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Spinal cord compression complicated by paraplegia following transcatheter aortic valve replacement

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Description

A 85-year-old male was treated by Novel Oral Anticoagulant (NOAC): Apixaban 5 mg X 2 for cardiac arrhythmia (stopped 5 days before Transcatheter Aortic Valve Replacement (TAVR) and reintroduced the following day). TAVR Sapien 3 Ultra 26 mm (Edwards Lifesciences, Irvine, CA, USA) was performed for severe aortic stenosis symptomatic of exertional dyspnea with normal Left Ventricular Ejection Fraction (LVEF). 100 UI/Kg of heparin was injected during TAVR. No ACT control was performed due to a short procedure (less than 1 hour). 50 UI/kg of protamine was injected at the end of the procedure before the vascular axes were closed. The patient had no complications such as severe electrocardiographic conduction disorders or bleeding following TAVR by femoral approach. He presented only a post-procedure complete right bundle branch block and acute renal failure with peak creatinine at 144 µmol/L. He was suffering from a traumatic lower back pain three days after TAVR (Figure 1A), when transferred by the ambulance to his stretcher to change hospital. His lower back pain worsened with progressive onset during the day of T6-T7 metameric sensory-motor deficit in the two lower limbs. This deficit led to paraplegia at the end of the day. Spine Magnetic Resonance Imaging (MRI) was performed as a matter of urgency and showed that the spinal cord was compressed against the posterior wall of the vertebra by the epidural hematoma (Figure 1B,C). NOAC were immediately stopped. The neurosurgeon concluded that there was no link between TAVR and capillary fragility in the spinal cord. This capillary fragility was exacerbated by the anticoagulant treatment. There was no indication for invasive treatment such as drainage, despite an extremely unfavorable neurological prognosis. Afterwards, the patient presented some complications: urinary incontinence, urinary tract infection, arterial hypertension, reflex ileus without intestinal obstruction, renal failure. He died 10 days after the first symptoms appeared.

This extremely rare complication has never been described in scientific literature after TAVR, apart from one case report of valve-in-valve TAVR associated with Thoracic Endovascular Aortic Repair (TEVAR), which led to paraplegia due to transient

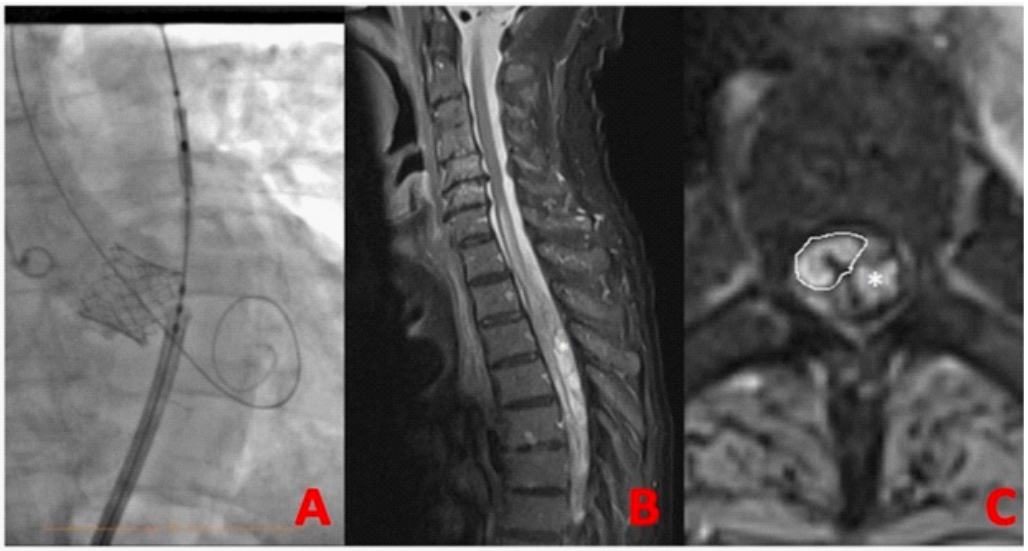

Figure 1: A. Angiography: TAVR Sapien 3 Ultra 26 mm (Edwards Lifesciences, Irvine, CA, USA) is implanted by left transfemoral access with good final result and without aortic insufficiency.

B. Spine MRI, T2W sagittal plane: The spinal cord is hyperintense (edema). The compressive epidural hematoma is visible posteriorly (*).

C. Spine MRI, T2W axial plane: The spinal cord (circled in white) is compressed against the posterior wall of the vertebra by the epidural hematoma (*).

spinal cord ischaemia associated with TEVAR and fully recovered with vasopressor therapy [1]. This reminds us that TAVR remains a procedure with potential serious complications and the need to manage anticoagulant therapy before, during and after the procedure.

Novel teaching points

TAVR has become commonplace with 3 million patients operated on worldwide. It can still have serious complications, not due to usual complications such as: Vascular, cardiological or stroke.

TAVR could potentially be performed under 70 UI/kg of heparin with injection of 70 UI/kg of protamine at the end of the procedure.

NOAC should potentially not be reintroduced the day after TAVR but 48 to 72 hours afterwards.

Declarations

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