Rupture and embolization of aberrant subclavian artery after spine surgery

Lonjedo E, Gómez J, Ruiz A, De La Via E, Casula E
Vascular and Interventional Radiology Unit. Doctor Peset University Hospital, Valencia, Spain

Clinical History

A 71-year-old male was diagnosed of infiltrating colon adenocarcinoma. In 2013 was diagnosed of tumor vertebral infiltration with soft tissue mass at the cervical spine (Fig 1). He underwent surgery of metastasis in the left dorsal paravertebral region with resection of vertebral bodies T2 and T3 (Moos mesh) and left costal arches.

Two weeks later, he suffers a sudden episode of hemodynamic shock, with loss of consciousness and severe anemia. After stabilization maneuvers, severe hypotension lingers, so thoracic AngioCT is performed. (Fig. 2)

Discussion

Kommerell’s diverticulum is a very rare finding. An aberrant right SCA is the most common congenital aortic arch anomaly (approximately 1% of the population). 60% of patients with an aberrant right SCA have an associated Kommerell’s diverticulum. Kommerell’s diverticulum was originally described as a diverticular outpouching at origin of an aberrant right subclavian artery with a left side aortic arch as in this case. This entity can be discovered accidentally in asymptomatic patients. Sometimes they are associated with complications, such as compression, dissection, rupture or bleeding. The rupture of an aneurysm of an aberrant right subclavian artery or Kommerell’s diverticulum can be life threatening. Classically, surgical treatment has been elective. However, hybrid or endovascular treatments can be an alternative. In our case, the situation of hemorrhagic shock and the need to stop the bleeding forced an emergency treatment, deciding the endovascular procedure.

Iatrogenic arterial injury is an uncommon but recognized complication of posterior spinal surgery. The spectrum of injuries includes vessel perforation leading to hemorrhage, delayed pseudoaneurysm formation, and threatened perforation by screw impingement on arterial vessels. This case is unusual in that the patient had an aberrant subclavian artery contacting the osteosynthesis material. After surgery there was progressive damage of the vessel wall, due to the closeness to the Moos mesh and the screws, adding the pulsatility effect, leading to rupture, bleeding and shock. Repair of these injuries traditionally involved open direct vessel repair or graft placement, which can be associated with significant morbidity (50%). Endovascular repair is an alternative for the treatment of arterial injuries resulting from spinal surgery, offering a safe and less invasive alternative to open repair, with less incidence of spinal cord ischemia.

References