Ruptured internal iliac artery aneurysm in Kinshasa, Democratic Republic of the Congo

Alphonse Ndonga N’sungu Nzomvuama, MD,a Germain Matoko Muanda, MD,b John Ernen’Mey Fala, MD,b Patrick Miteo Mukuna, MD,c and Joseph Makunza Nsiala, MD,c Kinshasa, Democratic Republic of the Congo

ABSTRACT

Isolated aneurysm of the internal iliac artery is rare. To the best of our knowledge, we report the first documented case of conventional surgical treatment of a ruptured internal iliac artery aneurysm in the Democratic Republic of the Congo. (JVasc Surg Cases Innov Tech 2022;8:325-7.)

Keywords: Democratic Republic of Congo; Internal iliac artery; Ruptured aneurysm

Isolated aneurysm of the internal iliac artery (IIA) is rare, accounting for 0.4% of all abdominal aneurysms.1 Its evolution is quiet, and the diagnosis often fortuitous. In several cases, the diagnosis was made once complications had occurred, the most serious of which is rupture of the aneurysm. Surgery of a ruptured IIA aneurysm carries a high risk of perioperative morbidity and mortality of ≤50%.1,2

To the best of our knowledge, we have reported the first documented case of conventional surgical treatment of a ruptured IIA aneurysm in the Democratic Republic of the Congo (DRC).

CASE REPORT

A 59-year-old man had been admitted to the Department of Thoracic and Cardiovascular Surgery of Kinshasa University Hospital for a ruptured aneurysm of the left IIA. The aneurysm had been discovered during an abdominal mass assessment 6 months earlier. Since its discovery, the mass had grown progressively more voluminous and had become more painful. The patient had been seen consecutively at several dispensaries during the 6 months after the abdominal mass assessment and had been treated with analgesics. The only doctor who saw him had performed an abdominal ultrasound examination. However, we did not receive a report or images from that investigation. Subsequent to the ultrasound examination, a computed tomography (CT) scan was requested.

At admission, the mass was ~10 × 7 cm, with a firm and pulsatile consistency. The IIA aneurysm extended from the umbilical region to the left iliac fossa. The patient complained of abdominal pain. He had been experiencing lumbar pain that radiated to the left lower limb and had become progressively worse for 3 months, leading to limb functional impairment. The limb was flexed and externally rotated, with diminished muscular strength rated at 2 of 5, and significant muscular atrophy of the left thigh and buttock. His blood pressure was 140/90 mm Hg. Owing to the presence of anemia (hemoglobin, 8 g/dL), the heart rate was 120 beats/min, with a respiratory rate of 25 cycles/min.

The patient’s CT scan revealed a ruptured aneurysm of the left IIA enclosed by a huge retroperitoneal hematoma, with an associated left ureterohydronephrosis (Fig, A). His renal function was normal (creatinine, 88 μmol/L; glomerular filtration rate, 95 ml/min). The first two sacral vertebrae were eroded on their left side (Fig, B). A second follow-up CT scan was not performed. The patient could not afford a new imaging study. In the DRC, the cost of the examinations and that of the whole management is covered by the patient.

Our patient was transfused with 2 U of red blood cells. Three venous catheters were placed in the operating room. The first, a central three-way catheter was placed in the right internal jugular vein, and the two other catheters were inserted into each forearm. An arterial catheter was inserted into the left radial artery for continuous blood pressure monitoring, in addition to standard multiparametric monitoring with electrocardiography, oxygen saturation, and heart and respiratory rate.

The patient underwent median laparotomy, which confirmed the presence of a pressured hematoma contained by the posterior peritoneum (Fig, C). After controlling the infrarenal aorta, the retroperitoneum was opened. The hematoma was organized in successive clotted layers from superficially and older to deeper and more recent (Fig, D). Some flaps of the aneurysmal wall were mixed with clots. To prevent a left ureter injury, surgery was limited to removing the clots. No dissection, resection, or surgical suturing was performed beyond the still attached debris of the posterior aneurysmal wall.

After 5 minutes of aortic clamping, the proximal stump of the IIA was isolated and ligated with Corolene 3-0 suture (blue
polypropylene monofilament suture; Peters Surgical, Lle-de-France, France), reinforced with running suture using the same suture type (4-0 size). The distal end was thrombosed.

The patient developed a postoperative paralytic ileus, which had resolved after 48 hours. He was discharged on the 10th post-operative day. Diuresis and renal function were preserved. Seen again 1 year later, he was doing well but had not recovered the use of his left lower limb.

The patient provided written informed consent for the report of his case details and imaging studies.

DISCUSSION

IIA aneurysms have long been known to be rare. In the historical autopsy series by Lucke and Rea of 12,000 patients, only 1 IIA aneurysm was found among 320 other aneurysms. The surgical series reported by Zimmer et al had included only 3 IIA aneurysms of 572 aortoiliac aneurysms in 440 patients.

To the best of our knowledge, the present case of a ruptured IIA aneurysm is the first reported in our country. The rarity of this type of aneurysm and, in particular, the difficulty of the diagnosis explain this late description in the DRC.

Because an aneurysm of the IIA will be deeply located in the pelvis, it can remain asymptomatic for a long period until it has been discovered incidentally or complications have developed. The most serious complication is rupture of an IIA aneurysm. It has been estimated that the rupture rate for IIA aneurysms ranges from 33% to 67%. The mortality related to rupture is high, ranging from 50% to 100% of cases, owing to both the frequent delay in diagnosis and the technical difficulties of surgery in emergency conditions.

Other complications of IIA aneurysms result from mechanical compression of the surrounding structures by the aneurysmal mass or, as in the present case, by the

Fig. A. Computed tomography (CT) scan showing a huge hematoma that had shifted the infrarenal aorta in association with a left ureterohydronephrosis. B. CT scan showing an eroded S1. C. Intraoperative photograph showing a pressure retroperitoneal hematoma. D. CT scan showing successive clotted layers from the superficial and older to the deeper and more recent (arrow).
mass, which was constituted by clots covering the rupture. Our patient had developed both ureterohydronephrosis and left inferior limb motor impairment resulting from the compression of the pelvic ureter and the lumbosacral nerve roots. Several other complications have been reported, including thrombophlebitis, occlusive syndrome, and rupture of the aneurysm in the rectum or sigmoid.

In the case of our patient, even if the ureterohydronephrosis had remained silent, the occurrence and persistence of a motor deficit in this young patient should have led to a more thorough exploration and, thus, to an earlier diagnosis. However, the costs of healthcare in our heavily pauperized environment are the patient's responsibility. In addition, ultrasound and CT scans are not uniformly available across our country. Even for patients living in cities where medical imaging is more readily provided, the cost of these examinations is high. In many cases, patients and their family members will not be able to pay these costs.

The occurrence of an IIA aneurysm is mainly a disease of patients aged ≥65 years. Some cases have been reported in young patients such as ours and in even younger patients. In addition, it has been more frequently described in men than in women, with a male/female ratio of ≥6:1.6

Early surgery has been recommended because of the high mortality of ruptured IIA aneurysms. A 3-cm aneurysmal diameter is considered the minimum threshold indicating surgery. The mortality of elective surgery varies from 7% to 11% but can exceed 50% in the case of aneurysmal rupture. The risk of death will be enhanced by the presence of major comorbidities and, locally, by any previous abdominal surgery. At present, endovascular repair and embolization are the therapeutic alternatives offering improved outcome compared with conventional surgery by reducing postoperative morbidity and death or shortening the postoperative hospital stay. However, these techniques are not available in the DRC.

Our surgical treatment consisted of ligation of the proximal stump of the IIA. Revascularization was not possible because the distal portion of the IIA was not readily visible. In addition, the deep pelvic location of the aneurysm will complicate control of the distal portion of the IIA and its branches, especially in the case of rupture.6 The most important step in the urgent setting of aneurysm rupture is to control the bleeding by achieving hemostasis. In the present case, we started by controlling the infrarenal aorta. After clot extraction, the proximal branch of the IIA was located by the presence of bleeding.

CONCLUSIONS
The IIA aneurysm is rare, and its rupture remains a life-threatening complication. We have reported on our first surgical case of a ruptured IIA aneurysm. Conventional surgery provided a satisfactory result. Although difficult, an early diagnosis will allow for elective, conventional or endovascular management, with results much better than those from emergency surgery.

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