × 40-mm self-expanding stent implantation was performed from the axillar artery approach. Two months later RSA re-PTA was performed because of PROTEGE stent stenosis. A self-expanding 8 × 40 mm Wallstent stent was successfully implanted. During the follow-up period — four years from the last operation — regular CT and duplex-Doppler examinations confirmed durable clinical success (Figs. 2, 3).

Figure 1. Preoperative 3D CT reconstruction of the RAA-aLSA. Four vessels branching from the arch in the following order: left CCA, right CCA, RSA, and aLSA branches from the aneurysmal Kommerell diverticulum, with significant stenosis in its proximal part

Figure 2. Follow-up control 48 months after the last procedure. The posterior view of the RAA-aLSA confirms correct stent-graft position, successful exclusion of the aneurysm, without endoleaks, and patent stents in RSA

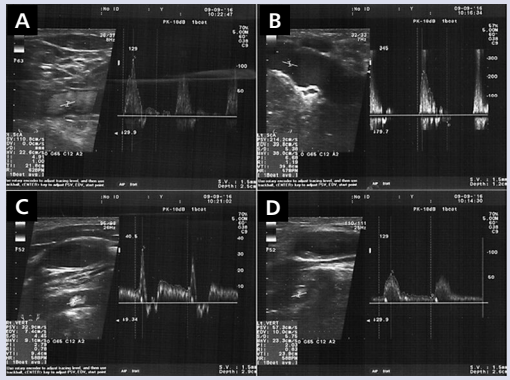

Figure 3. Duplex-Doppler examination presents proper waveform spectrum in: RSA (**A**), LSA (**B**), LVA (**D**), RVA (**C**) with the ultrasonographic signs for steal syndrome, without clinical symptoms

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