Lower extremity weakness as the first sign of an abdominal aortic aneurysm

Caleb Baz Figueroa, MD,[a] Alejandro Delgado Molinos, MD,[b] Octavio de la Torre Scherak, MD,[b] Ángel López Castillo, MD,[b] Juan Carlos Moy Petersen, MD,[b] Francisco José Farrais Expósito, MD,[b] Jose Carlos Cruz Arteaga, MD,[b] Raúl Portas Gómez, MD,[b] *and* Jose Antonio Pérez Gómez, MD,[b]
Santa Cruz de Tenerife, Spain

ABSTRACT

Giant aortic aneurysms are rare entities with a high mortality, and only a few cases have been described. Spinal cord ischemia secondary to an aortic aneurysm occurs even more rarely. We present the case of a giant aneurysm of the infrarenal abdominal aorta that was initially manifested through bilateral lower limb weakness. (J Vasc Surg Cases and Innovative Techniques 2020;6:221-3.)

Keywords: Aneurysm; Abdominal aortic; Lower extremity

CASE REPORT

A 66-year-old man was admitted to the neurology department of our hospital for progressive lower limb weakness (American Spinal Injury Association score: L2, 4/5; L3, 4/5; L4-L5-S1: 5/5), vibratory hypoesthesia in the lower limbs, patellar and Achilles reflex 2+/4+, and urinary retention with suspected spinal vascular disease. On examination of the lower limbs, no clinical signs of ischemia were detected. The femoral pulses were palpable on both sides. Magnetic resonance imaging and complementary computed tomography revealed a 22-cm infrarenal abdominal aortic aneurysm (Fig 1) with radiologic signs compatible with loss of the fatty layer between the posterior aneurysm wall and the vertebral bodies and disks L3 and L4 (Fig 2). The radiologic signs suggested a contained rupture as well as aneurysmal dilation of both the common iliac and hypogastric arteries.

Emergency surgery by means of xiphopubic midline laparotomy uncovered a large, infrarenal aortic aneurysm (Fig 3) with an infrarenal neck of about 3 to 4 cm, which extended to the internal and external common iliac arteries and ruptured into the posterior retroperitoneum. The mass occupied a large part of the abdominal cavity, thereby distorting its anatomic features (Fig 4). The infrarenal aortic neck was controlled. As the situation suggested difficult proximal aneurysm control, the inferior mesenteric and renal veins were localized and ligated. Both common iliac veins and the femoral tripod were dissected to achieve distal control. Longitudinal arteriotomy was performed and an aortobifemoral bypass established using a 24- × 10-mm, bifurcated, silver-coated Dacron prosthesis. As an incident during surgery, the left renal calyx was accidentally punctured and required suturing and setting of a double J ureteral catheter.

In the course of the procedure, the patient was transfused 15 red blood cell concentrates, 5 units of plasma, and 1 unit of platelets and needed high-dose, ionotropic support. During the postoperative period, the patient suffered oligoanuria, which required continuous dialysis followed by intermittent dialysis until spontaneous diuresis at discharge. Furthermore, surgical wound infection occurred in the right groin and was treated with antibiotic and vacuum-assisted wound closure therapy. There were no further urinary complications, so that the double J catheter was removed.

The patient evolved satisfactorily. Neurologic recovery started at postoperative day 60 with complete neurologic recovery, and the patient was eventually discharged home after 4 months in the hospital. The patient's consent to publish this report was obtained.

DISCUSSION

Aortic aneurysms (ie, thoracic, thoracoabdominal, and abdominal aneurysms) represent a life-threatening condition. If not treated, they are associated with a risk of rupture ranging between 46% and 74%, with a 5-year survival rate of 9% to 13%.[1] Potential ruptures are mainly related to aneurysm dimensions. The risk increases substantially with size, so that, for example, the annual rupture risk in aneurysms >6 cm in diameter rises to 14%.[2]

According to the literature, giant aneurysms are defined by a diameter ≥11 cm.[2] They represent a rare clinical entity, and only a few cases have been published.[3] The majority of giant aneurysms occur in men. The mean age of these patients is 77 years, and the overall perioperative mortality rates rise to 23%.

From the Department of Orthopedic Surgery and Traumatology,[a] and Department of Angiology and Vascular Surgery,[b] University Hospital Nuestra Señora de Candelaria.

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Correspondence: Caleb Baz Figueroa, MD, Orthopedic Trauma Division, University Hospital Nuestra Señora de Candelaria, Ctra del Rosario 145, 38010 Santa Cruz de Tenerife, Spain (e-mail: calebbfigu@gmail.com).

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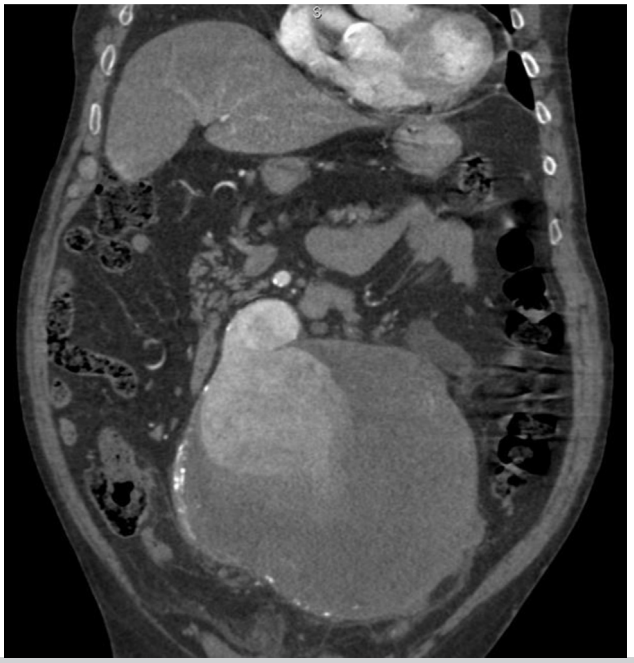

Fig 1. Coronal computed tomography scan revealed a giant aneurysm that contrasted poorly because of its size.

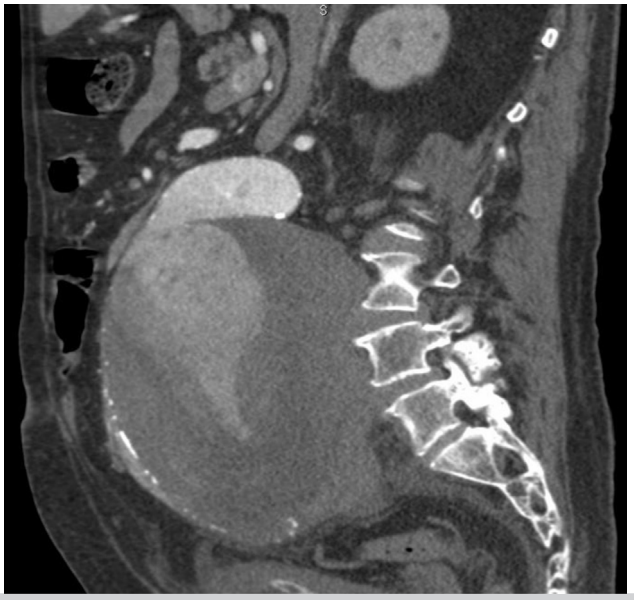

Fig 2. Sagittal computed tomography scan showed the considerable curvature of the aneurysm neck and its displacement toward the anterior abdominal wall.

The largest aneurysm known as yet had a maximum transverse diameter of 25.6 cm.[4] Based on extensive research in the medical databases PubMed, MEDLINE, CINAHL Plus, and Scopus, the case presented here appears to represent the third largest aneurysm so far described and the largest described in Spain.

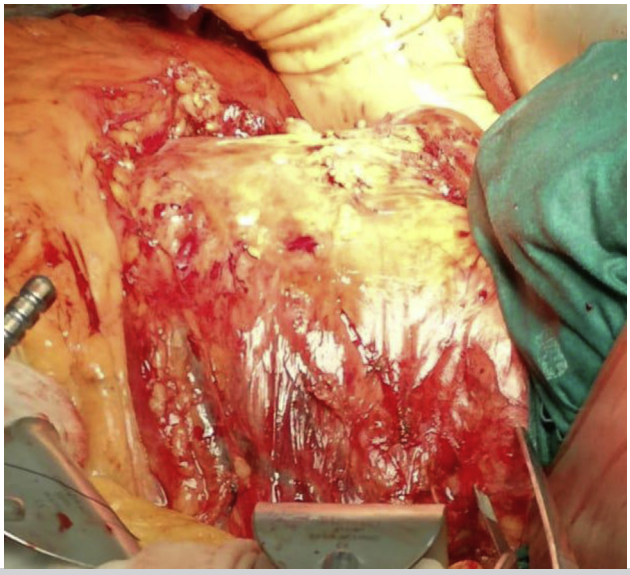

Fig 3. Intraoperative findings during open repair of giant abdominal aortic aneurysm.

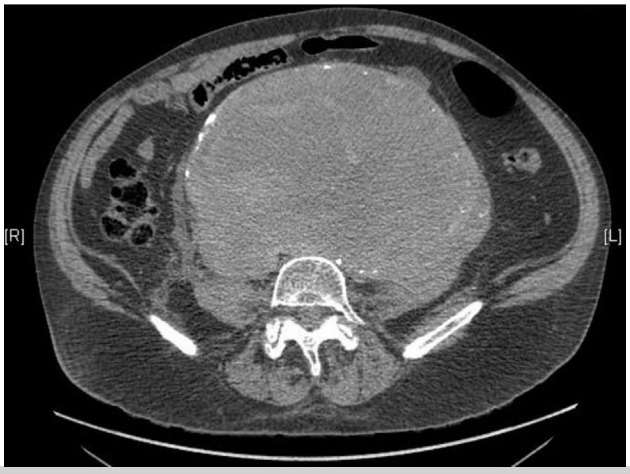

Fig 4. An axial computed tomography image illustrates the large extent to which the abdominal cavity was reduced by the mass of the giant aneurysm.

In most cases, the procedure of choice is open surgery. Open surgery for giant aneurysms is a challenge in itself because of the limited space, distortion of the normal anatomic structures in the abdominal cavity, reduced operative field, extreme neck angulation, short neck length, and adhesions to adjacent structures.[5]

Medulla spinalis arterial vascularization consists of an extramedullary network and intramedullary arteries. Afferent arteries originate on multiple sites, according to the medullary level. In the cervical region, vascularization stems from the vertebral arteries; in the rest of the medulla, blood supply comes from branches of the aorta.

Spinal cord ischemia is a rare disease and accounts for <1% of all strokes.[6] One reason for this is the extensive

vascular collateral network of the spinal cord, which is provided by the anterior spinal artery, dual posterior spinal arteries, and dual posterolateral spinal arteries. The etiology of spinal cord infarction is heterogeneous, and it can occur in different situations, such as severe hypotension, aortic dissection, abdominal aortic occlusion, aortic surgery, and thrombosis in the intramedullary arterial network, as well as in different situations, such as syphilis and vasculitis.

Spinal cord ischemia secondary to an aortic aneurysm is an unusual situation. The typical clinical features entail urinary incontinence, lower limb motor deficit, and patchy sensory loss with a sensory level of T10-12. Moreover, because of its clinical presentation, it may be confused with other spinal involvement syndromes, such as Guillain-Barré syndrome.[7] Neurologic signs caused by spinal cord ischemia often are manifested during a longer time, and depending on infarct topography, the patients suffer from different types of transverse spinal cord. In our case, because of the clinical presentation, the affected area of the medulla spinalis seems to be at the level of the conus medullaris, which involves vascular territories of the anterior spinal artery and posterior spinal artery.[8]

The pathogenesis of the neurologic deficit in our patient could not be definitely established. In fact, little is known about hemodynamics within the arterial and venous vessels of the spinal cord and about medulla spinalis autoregulation. In most cases, the cause of spinal cord ischemia remained unclear.[8] In our case, we postulate that it is due to compression and thrombosis of the radicular arteries.

CONCLUSIONS

The giant aneurysm described here is unique in its kind by causing bilateral lower limb weakness, with only two more published cases of complicated aneurysms that generated initial neurologic signs. This finding should also be taken into account within the differential diagnosis in elderly patients who present with initial spinal dysfunction.[7,9]

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