CASE REPORT

Endovascular management of ruptured common iliac mycotic aneurysm in an HIV-positive patient

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Dr Mary Clarke Moloney,
mary.clarkemoloney@hse.ie**SUMMARY**

Isolated iliac artery aneurysms are a rare entity. The majority of cases are asymptomatic and often escape detection. Mortality rates after sudden rupture and emergent surgery for iliac artery aneurysm are very high. We report a case of a 56-year-old man who presented with right hip pain masquerading as septic arthritis or psoas abscess. CT showed ruptured right common iliac artery aneurysm with extensive active extravasation into psoas with a retroperitoneal haematoma. Aneurysm was repaired using an endovascular technique. Postoperative recovery was eventful with the patient experiencing severe back pain radiating down the leg accompanied with fever. CT showed persistent, right iliopsoas haematoma and pelvic haematoma with secondary hydronephrosis. Viral screen for hepatitis B, C and HIV returned positive. The patient was started on intravenous meropenem. Fever and pain settled. Repeated CT scan showed decrease in retroperitoneal pelvic haematoma.

BACKGROUND

Isolated iliac artery aneurysms are a rare entity, found in 0.03% of the population in autopsy studies.¹ Of all aortoiliac aneurysms, only 0.4–1.9% are isolated to the iliac arteries.^{1–5} Up to 71% of patients are asymptomatic and present with haemodynamic instability after rupture, which carries a high perioperative mortality rate of 59%.⁶ A patient with a ruptured iliac artery aneurysm may present with non-specific symptoms such as abdominal pain,⁷ genitourinary symptoms,⁷ back pain⁸ or sciatica.⁸ Early diagnosis and prompt intervention is necessary for a positive outcome.⁶

CASE PRESENTATION

A 56-year-old Lithuanian man was referred to the orthopaedic team from the accident and emergency department with acute onset of right hip/groin pain for 48 h. It was difficult to get complete history due to his poor English. He was unable to extend his hip and was limping while walking. He also reported fever and night sweats. His medical history was unremarkable apart from significant weight loss in recent years.

On general physical examinations, the patient was haemodynamically stable but distressed with pain and kept his hip joint in a flexed position. Examination of his right hip showed tenderness and reduced range of movements limited by pain. Neurological examinations showed decreased sensation and motor at L3, rest was normal. Laboratory investigation showed an increase in all inflammatory markers (white cell count

20.45×10⁹/L, C reactive protein 310 mg/L and erythrocyte sedimentation rate 91 mm/h). He was admitted with a provisional differential diagnosis of myositis, septic arthritis, psoas abscess or synovitis.

INVESTIGATIONS

The patient was reassessed within 24 h after admission; tenderness in the right iliac fossa prompted a general surgical consultation. CT showed ruptured right common iliac artery aneurysm with extensive active extravasation into psoas with a retroperitoneal haematoma. The right external iliac artery was patent. The abdominal aorta was of normal calibre. The left common and external iliac arteries were of normal calibre (figure 1).

TREATMENT

The patient was brought to theatre for endovascular aneurysm repair of the iliac artery aneurysm. At operation transfemoral approach with 7 Fr sheath was used to pass a guide wire through the iliac aneurysm into the aorta. A polytetrafluoroethylene covered stent (Advanta V12 Atrium), size 10×59 mm was deployed from mid-common iliac artery to proximal external iliac artery, covering the origin of the internal iliac artery and dilated with a 12 mm balloon. Immediately postendovascular aneurysm repair an angiogram was performed, which confirmed sealing of the ruptured site and no contrast leak was seen (figure 2).

OUTCOME AND FOLLOW-UP

The patient's postoperative recovery was eventful. On the third postoperative day he developed leg swelling and calf tenderness. Duplex ultrasound for deep vein thrombosis proved negative. On the fifth postoperative day his temperature spiked up to 38.6°C, with severe pain in his back radiating to his

Figure 1 CT showed ruptured iliac artery aneurysm with haematoma.

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Figure 2 Perioperative angiogram showed no leak after stent deployment.

leg. Septic screens were sent and he was started on intravenous Tazocin. He remained febrile despite on intravenous antibiotics. All septic screens and tuberculosis screen were negative. Further investigations were performed to find out the cause of the aneurysm. All his connective tissue diseases screens were negative. With on-going fever and pain, abdominal CT repeated and the microbiologist contacted. The microbiologist advised to send viral screen for HIV and hepatitis and the patient was started on intravenous meropenem. CT showed there was a persistent, significant right iliopsoas haematoma and pelvic haematoma with secondary hydronephrosis (figure 3).

The hepatitis B, C and HIV results returned positive. The infectious disease team was contacted, who advised further screening for syphilis, toxoplasmosis, cytomegalovirus, varicella zoster virus CD4 count and also aspirate from haematoma. Repeat CT showed decrease in retroperitoneal pelvic haematoma, but there was no convincing evidence of abscess formation. Culture from haematoma was also negative. His viral screen showed HIV-1 Branch DNA copies 46 422 copies/mL, CD4 count 581, VL 58 943, hepatitis C virus polymerase chain reaction-positive genotype 1, hepatitis B surface antigen weak positive. The patient's fever and pain settled and he was discharged home on intravenous meropenem for 6 weeks and follow-up appointments planned for the infection and vascular clinics.

Figure 3 CT showed right-sided hydronephrosis.

DISCUSSION

Isolated iliac artery aneurysms without associated abdominal aortic aneurysms are rare and account for only 0.4–1.9% of aortoiliac segment aneurysms.^{1–5} It is most prevalent in men aged 65–75 years, male incidence reported as 70/100 000 years, while in women the incidence is only 2/100 000 years.^{2 5 8–10} At 56 years the patient detailed in our case presentation was younger than that reported in the literature.

Because of their deep location, detection of isolated iliac aneurysms by physical examination is nearly impossible, although large aneurysms are sometimes discovered by rectal examination. The common iliac artery is most frequently involved (70–90%) followed by internal iliac artery (10–30%) with the external iliac artery usually spared, for reasons not understood.^{5 10 11} Iliac artery aneurysms are usually asymptomatic until rupture. Symptoms resulting from pressure on adjacent structures such as bowel, bladder, uterus, nerve roots and pelvic veins, can produce diagnostic confusion especially in the absence of obvious mass. Renal colic, sciatic nerve pain, hematochezia, haematuria can reflect the erosive nature of these aneurysms.^{12–14}

The aetiology of common iliac artery aneurysm is the same as for abdominal aortic aneurysm. Degenerative or atherosclerotic aneurysms account for more than 90% of all aneurysms. Less frequent causes include infection (mycotic), cystic medial necrosis, arteritis, trauma, inherited connective tissue disorders and pseudoaneurysms from anastomotic disruption.¹⁰ In our case we did not confirm tissue diagnosis, but with the presentation and no atherosclerotic process in other arteries the most likely explanation is mycotic. Histologically these aneurysms are characterised by elastin fragmentation, inflammatory cell infiltrate and loss of smooth muscle cells.^{15 16} Only nine cases of mycotic common iliac artery aneurysm have been reported to date and 80% of these occurred in patients having systemic bacterial embolisation.¹⁰ The term mycotic aneurysms has been applied to various types of infected aneurysms. Crane attempted to classify mycotic aneurysms into primary and secondary types. He introduced the term primary mycotic aneurysms to refer to infected aneurysms not associated with endocarditis or an infectious focus. In contrast, secondary types were those that formed as a result of precedent endocarditis. The most common causative agents are *Salmonella* species and *Staphylococcus aureus*. Risk factors include previous operations and a depressed immune state like HIV, neoplastic disease and use of corticoid or cytotoxic agents.^{17 18}

It has also been described by Siau *et al*¹¹ who reported a similar case proven to have common iliac artery aneurysm.

Mortality rates after sudden rupture and emergent surgery for iliac artery aneurysm are as high as 33–59%, whereas mortality from elective repair is less than 5%.^{5 9 10} However, because of infrequent nature of these lesions, clear management guidelines have not been well-defined for the asymptomatic patient. Furthermore, the technical complexities of operating on vessels deep within the pelvis have made standard elective surgical management more difficult. Alternative endovascular aneurysm repairs have been used in an attempt to optimise repairing these aneurysms.

Endovascular repair of isolated iliac artery aneurysms with a supported graft or covered stent is possible if there is a sufficient length of normal iliac artery above and below the aneurysms to allow graft sealing. Early experience with endovascular repair of isolated iliac aneurysms is disappointing, with early and late adverse event rate of 27% reported in the largest published

series.^{19 20} However, in our case we successfully managed the ruptured mycotic aneurysm in an HIV-positive patient with an endovascular stent graft, which has less morbidity and mortality when compared with open repair.

Learning points

- The early recognition of any aneurysm is important as is surgical intervention. Iliac artery aneurysms are usually asymptomatic until rupture.
- Iliac artery aneurysms often escape detection because of their inaccessible position within the pelvis and the relative rarity of these aneurysms contributing to a low index of suspicion when confronted by chronic lower abdominal or pelvic symptoms or overt vascular emergency.
- Endovascular repair of isolated iliac artery aneurysms with a supported graft or covered stent is possible and may be considered if there is a sufficient length of normal iliac artery above and below the aneurysms to allow graft sealing.

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REFERENCES

- 1 Brunkwall J, Hauksson H, Bengtsson H, *et al.* Solitary aneurysms of the iliac arterial system. An estimate of their frequency of occurrence. *J Vasc Surg* 1989;10:381–4.
- 2 Lawrence PF, Lorenzo-Rivero S, Lyon JL. The incidence of iliac, femoral and popliteal artery aneurysms in hospitalised patients. *J Vasc Surg* 1995;22:409–15; discussion 415–16.
- 3 Lowry SF, Kraft RO. Isolated aneurysms of the iliac artery. *Arch Surg* 1978;113:1289–93.
- 4 Nachbur BH, Inderbitzi RGC, Bar W. Isolated iliac aneurysms. *Eur J Vasc Surg* 1991;5:375–81.
- 5 McCready RA, Pairolero PC, Gilmore JC, *et al.* Isolated iliac artery aneurysms. *Surgery* 1983;93:688–93.
- 6 Huang Y, Glociczki P, Duncan AA, *et al.* Common iliac artery aneurysm: expansion rate and results of open surgical and endovascular repair. *J Vasc Surg* 2008;47:1203–10; discussion 1210–11.
- 7 Hiromatsu S, Hosokawa Y, Egawa N, *et al.* Strategy for isolated iliac artery aneurysms. *Asian Cardiovasc Thorac Ann* 2007;15:280–4.
- 8 Gardiner MD, Mangwani J, Williams WW. Aneurysm of the common iliac artery presenting as a lumbosacral plexopathy. *J Bone Joint Surg Br* 2006;88:1524–6.
- 9 Krupski WC, Selzman CH, Florida R, *et al.* Contemporary management of isolated iliac aneurysms. *J Vasc Surg* 1998;28:1–11; discussion 11–13.
- 10 Richardson JW, Greenfield LJ. Natural history and management of iliac aneurysms. *J Vasc Surg* 1988;8:165–71.
- 11 Siau K, Singh A, Awon K, *et al.* Ruptured aneurysm of the common iliac artery as a cause of unilateral hip pain. *J Bone Joint Surg* 2010;92:153–4.
- 12 Villani U, Leoni S, Mora A. Unilateral hydronephrosis secondary to iliac aneurysm. *Urology* 1985;26:62–3.
- 13 Thiry AJ, Struyven J, Van-DeCasseye M. Spontaneous rupture of the right iliac arterial aneurysms into ureter. *Urology* 1980;16:101–3.
- 14 Sacks NP, Huddy SP, Wegner T, *et al.* Management of solitary iliac aneurysms. *J Cardiovasc Surg* 1992;33:679–83.
- 15 Jacob T, Hingorani A, Ascher E. Examination of the apoptotic pathway and proteolysis in the pathogenesis of popliteal artery aneurysms. *Eur J Vasc Surg* 2001;22:77–85.
- 16 Faggioli GL, Gargiub M, Berton F, *et al.* Parietal inflammation infiltrate in peripheral aneurysms of atherosclerotic origin. *J Cardiovasc Surg* 1992;33:331–6.
- 17 Sanada J, Matsui O, Arakawa F, *et al.* Endovascular stent-grafting for infected iliac artery pseudoaneurysms. *Cardiovasc Intervent Radiol* 2005;28:83–6.
- 18 Muller BT, Wegener OR, Grabitz K, *et al.* Mycotic aneurysms of the thoracic and abdominal aorta and iliac arteries: experience with anatomic and extra-anatomic repair in 33 cases. *J Vasc Surg* 2001;33:106–13.
- 19 Chaer RA, Barbato JE, Lin SC, *et al.* Isolated iliac artery aneurysms: a contemporary comparison of endovascular and open repair. *J Vasc Surg* 2008;47:708–13.
- 20 Pitoulas GA, Donas KP, Schilte S, *et al.* Isolated iliac artery aneurysms: endovascular versus open elective repair. *J Vasc Surg* 2007;46:648–54.

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