

INFECTED INTERNAL ILIAC ARTERY ANEURYSM: A CASE REPORT

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Isolated internal iliac artery aneurysms are rare, and although most are of atherosclerotic origin the cause may also be congenital, traumatic, associated with pregnancy or infectious. A 56-year-old man presented with a swollen, painful left lower limb. Within a few days, weakness of the limb developed with fever and an acute abdomen with free air on x-ray. At emergency laparotomy a small perforation was found in the ascending colon. Examination of the left iliac fossa revealed a ruptured left internal iliac artery aneurysm. Extra-anatomic cross-femoral bypass grafting was done to revascularize the left lower extremity. The patient recovered without complication. At discharge the weakness had improved but knee flexion and extension were weak. Culture of the aneurysm contents grew *Staphylococcus aureus* and *Pseudomonas aeruginosa*. The authors discuss the presentation and management of infected internal iliac artery aneurysms.

Les anévrismes isolés de l'artère iliaque interne sont rares et même si la plupart sont causés par l'athérosclérose, ils peuvent l'être aussi par un problème congénital, un traumatisme, une grossesse ou une infection. Un homme de 56 ans se plaint de douleurs et d'enflure au bas de la jambe gauche. En quelques jours, le membre s'affaiblit, le patient est fébrile et a un abdomen intensément douloureux où une radiographie révèle la présence d'air libre. Une laparotomie d'urgence révèle une petite perforation dans le côlon ascendant. L'examen de la fosse iliaque gauche révèle une rupture d'un anévrisme de l'artère iliaque interne gauche. On a procédé à un pontage transfémoral extra-anatomique pour revasculariser l'extrémité inférieure gauche. Le patient s'est rétabli sans complication. Au moment de la libération, la faiblesse s'était résorbée un peu, mais la flexion et l'extension du genou étaient faibles. La culture du contenu de l'anévrisme a révélé la présence de *Staphylococcus aureus* et de *Pseudomonas aeruginosa*. Les auteurs discutent de la présentation et du traitement des anévrismes infectés de l'artère iliaque interne.

Aneurysms of the iliac arteries usually occur in association with abdominal aortic disease. Isolated aneurysms of the internal iliac artery are rare, constituting only 0.4% of all intracorporeal aneurysms.¹ Most of these isolated aneurysms are atherosclerotic. However, they may have a congenital, infectious or traumatic cause, or occur in association with pregnancy. We report on a patient with an unusual pre-

sentation of an infected internal iliac artery aneurysm.

CASE REPORT

A 56-year-old man complained of a swollen, discoloured and painful left lower limb for 3 days. He was admitted to the medical service, where duplex scanning revealed deep venous thrombosis (DVT) of the common femoral and superficial femoral veins.

Heparin infusion was started.

This patient had a history of rheumatoid arthritis. Five months earlier, he had been started on dapsone as part of his rheumatoid arthritis therapy. Two months later an agranulocytosis developed secondary to the dapsone therapy. He was treated with granulocyte stimulating factor that left him with a persistent granulocytosis and thrombocytosis at the time of his admission for the DVT.

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Five days after admission he complained of numbness and weakness in the left lower limb. He had no bladder or bowel incontinence. Physical examination revealed significant weakness and decreased sensation involving the L2 to L5 nerve roots. Both the sciatic and femoral nerve distributions were affected. Left knee and ankle jerks were absent.

A neurologist was consulted. The provisional diagnosis was a rheumatoid vasculitic radiculopathy. The neurologist recommended computed tomography (CT) to rule out the possibility of a retroperitoneal lesion compressing the lumbosacral plexus on the left side. In the meantime, the patient was started on high-dose steroids.

During this period he had a raised body temperature, spiking to more than 39 °C. Blood cultures grew *Staphylococcus aureus*. No focus of infection was identified, and he was started on intravenous cloxacillin (1 mg every 6 hours).

The CT scan of the pelvis revealed a large mass in the left iliac fossa mea-

suring 7 × 8 cm (Fig. 1). The differential diagnosis was either malignant disease, abscess or internal iliac artery aneurysm.

On the 6th day in hospital, the patient complained of abdominal bloating and constipation. He was still passing gas and had mild abdominal pain. His abdomen was mildly tender, there was no rebound and bowel sounds were present. Bruising was noticed in the left flank. He was alert and hemodynamically stable. Plain films of the abdomen revealed free air under the diaphragm and some dilated loops of small bowel. His hemoglobin level had dropped from 122 g/L at admission to 83 g/L. The heparinization was reversed with protamine sulfate, and fresh-frozen plasma and packed red blood cells were transfused. An emergent laparotomy was planned. A stent was placed in the left ureter to aid in intraoperative identification.

At laparotomy, serous fluid was present in the abdomen, with minimal fecal contamination. A small "pin hole" perforation was found in the ascending colon. This explained the

pneumoperitoneum on the preoperative x-ray films. The perforation was oversewn. Inspection of the left pericolic gutter and iliac fossa revealed a ruptured internal iliac artery aneurysm. There was considerable local inflammation. The distal common iliac and proximal external iliac arteries were involved in the inflammatory process. Both the common iliac and external iliac arteries were tied off. The aneurysm was opened and obliterated. The aneurysmal contents were sent for culture. There was no evidence of any aneurysmal disease in the aorta or the other iliac vessels. The abdominal cavity was irrigated with normal saline and the abdomen closed. An extra-anatomic cross-femoral bypass was done to revascularize the left lower limb.

Postoperatively, the patient received antibiotic therapy (vancomycin, 1 g every 12 hours and gentamicin, 80 mg every 8 hours). Heparin infusion was resumed in 48 hours. His postoperative course was uncomplicated. Cultures of the aneurysmal contents grew *S. aureus* and *Pseudomonas aeruginosa*. Cultures of the peritoneal fluid were negative. Antibiotic therapy was continued. At the time of discharge his limb weakness had improved, but knee flexion and extension remained weak.

Because there was no evidence of any aneurysmal disease in the remainder of the aortoiliac system, it was our opinion that this aneurysm developed from a microbial arteritis. The cause of his ascending colon perforation was not determined with certainty. It may have been due to steroids since there was no evidence of disease or mechanical obstruction of the colon.

DISCUSSION

Isolated aneurysms of the internal iliac artery are rare and infection is a

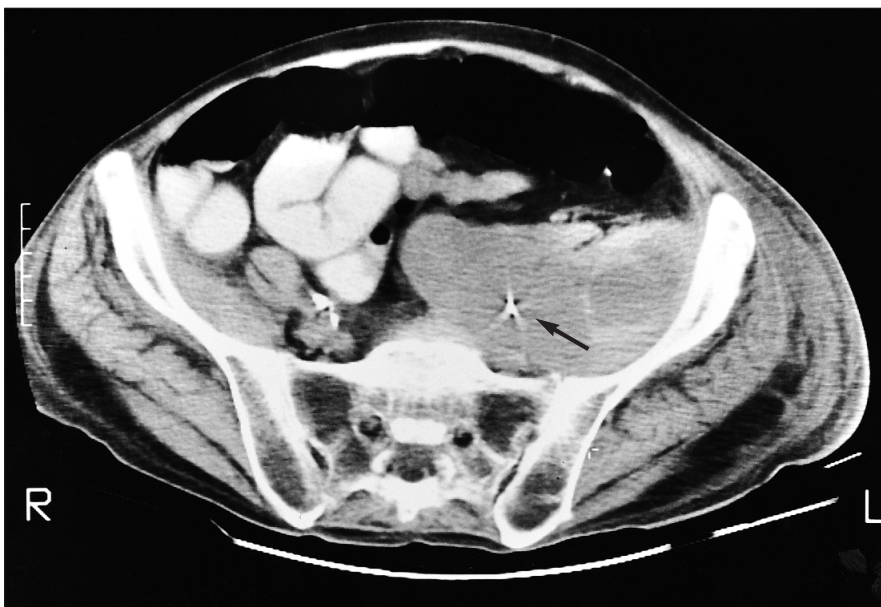


FIG. 1. Computed tomography scan of pelvis, demonstrating ruptured left internal iliac artery aneurysm (large arrow). Left ureter (small arrow) is surrounded by aneurysm mass.

rare cause. Physical examination is often inconclusive.² Most of these aneurysms present as an incidental finding or at rupture. Lowry and Kraft³ found that 75% of the cases they reviewed presented at rupture. The average size of the aneurysm at presentation was 7.5 cm.³ Such aneurysms may also present as a urinary tract or gastrointestinal obstruction, lumbosacral nerve root compression or thrombophlebitis. The neurologic presentation is rare,^{4,5} whereas obstructive uropathy is frequent.⁶ Rectal examination can aid in the diagnosis. Internal iliac artery aneurysms expand at an average rate of 4 mm/yr,⁷ which is about the same rate as abdominal aneurysms. The death rate associated with rupture is 80%.³ These aneurysms can be investigated by either CT or angiography. Once they reach 4 cm in size or larger, surgery should be considered.⁸ Treatment consists of opening, decompressing and obliterating the aneurysm.² Bypass grafting should be done only when necessary.⁴

Infected aneurysms can be classified as follows: mycotic aneurysm, microbial arteritis with aneurysm, infected pre-existing aneurysm or post-traumatic infected false aneurysm. A mycotic aneurysm is one that arises from emboli caused by bacterial endocarditis seeding in a vessel wall.⁹

The case presented is an example of microbial arteritis with aneurysmal degeneration. It is the second most common cause of infected aneurysms,⁹ post-traumatic infected false aneurysms being the most common. The patient is usually over 50 years of age. The aneurysms tend to occur in the aortoiliac tree. The most common infecting organisms are *Salmonella* sp., *S. aureus*, *Escherichia coli* and *Pseudomonas* sp.¹⁰

The presentation of infected internal iliac aneurysms is insidious. Abdominal pain, fever, leukocytosis and a positive blood culture are usually

present. All of the previously mentioned signs may also occur.

The principles of managing these infected aneurysms involve hemorrhage control, operative control of sepsis by irrigation and débridement, obliteration of the aneurysm and prolonged antibiotic therapy.⁸ Aneurysm size is not a factor in the decision to operate. Aneurysms should be treated operatively as soon as the diagnosis is made.¹¹ If bypass is necessary it should be extra-anatomic.

References

1. Markowitz AM, Norman JC: Aneurysms of the iliac artery. *Ann Surg* 1961; 154: 777-787
2. McCreedy RA, Pairolo PX, Gilmore JC et al: Isolated iliac artery aneurysms. *Surgery* 1983; 93: 688-693
3. Lowry WF, Kraft RO: Isolated aneurysms of the iliac artery. *Arch Surg* 1978; 113: 1289-1293
4. Manaster BJ, Greenborg M, Rubir JM: Isolated internal iliac artery aneurysms. *J Comput Assist Tomogr* 1982; 6: 842-844
5. Waldman I, Braun AI: Femoral neuropathy secondary to iliac aneurysm. *South Med J* 1977; 70: 1243-1244
6. Nelsen RP: Isolated internal iliac aneurysms and their urological manifestations. *J Urol* 1980; 124: 300-303
7. Martin P, Frawley JE, Sripad S: The anatomy and management of aneurysms of the internal iliac artery. *Br J Surg* 1971; 58: 111-113
8. Boyarsky AH, Burks NP, Davidson JT et al: Ruptured aneurysms of the internal iliac artery. *South Med J* 1985; 78: 1356-1357
9. Rutherford RB: *Vascular Surgery*, 4th ed, W.B. Saunders, Philadelphia, 1995: 1139-1150
10. Wilson SE, Van Wagenen P, Passaro E Jr: Arterial infection. *Curr Probl Surg* 1978; 15: 1-89
11. Reddy DJ, Shepard AD, Evans JR et al: Management of infected aortoiliac aneurysms. *Arch Surg* 1991; 126: 873-879

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