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CASE REPORT

Late Rupture of a Thrombosed Aortic Abdominal Aneurysm - a Case Report

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ABSTRACT

Introduction: Severe back pain caused by a thrombosed and ruptured aortic abdominal aneurysm can imi-tate a lumbar disc herniation. Case presentation: We present the case of a 72-year-old dia-betic patient with chronic atrial fibrillation, who had been experiencing high-intensity low back pain and claudication in the last year prior to his presentation. After experiencing a mi-nor trauma, a lumbar MRI examination was performed, which revealed a retroperitoneal tu-moral mass compressing and eroding the L2–L4 vertebral bodies. Computed tomography an-giography showed an infrarenal aortic aneurysm (3.374 × 3.765 cm) which appeared to have ruptured and thrombosed. The question arising was when did the rupture occur, how massive was the damage, and how suitable for reconstruction was the aortic wall below the origin of the renal arteries. An open repair was scheduled and performed. The intraoperative finding was ruptured aneurysm of the thrombosed infra-abdominal aorta. The thrombosis extended along the common iliac and external iliac branches. We performed an aortobifemoral bypass using a 16 × 8 mm Dacron graft, clamping the aorta above the origin of the renal arteries. Conclusion: The unintentional diagnosis, due to a minor fall, was overall a fortunate event for this patient. Aortic aneurysms may present with lumbar pain that can be mistakenly interpreted as a spinal issue.

Keywords: abdominal aortic aneurysm, thrombosis, vertebral erosion, thrombosed abdominal aortic aneurysms

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INTRODUCTION

Diagnosing the symptoms of chronic abdominal aortic aneurysm (AAA) thrombosis is an uncommon but well-known clinical challenge. It is known that aneurysm thrombosis does not protect the aorta against compression and rupture. This supports the idea that endoaneurysmorrhaphy with lining aorta restoration is the best treatment to consider for patients with AAA who suffer outbursts of thrombosis.[1] It has been previously hypothesized that the exist-ence of a thrombus inside the AAA may raise the chances of its rupture.[2]

The confined rupture of the abdominal aorta is rarely linked with spinal disintegration. Radicular nerve

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root compression may imitate a lumbar disc herniation, whereas spinal erosion finally leads to severe back pain. These characteristics typically lead to a postponed or misdiagnosed life-threatening illness. The symptoms accompanying the stenosis of radicular nerves are the most common reason for low back discomfort and neurological indication for magnetic resonance imaging (MRI).

In the case of an unruptured AAA, vertebral erosion (VE) is rarely related to a chronic contained rupture (CCR)-AAA and is much less common. Also, the participation and radicular pressure accompanying a large chronically thrombosed AAA may resemble a herniated disc syndrome or neuropathy of the lower limb.[3]

CASE PRESENTATION

We present the case of a 72-year-old patient, known smoker, hypertensive, with NYHA II left ventricular systolic dysfunction, atrial fibrillation with high ventricular rate, and diabetes mellitus, treated with oral antidiabetic drugs. He had been suffering from severe low back pain and claudication (walking distance less than 10 m) for about one year, for which he was referred to the Neurosurgery Unit. Two weeks prior to the current presentation, he had suffered a fall, without any other repercussion than a slight worsening of the lower back pain. Following this event, the patient was referred to the emergency room, with a suspicion of lumbar disc herniation, for which lumbar MRI was performed. The MRI showed a tumoral mass in the retroperitoneum that was eroding the L2–L4 vertebral bodies (Figure 1).

The patient was referred to the Vascular Surgery Unit, where clinical examination found a bilateral lack of femoral pulse, along with pallor and associated modifications such as coldness, absence of hair growth, and a marbling effect. Upon abdominal inspection and palpation, an abdominal non-pulsating tumoral mass was found. A thoraco-abdominal computed tomography (CT) angiography was conducted, which showed a thrombosed infrarenal aortic aneurysm below the origin level of the left renal artery, with a size of 3.374 × 3.765 cm (AP × LL) (Figure 2). The thrombosis was further extending along the common iliac arteries, internal and external iliac arteries, bilaterally, with distal permeabilization of the bilateral femoral artery via the collateral bed and at the level of the inferior epigastric artery (Figures 3 and 4).

The patient was admitted to the Vascular Surgery Clinic and was referred to a cardiological preoperative consult, which did not reveal any major cardiovascular contraindications for surgery. The surgical procedure began with a bilateral inguinal incision and the bilateral exposure of the common femoral arteries, suspended on loops. Then a median laparotomy was performed, isolating the peritoneal cavity and pushing the small bowel in the right hypochondrium, thus exposing the retroperitoneum, where a ruptured aneurysm of the infra-abdominal aorta, completely thrombosed, was revealed. The infrarenal aorta

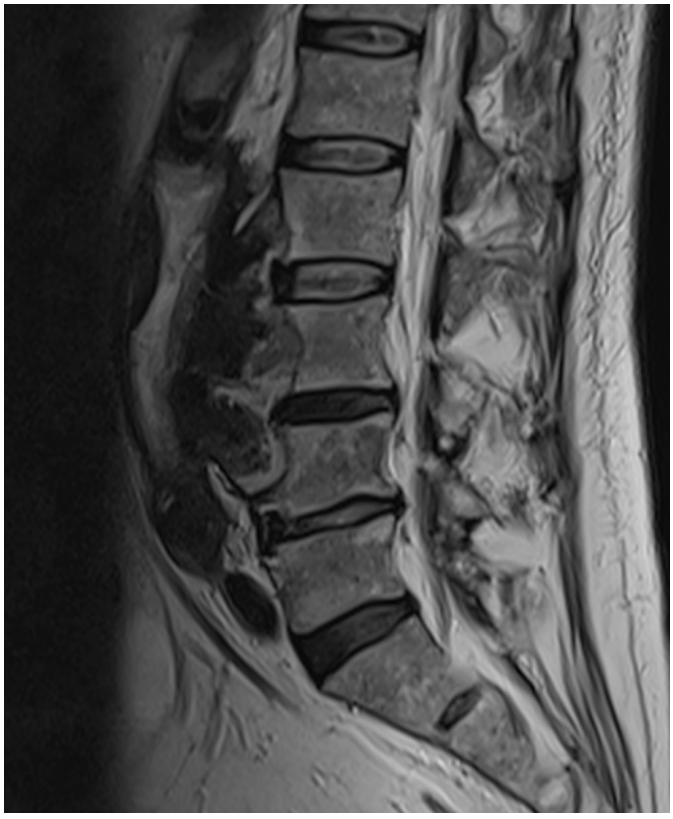

FIGURE 1. MRI examination showing a tumoral mass in the retroperitoneum that was eroding the L2–L4 vertebral bodies

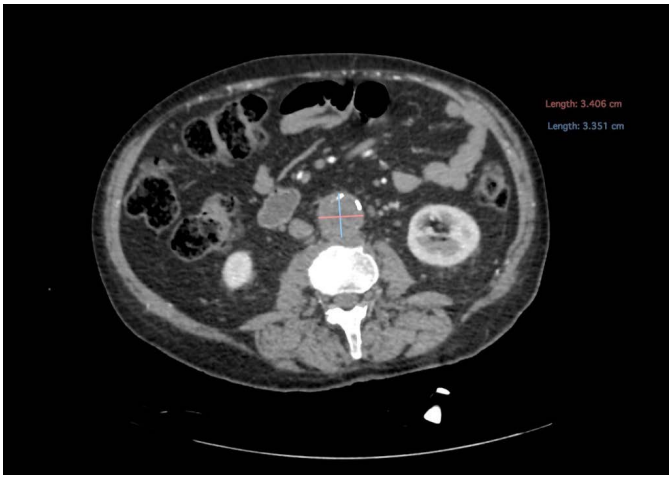

FIGURE 2. CT angiography showing a dilated infrarenal aortic aneurysm

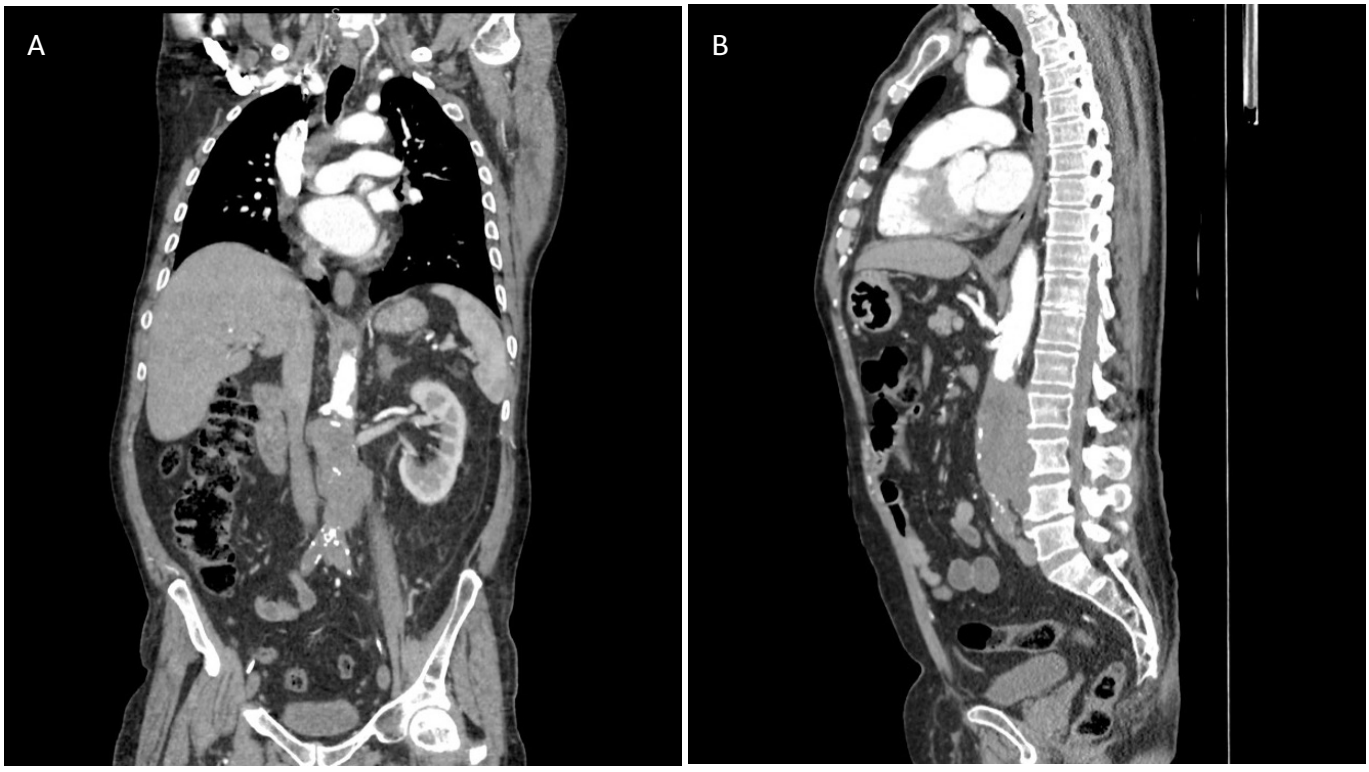

FIGURE 3. **A**, **B** – Thoraco-abdominal CT angiography scan showing the abdominal infrarenal aneurysm with thrombosis

was prepared, and the aortic wall was exposed just below the origin of the renal arteries, which were non-aneurysmal and suitable for a durable anastomosis. Due to a lack of maneuvering space, the aorta was prepared and clamped above the renal arteries. The aneurysmal sac was opened, and after extracting the thrombotic mass, which had dissected and destroyed the tissues including the vertebral bodies, an aortobifemoral bypass using a 16 × 8 mm

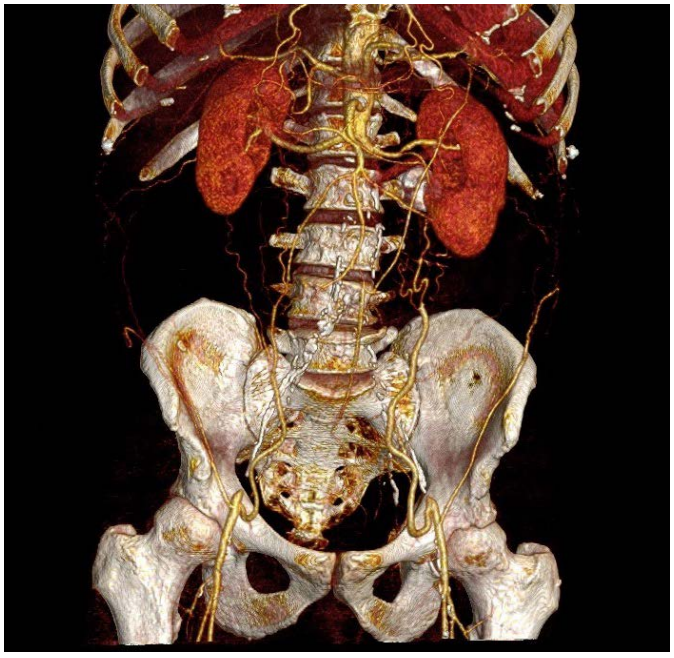

FIGURE 4. 3D reconstruction of the thoraco-abdominal scan showing the iliac extension of the aortic thrombosis

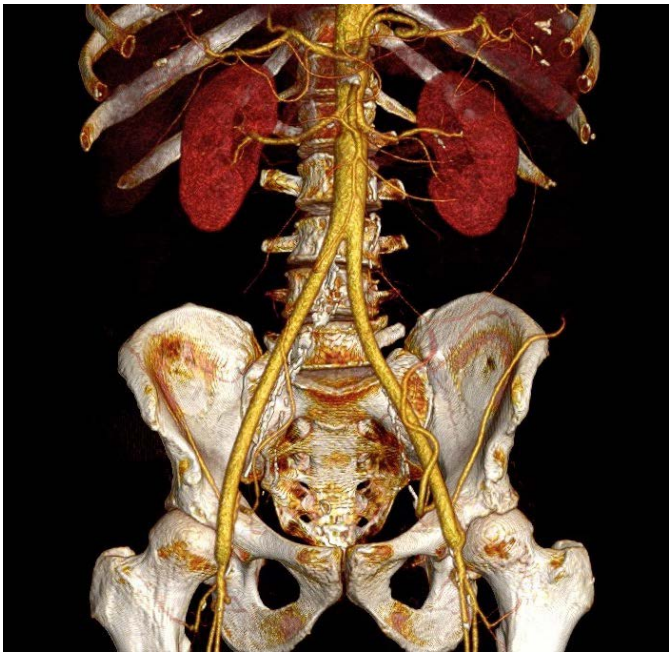

FIGURE 5. Follow-up CT angiography at 3 months – 3D reconstruction showing intact permeable aortobifemoral bypass graft

Dacron graft was performed. This approach was chosen due to extended aged thrombosis of the iliac branches, beyond extraction possibilities. An infrarenal anastomosis in a T-T manner was performed using monofilament Prolene 4-0 in the aortic wall, just below the renal arteries. The distal, femoral, and bilateral anastomoses were performed in an L-T manner using monofilament Prolene 5-0. The total clamping time was 15 minutes. Total blood loss was approximately 350 mL, making blood transfusion unnecessary.

Postoperatively, the patient did not present any complication, which led to his safe discharge on the fifth day after surgery, symptom free and notably finding great relief in the disappearance of the severe back pain. At the one-month follow-up, arterial continuous Doppler found bilateral audible pulsations of the posterior tibial artery and of the dorsalis pedis artery.

The three-month follow-up CT angiography showed the fully functional aortobifemoral bypass (Figure 5).

DISCUSSIONS

In the context of a chronic spinal condition, an aortic aneurysm must be suspected and excluded. Duplex scans are necessary for differential diagnosis. Due to the abrupt, life-threatening secondary rupture of the AAA, time spent on incorrect or delayed identification may be lethal.[3]

Vertebral erosion caused by persistent AAA rupture is quite a rare entity. The easiest and quickest road to diagnosis is CT angiography, should the blood urea nitrogen (BUN) and creatinine have normal values.[4,5] In the presented case, the challenging part was the presence of a non-pulsating abdominal tumoral mass, accompanied by ischemic manifestations of the lower limb and severe low back pain.

Studies suggest that the thrombus in the AAA does not reduce shear pressure related to the aneurysm wall substantially, therefore it does not decrease the probability of rupture. Also, a thrombus within an aortic aneurysm does not reduce pressure on the aneurysmal wall.[6]

In the present case, there is no exact knowledge as to whether the thrombosis occurred before or after the patient had suffered the minor injury two weeks prior to his hospital admission. CT angiography in this case was extremely important, yet the detail showing the rupture of the wall could have been easily overlooked, which led us to hypothesize that the aneurysm was already thrombosed when it ruptured, due to the fall. Otherwise, there would have been consequences such as a pseudoaneurysmal mass, which is easily differentiated intraoperatively from a true aneurysm.

CONCLUSIONS

The unintentional diagnosis, caused by a minor fall, was a fortuitous occurrence for the patient since he was developing a life-threatening illness that was not being addressed properly. The challenges of either a chronic contained ruptured AAA or an acutely rupture of an already thrombosed AAA, are redoubtable. In such cases, open surgery is mandatory and requires a well-prepared intensive care team, ready for prolonged aortic clamping time and massive blood transfusion, if necessary.

CONFLICT OF INTEREST

None declared.

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