Hybrid Treatment of Acute Abdominal Aortic Thrombosis Presenting with Paraplegia

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Hybrid Treatment of Acute Abdominal Aortic Thrombosis Presenting with Paraplegia

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Acute thrombotic or embolic occlusion of the abdominal aorta is a rare vascular emergency associated with high morbidity and mortality rates. Classically, the clinical presentation is a severe peripheral ischemia with bilateral leg pain as the predominant feature. Aortic occlusion presenting as an isolated acute onset of paraplegia due to spinal cord ischemia is very rare and requires improved awareness to prevent adverse outcomes associated with delayed diagnosis. We report the case of a 54-year-old man who presented with sudden paraplegia due to the thrombotic occlusion of the infrarenal aorta involving the first segment of the common iliac arteries on both sides; emergent transperitoneal aorto iliac thrombectomy combined with the endovascular iliac kissing-stent technique were performed achieving perioperative complete regression of the symptoms.

Acute occlusion of abdominal aorta is rare and constitutes a vascular emergency associated with high morbidity and mortality rates. Etiology may include aortic saddle embolism, acute thrombosis of a severely atherosclerotic distal aorta, or intimal flap resulting in dissection and thrombosis.[1] Severe lower limb ischemia with pain as a predominant feature is the typical clinical presentation. Aortic occlusion as an isolated acute onset of paraplegia due to spinal cord ischemia is very rare and necessitates improved awareness to prevent adverse outcomes associated with delayed diagnosis.[2] The treatment may consist of open surgery (such as aortic thrombectomy), transfemoral embolectomy, and axillo-femoral bilateral bypass or endovascular techniques, such as thrombolytic therapy and percutaneous transluminal angioplasty.[3]

CASE REPORT

A 54-year-old man was admitted to the emergency room with a sudden onset of complete loss of perception and motility involving the lower extremities. The patient was a smoker with a history of chronic obstructive pulmonary disease and myocardial infarction treated with coronary angioplasty 11 years before. Clinical examination revealed hypertension (170/100 mm Hg) without cardiac rhythm disorders, complete flaccid paraplegia without lower limbs pain, and absence of pulsatile abdomen masses; femoral artery pulses were absent on both sides. Emergent thoracoabdominal CTA (computed tomographic angiography) (Fig. 1) followed by aortic angiography (Fig. 2) demonstrated a complete occlusion of the infrarenal aorta involving the first segment of the common iliac arteries on both sides. The patient was urgently addressed to the operating theatre for revascularization. After an unsuccessful single attempt at retrograde thrombectomy via a bilateral common femoral artery approach, a transperitoneal access to abdominal infrarenal aorta was performed with subrenal clamping and longitudinal aortotomy; a big lumbar artery with poor back-bleeding was preserved using a no. 2 Fogarty balloon catheter. Aortoiliac thrombectomy revealed an underlying atherosclerotic plaque of the posterior

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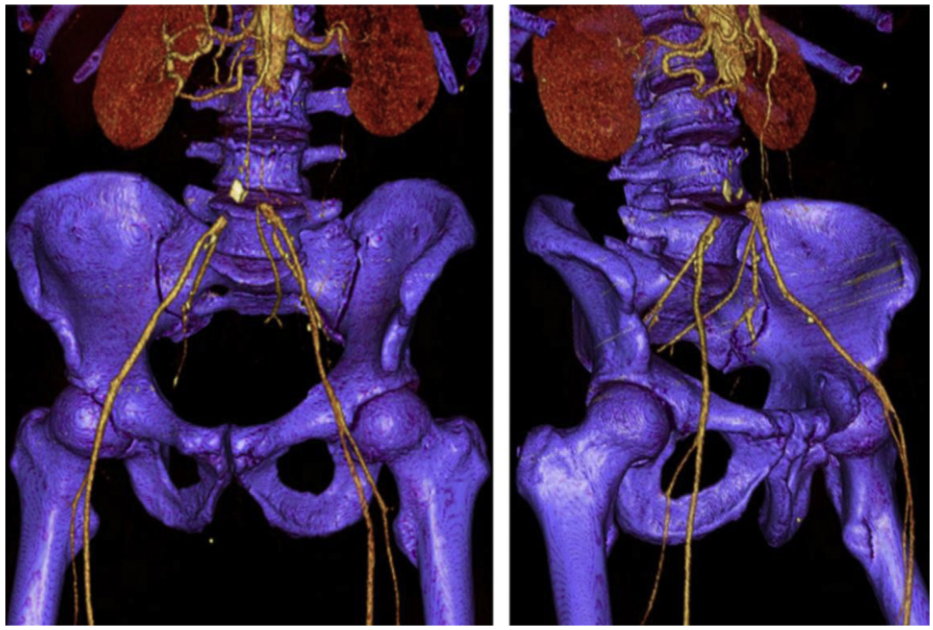

Fig. 1. Thoracoabdominal CTA.

aortic wall; reconstruction of the aortic arteriotomy was completed with a bovine pericardial patch. The intraoperative angiography showed a residual severe stenosis of the left common iliac artery, treated with 2 self-expanding stents (placed using the kissing technique).

The patient recovery after 24 hr in the intensive care unit showed a progressive neurological improvement in perception and motility, with complete resolution of the paraplegia on day 9. Magnetic resonance imaging examination on day 10 ruled out any residual ischemic lesion of the spinal cord. The patient was dismissed on day 20. The 30-day postoperative CTA (Fig. 3) confirmed the technical success of the treatment.

DISCUSSION

Sudden occlusion of the abdominal aorta is a rare event correlated with extremely high morbidity and mortality rates. It should be readily diagnosed as patients typically present with acute, severe leg pain associated with perishing cold, mottling, and pulselessness with eventual numbness and motor deficits. In a few patients, however, the initial presentation may be the flaccid paralysis of the lower extremities due to spinal cord ischemia.[4] The differential diagnosis should include lesions compressing the spinal cord ventrally and misdiagnosis may lead to a delay in the right treatment. However, the absence of femoral pulses should suggest a rapid diagnosis and treatment of the aortic occlusion. Occlusion of the anterior spinal artery or its collaterals can result in acute spinal cord ischemia.[5] In a few patients the acute aortic occlusion may present as an early thrombosis of critical spinal arteries that leads to a rapid paraplegia, masking lower limb pain.[6] We suppose that in our patient the massive infrarenal aortic occlusion led to simultaneous interruption of the artery of Adamkiewicz, the anterior spinal artery, and segmental spinal arteries, leading to the acute hypoperfusion of the spinal cord and subsequent ischemia; the lack of pain in the lower limbs was a neurological result of the acute paraplegia.

In acute aortic occlusion cases, it is generally accepted that the earlier the revascularization, the better the result. Ischemic dose—response curves in the animal models have been showing that survival rates and different degrees of injury depend on the ischemic time.[7]

However, there seems to be a time frame of 8 hr beyond which reperfusion gives very poor results with incomplete functional recovery and can also be followed by compartment syndrome and revascularization syndrome.[8] In addition, the intervention has to be even quicker when spinal cord ischemia is associated. In our case, we excluded the thrombolytic therapy because it requires too much time to obtain a complete revascularization and because of the risk of a peripheral embolization

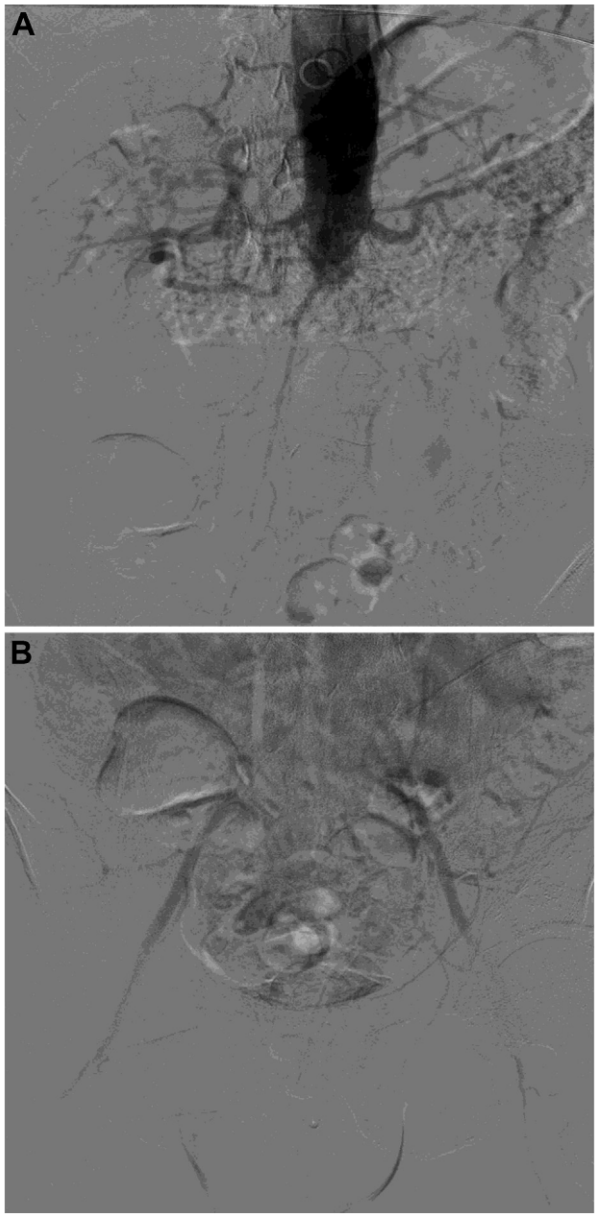

Fig. 2. Aortic angiography showing **(A)** a complete occlusion of the infrarenal aorta and **(B)** involving the first segment of the common iliac arteries on both sides.

potentially involving the hypogastric arteries which would have rendered the spinal cord ischemia even more critical and possibly irreversible. A ''prudent'' retrograde thromboembolectomy was attempted, because we considered this the least invasive and most rapid approach, although we were aware of the risk of complications associated with the maneuver (risk of thrombus migration from the aorta to the visceral vessels). Retrograde Fogarty thrombectomy was ineffective because of an ''in situ'' aortoiliac thrombosis and not an embolic event.

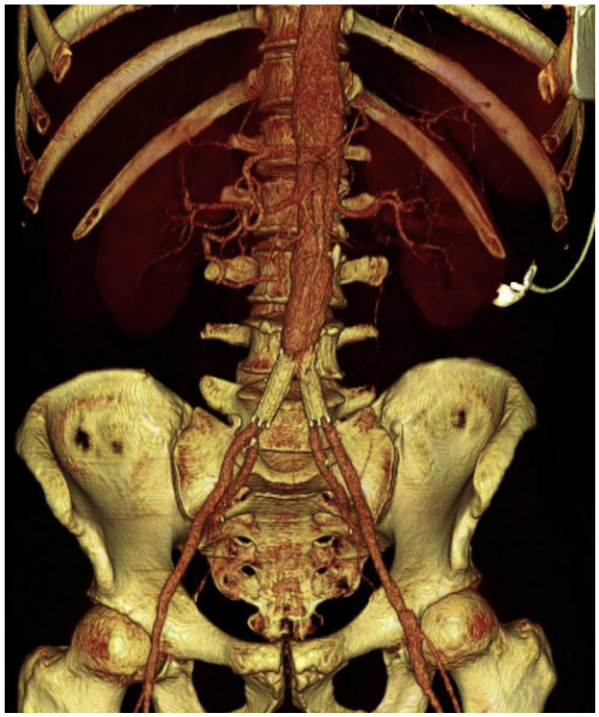

Fig. 3. The 30-day postoperative CTA confirmed the technical success of the treatment.

In our case, the early diagnosis and the subsequent prompt hybrid intervention (transperitoneal aortoiliac thrombectomy completed with endovascular treatment of the left iliac stenosis) permitted a good outcome with complete recovery from both neurological symptoms and limb ischemia. No postoperative sequelae have been documented.

CONCLUSION

Paraplegia may be the dominant clinical feature of acute abdominal aortic occlusion. Vascular examination should always be performed to avoid delayed diagnosis and to address the patient to the appropriate treatment. A prompt aortic revascularization is essential to obtain the best outcome improving survival and functional rates in this rare condition associated with high morbidity and mortality rates.

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