■ CASE REPORT

Aneurysm of the common iliac artery presenting as a lumbosacral plexopathy

M. D. Gardiner,
J. Mangwani,
W. W. Williams

From Broomfield
Hospital,
Chelmsford, England

We describe a case of lumbosacral plexopathy caused by an isolated aneurysm of the common iliac artery. The patient presented with worsening low back pain, progressive numbness and weakness of the right leg in the L2-L4 distribution. This had previously been diagnosed as sciatica. A CT scan showed an aneurysm of the right common iliac artery which measured 8 cm in diameter. Despite being listed for emergency endovascular stenting, the aneurysm ruptured and the patient died.

It is important to distinguish a lumbosacral plexopathy from sciatica and to bear in mind its treatable causes which include aneurysms of the common and internal iliac arteries.

Isolated aneurysms of the common iliac artery are rare. Most present with symptoms related to the compression of adjacent structures. Early diagnosis and elective treatment is essential, because the emergency management of a ruptured aneurysm of the iliac artery carries a peri-operative mortality of more than 50%.¹

Case report

A 71-year-old man presented to the Emergency Department with a 48-hour history of worsening low back pain with aching, numbness and weakness in his right leg. Three months previously, he had been diagnosed by his General Practitioner as having right-sided sciatica. He had been walking with one stick but had difficulty standing. There was no history of sphincter disturbance or vascular claudication. He had ischaemic heart disease and was on a course of chemotherapy for chronic lymphocytic leukaemia.

On examination he was alert, orientated and haemodynamically stable. The abdomen was soft and non-tender with no palpable masses. There was tenderness over the right sacroiliac joint. Flexion of the right hip and dorsiflexion of the right foot were weak (Medical Research Council grade 3²) and he had diminished sensation in the L2-L4 dermatomes. Neurological examination of the left leg was normal. Perineal sensation and anal tone were both normal. His feet were warm and the peripheral pulses were palpable in both legs. Laboratory tests revealed a low level of haemoglobin (11.4 g/dl), a normal platelet count (305 x 10⁹/l), and a raised white cell count (19.9 x

10⁹/l) and C-reactive protein (131.8 mg/l). Renal and liver function tests were normal.

An urgent contrast-enhanced CT scan of the abdomen and pelvis showed a large aneurysm of the right common iliac artery, 8 cm in diameter, eroding the bodies of the L4 and L5 vertebrae (Fig. 1). There was also a pseudo-aneurysm arising from the main aneurysm and an associated haematoma in the right psoas and iliacus muscles. The haematoma had caused anterior displacement of the right kidney. There was some dilatation of the small bowel but with no obvious obstructing lesion. The patient was listed for emergency endovascular stenting of the aneurysm the following day, but unfortunately he died overnight when the aneurysm ruptured.

Discussion

In retrospect, the patient's history suggests that the progressively worsening symptoms, labelled as sciatica, were due to compression of the lumbosacral plexus by the expanding aneurysm of the common iliac artery. The sudden deterioration in his neurological symptoms was probably precipitated by a retroperitoneal bleed. This heralded the subsequent rupture.

Lumbosacral plexopathy has been described in one case of an aneurysm of the common iliac artery³ and in a number of patients with an aneurysm of the internal iliac artery.⁴⁻⁶ The former³ was in a 66-year-old man who was a smoker and type 2 diabetic. Over a number of months he developed a worsening burning pain in his left buttock radiating to his left ankle. It was not associated with exercise. On

■ M. D. Gardiner, MA, MRCS, Senior House Officer in Plastic Surgery and Burns St. Andrews Centre for Plastic Surgery and Burns
■ W. W. Williams, FRCS, Consultant in Trauma and Orthopaedic Surgery Department of Trauma and Orthopaedic Surgery Broomfield Hospital, Chelmsford CM1 7ET, UK.

■ J. Mangwani, MS(Orth), MRCS, SpR in Orthopaedic Surgery Department of Trauma and Orthopaedic Surgery Colchester General Hospital, Colchester CO4 5JL, UK.

Correspondence should be sent to Mr M. D. Gardiner; e-mail: mdgardiner@gmail.com

©2006 British Editorial Society of Bone and Joint Surgery
doi:10.1302/0301-620X.88B11.17745 \$2.00

J Bone Joint Surg [Br]
2006;88-B:1524-6.

Received 7 February 2006;
Accepted after revision 6 July 2006

Fig. 1

CT scan of the abdomen and pelvis taken on the evening of admission showing a large aneurysm of the right common iliac artery (A), haematoma in the retroperitoneal muscles (B), and erosion of the fifth lumbar vertebra (C).

Fig. 2

Lateral radiograph of the lumbar spine taken at admission. The arrows point to increased lucency and loss of definition of the anterior borders of the fourth and fifth lumbar vertebrae suggesting bony erosion.

examination, he had weakness of hip flexion and paraesthesiae in the L3, L4, L5 and S1 dermatomes. Radiographs of the lumbosacral spine were normal, but a CT scan demonstrated a voluminous aneurysm of the left common iliac artery eroding the sacral promontory. There was no associated hydronephrosis. He went on to have the aneurysm excluded from the circulation.

Isolated aneurysms of the common iliac artery are rare, with an estimated prevalence of 0.008% to 0.03% in the general population.⁷ The incidence increases with age, and there is a male preponderance.⁸ The usual course is for aneurysms to increase progressively in size and to eventually rupture.⁹ During the growth phase they often become symptomatic as they compress or erode local structures. Alternatively, they present as a coincidental finding during imaging, or when they finally rupture. The rate of rupture of isolated aneurysms of the iliac artery increases with their size. Richardson and Greenfield⁹ reported a 31% rate of rupture in aneurysms with a mean diameter of 5.6 cm. Inflammation is an important pathophysiological feature, so inflammatory markers, such as the C-reactive protein, are usually elevated.¹⁰

Isolated aneurysms of more than 3 cm in diameter require surgical intervention. Elective endoluminal grafting¹¹ with exclusion of the aneurysmal sac is the procedure of choice: 90% survive the peri-operative period.¹¹ The emergency treatment of an aneurysm carries a peri-operative mortality of 33% to 50% and a ruptured iliac aneurysm, a peri-operative mortality of over 50%.¹ The alternative to endoluminal grafting is to use a percutaneous technique such as coil occlusion¹² or stent grafting.¹³ These techniques are useful when treating patients who are of high surgical risk.

Lumbosacral plexopathy is defined as the symptoms and signs associated with damage to the plexus of nerves formed by the ventral divisions of the lumbar, sacral and coccygeal nerve roots. The pathophysiology of lumbosacral plexopathy varies according to its cause. The most common cause of intrinsic nerve damage is diabetes mellitus,¹⁴ while the most common extrinsic cause is local compression or invasion of the nerve roots by an abdominal or pelvic neoplasm.¹⁵ Rarer causes include radiation therapy,¹⁶ an abdominal aortic aneurysm¹⁷ and renal transplantation.^{18,19}

The clinical presentation is variable and depends on the aetiology of the plexopathy. Patients usually present with localised pain in the lower back, buttock, hip, or thigh. The pain is unilateral and described as an ache or pressure. It can take a number of months before specific neurological symptoms are apparent. Progressive unilateral sensory loss and motor weakness occur in most patients, but incontinence is rare. The distribution of the motor weakness and sensory impairment offers clues to the specific nerve or nerve root involved.

Renal function may be abnormal if there is ureteric obstruction. Plain radiographs may reveal bone erosion (Fig. 2). Electromyography and nerve conduction studies usually demonstrate changes such as a decrease in amplitude of the evoked motor responses and borderline nerve conduction velocities.¹⁴ Electromyographic findings are often more severe than the clinical picture suggests.¹⁴ CT scanning of the abdomen and pelvis is valuable as it can identify tumours, lymph node enlarge-

ment and bony involvement.¹⁵ MRI gives a more detailed assessment of the soft tissues.

This case typified the progressive nature of most lumbosacral plexopathies. A careful history and examination suggested a mainly lumbar plexopathy rather than involvement of the sacral nerve root to which the patient's symptoms had been attributed. As this case demonstrates, early diagnosis of symptomatic aneurysms and referral to a vascular surgeon is crucial.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

References

1. Desiron Q, Detry O, Sakalihan N, Defraigne JO, Limet R. Isolated atherosclerotic aneurysms of the iliac arteries. *Ann Vasc Surg* 1995;9:62-6.
2. Medical Research Council of the United Kingdom. Aids to examination of the peripheral nervous system: memorandum no 45. Palo Alto, Calif: Pedragon House 1978.
3. Giraldo C, Merlini V, Mosca F, Ferrari M. Compression of the lumbosacral plexus in a case of voluminous aneurysm of the common iliac artery. *Rev Neurol* 1984;54:399-404 (in Italian).
4. Delgado-Garcia F, Lopez-Dominguez JM, Casado-Chocan JL, et al. Lumbosacral plexopathy as a form of presentation of an aneurysm of the iliac artery. *Rev Neurol* 1999;28:1072-4 (in Spanish).
5. al Asadi AD, le Fur R, al Amri A. Motor deficit complicating an isolated aneurysm of the internal iliac artery. *J Chir (Paris)* 1995;132:361-3 (in French).
6. Wider C, Kuntzer T, Von Segesser LK, et al. Bilateral compressive lumbosacral plexopathy due to internal iliac artery aneurysms. *J Neurol* 2006;253:809-10.
7. Eekhof JL, Ansink BJ, Davies GE. Iliac artery aneurysms. *J Neurol Neurosurg Psychiatry* 1990;53:927.
8. 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.
9. Richardson JW, Greenfield LJ. Natural history and management of iliac aneurysms. *J Vasc Surg* 1988;8:165-71.
10. Vainas T, Lubbers T, Stassem FR, et al. Serum C-reactive protein level is associated with abdominal aortic aneurysm size and may be produced by aneurysmal tissue. *Circulation* 2003;107:1103-5.
11. Krajcer Z, Khoshnevis R, Leachman DR, Herman H. Endoluminal exclusion of an iliac artery aneurysm by WallStent endoprosthesis and PTFE vascular graft. *Texas Heart Inst J* 1997;24:11-14.
12. O'Brien CJ, Rankin RN. Percutaneous management of large-neck pseudoaneurysms with arterial stent placement and coil embolization. *J Vasc Interv Radiol* 1994;5:443-8.
13. Razavi MK, Dake MD, Semba CP, Nyman URO, Liddell RP. Percutaneous endoluminal placement of stent-grafts for the treatment of isolated iliac artery aneurysms. *Radiology* 1995;197:801-4.
14. Dyck PJB, Norell JE, Dyck PJ. Non-diabetic lumbosacral radiculoplexus neuropathy: natural history, outcome and comparison with the diabetic variety. *Brain* 2001;124:1197-207.
15. Jaeckle KA, Young DF, Foley KM. The natural history of lumbosacral plexopathy in cancer. *Neurology* 1985;35:8-15.
16. Frykholm GJ, Sintorn K, Montelius A, et al. Acute lumbosacral plexopathy during and after preoperative radiotherapy of rectal adenocarcinoma. *Radiother Oncol* 1996;38:121-30.
17. Lainez JM, Yaya R, Lluch V, et al. Lumbosacral plexopathy caused by aneurysms of the abdominal aorta. *Med Clin (Barc)* 1989;92:462-4 (in Spanish).
18. Dhillon SS, Sarac E. Lumbosacral plexopathy after dual kidney transplantation. *Am J Kidney Dis* 2000;36:1045-8.
19. Luzzio CC, Waclawik AJ, Gallagher CL, Knechtle SJ. Iliac artery pseudoaneurysm following renal transplantation presenting as lumbosacral plexopathy. *Transplantation* 1999;67:1077-8.