CASE REPORT

Contained ruptured abdominal aortic aneurysm presenting as cauda equina syndrome

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SUMMARY

This is the case report of a contained ruptured aortic aneurysm presenting with acute cauda equina syndrome. The patient was a 79-year-old man. A literature search revealed various unusual presentations of abdominal aortic aneurysm (AAA), including femoral neuropathy, hip pain and others; however, there are no other reports of cauda equina-like syndrome. The present case is therefore another unusual presentation of ruptured abdominal aortic aneurysm and reiterates the utmost importance of careful history taking and clinical examination. Abdominal aortic aneurysm rupture should always be considered in the differential diagnosis of sudden onset isolated lower limb neuropathies and or pain.

BACKGROUND

The increasing incidence of abdominal aortic aneurysms and the life-threatening results of rupture make early recognition and intervention fundamental.¹ Even after an endovascular abdominal aortic aneurysm repair, the risk of rupture remains high.^{2–3} In England and Wales, 6000 people die every year from complications of abdominal aortic aneurysm (AAA), accounting for 2% of all deaths in men aged over 65 years.⁴ Indeed, most patients with a rupture will not survive to reach the operating theatre. Currently, the overall mortality is about 90% and mortality in those that reach the operating suite remains around 50%.⁵ Moreover, diagnosis is often hindered by atypical and occasionally insidious presentations.^{4–6} We present the case report of one such patient whose aneurysmal rupture presented with a picture of cauda equina syndrome.

CASE PRESENTATION

A 79-year-old man presented to the emergency department (ED) with a history of weakness and pain in the left thigh. He woke up early that morning with these symptoms while he remembered being well the previous night. There was no history of trauma, and he was not otherwise generally unwell. The medical history comprised an AAA involving the left iliac artery 5 years before fixed with an open repair, chronic obstructive pulmonary disease, a DVT a year before, benign prostate hypertrophy, osteoarthritis and glaucoma. The patient was on several medications for the above including lifelong warfarin. He lived with his wife and was independent and self-caring.

Physical examination revealed an alert and orientated patient with good general state. Cardiovascular and respiratory examinations were

unremarkable, and the patient remained initially haemodynamically stable with a heart rate of 82 and a blood pressure (BP) of 175/99. His abdomen was soft and non-tender on palpation. Rectal examination showed a reduced perianal sensation but an almost absent anal tone. Neurological examination showed a significantly reduced power (2/5) to the left L2–3 territory, with normal power (5/5) elsewhere. There was a weak left knee jerk, an absent left ankle reflex and hyperaesthesia in the left thigh and medial calf region. Blood tests showed raised inflammatory markers, mild acidosis, lactate of 2.8 and an INR of 6.29.

Given this picture the patient was referred to the orthopaedic team for further investigation of a possible pathological process in the spinal canal. Our orthopaedic colleagues had similar clinical findings and an MRI (figure 1) of the lumbar spine that was then performed showed no evidence of epidural haematoma and a capacious spinal canal. However, a large left-sided retroperitoneal haematoma along the left ilio-psoas muscle with layering of blood, causing mass effect on the nerve was seen. A further CT angiogram of the aorta showed a leaking aortic aneurysm around an established trouser graft, the left limb of which was occluded and an extensive intraperitoneal and retroperitoneal haematoma with large volume intramuscular haematoma of the left psoas and ilio-psoas muscles (figures 2 and 3).

Figure 1 MRI showing a capacious spinal canal on the patient.

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Figure 2 CT angiogram showing aortic aneurysm on the patient (coronal view).

Figure 3 CT angiogram showing aortic aneurysm on the patient (sagittal view).

TREATMENT

The patient subsequently underwent an emergency laparotomy for regrafting.

OUTCOME AND FOLLOW-UP

The patient unfortunately passed away shortly after surgery.

DISCUSSION

The rupture of an aneurysm is possibly a life-threatening complication of an AAA, which may be preceded by leaking of variable duration after a repair. This may sometimes occur

regardless of the technique used to repair.² Either way if the aneurysm ruptures into an open cavity such as the peritoneum the patient may present with hypovolemic shock and will often die before reaching the hospital. However, and as in this case, the rupture may also occur within a contained space such as the retroperitoneum or the psoas muscle space, leading to the patient being stable at presentation and often for longer.⁷ Rupture will classically present as a sudden onset of severe abdominal and/or back pain, usually with circulatory collapse, but only in about 50% of cases.⁸ This means there is a high likelihood of diagnostic confusion with patients sometimes presenting with back, loin or groin pain, typically mistaken for renal colics. Furthermore, this atypical presentation may result in diagnostic delay with potential lethal consequences.

A literature search to identify other unusual presentations of AAA was performed using MEDLINE from 1980 to 2016 and found no cases reported with cauda equina as a presenting feature. Mahmood *et al*⁶ summarised unusual presentations of leaking or ruptured abdominal aortic aneurysms as follows: renal colic, urethral obstruction, obstruction of the left colon, testicular pain, peripheral neuropathy, hiccoughs, haematuria, right inguinal mass and symptomatic or even asymptomatic inguinal hernia. Other cases reported include acute or chronic hip pain, groin pain and acute buttock pain. Rarely, massive haematemesis is also reported due to a rupture into the bowel creating an aortoenteric fistula. The latter is more commonly associated with graft infection after an open repair as primary aortoenteric fistulae are very rare. Similarly, a rare rupture into the inferior vena cava may create an aortocaval fistula.⁴

This case denotes an atypical presentation as seen in ED. The patient originally denied any significant abdominal or back pain and remained haemodynamically stable. His presentation with an acute neurological syndrome was even more clinically misleading until imaging was performed. In any acute setting excluding a spinal pathology would have been the primary course of action, which fortunately includes imaging, which in turn enabled diagnosis of the rupture.

The left hip and leg neurological symptoms experienced by our patient could be accounted for by an irritation of the femoral nerve and the sciatic nerve at its origin. It is also possible that the large volume and significant extent of the bleeding may have irritated the left lumbosacral trunk as a whole. Indeed the lumbosacral trunk comprises the whole of the anterior

Learning points

- ▶ This case highlights once again the importance of a high index of suspicion when assessing middle-aged and elderly patients with lower limb pain and/or neuropathy, especially when they have a history of abdominal aortic aneurysm (AAA).
- ▶ It is well to remember that though the accuracy of physical examination in the diagnosis of abdominal aortic aneurysm has a sensitivity of 68% and a specificity of 75%, it is not always accurate in ruling it out.⁹
- ▶ Given that a large bleed can produce a variety of symptoms, and femoral neuropathy has severally been reported as an atypical presentation of AAA, we recommend that any lower limb pain and/or neuropathy of sudden onset in a patient with a history of AAA be considered for an immediate imaging of the aorta to rule out a possible leak or rupture.

division of the fifth and a part of that of the fourth lumbar nerves; it originates at the medial margin of the psoas major and then descends over the pelvic brim to join the first sacral nerve. The anterior division of the third sacral nerve divides into an upper and a lower branch, the former entering the sacral plexus and the latter the pudendal plexus. Mass effect on and irritation of this trunk by blood in the retroperitoneum and in the psoas muscle combined with similar effect by blood in the peritoneum might explain our patient's unusual presentation.

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Contributors All authors have made an individual contribution to the writing of the article and also have been involved with the patient's care during his last emergency department admission. SAE initiated this work under the supervision of DG, and both have attended to the patient in the course of their normal medical practice at the Norfolk and Norwich University Hospital—Emergency Department. Then, owing to the patient's unusual presentation they followed up the his progress and management within the hospital. SAE contributed to conception and initial design of the work and drafted the article. SAE and DG contributed to data collection and data analysis and interpretation. DG and JB contributed to critical revision of the article. JB also provided general support all through the exercise and facilitated access to data and to the patient's family for the purposes of obtaining due consent. All authors provided final approval of the version to be published. All authors are aware of the publication and have ratified this contributorship statement prior to current submission.

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