CASE REPORT

Very late rupture of a post-traumatic abdominal aortic pseudoaneurysm

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Accepted 12 January 2017

SUMMARY

Post-traumatic abdominal aortic pseudoaneurysms remain a rare yet severe complication of aortic injuries and may present many years later. Clinical presentations vary, from the traditional aneurysmal symptoms of abdominal and/or back pain with or without a pulsatile mass, to a fatal rupture. We present the case of a man aged 42 years, with a history of blunt abdominal trauma 14 years ago, presenting with symptoms of non-specific lower abdominal pain and a recent history of straining due to constipation. Clinical examination revealed umbilical bruising, in keeping with Cullen's sign, and extensive postsacral bruising. This case highlights some of the atypical manifestations of aneurysmal rupture and the importance of early recognition and management.

BACKGROUND

Post-traumatic abdominal aortic pseudoaneurysms are a rare occurrence. They may happen as a consequence of blunt or penetrating trauma and can present many years following initial injury.¹ Clinical presentations of a ruptured aortic pseudoaneurysm may vary. The clues in our case were the positive Cullen's sign and apparently spontaneous postsacral bruising. The prompt recognition of the bleed was life-saving.

CASE PRESENTATION

A man aged 42 years presented to the emergency department (ED) with a 1-week history of abdominal pain. He described the pain as sharp, worst in the suprapubic and right iliac fossa regions and radiating to the back. The patient also described overflow diarrhoea. It was following an episode of straining that the patient described a worsening of his pain with subsequent development of bruising in the umbilical and postsacral areas. The patient denied any blood in stools or genitourinary symptoms. He denied any chest pain.

In 2002, the patient had an emergency laparotomy for a bowel rupture and associated splenic injury following a road traffic accident. He had suffered from chronic back pain since this accident. He had not undergone any follow-up scans after the original incident and its treatment. The patient was taking over-the-counter analgesia for the pain and had been using lactulose and senna for constipation. He was on no other medications, took minimal alcohol but had a family history of irritable bowel syndrome (IBS).

Physical examination revealed that the patient was afebrile and haemodynamically stable. His lower abdomen was tender. There was evidence of

Cullen's sign, with bruising around the umbilicus, and significant postsacral bruising of 'wing-like' distribution. This bruising measured around 4 inches in the long transverse axis.

DIFFERENTIAL DIAGNOSIS

The patients' signs (Cullen's sign and postsacral bruising) suggested retroperitoneal inflammation or bleeding, and pancreatitis was considered; however, blood results revealed a normal amylase. An early CT scan was performed to look for other causes of retroperitoneal bleeding.

INVESTIGATIONS

A portal venous phase contrast-enhanced abdominopelvic CT scan was obtained. The radiologist noted an abnormally appearing aneurysm arising from the aortic bifurcation with a strong possibility of recent haemorrhage into the pelvis (figures 1 and 2). The unusually appearing aneurysm could represent a false aneurysm or a mycotic aneurysm.

TREATMENT

An emergency laparotomy was performed with the aim of devascularising the false aneurysm. There was no active bleeding at laparotomy, but there was evidence of long-term intermittent bleeding. Owing to extensive associated inflammation and fibrosis, a hybrid procedure was required. The distal aorta was ligated following which the common iliac arteries were both occluded endovascularly, and an aorto-bifemoral graft performed. The aneurysm was not found to be mycotic and thus was not sent for histology.

OUTCOME AND FOLLOW-UP

The patient was admitted into the intensive care unit (ITU) following the operation. He made a good recovery and was discharged home on day 10. His CT at 5 weeks showed the false aneurysm sac to be reducing in size and he remained well at follow-up 6 weeks later. A further CT scan is planned in 6 months.

DISCUSSION

Post-traumatic abdominal aortic pseudoaneurysms remain a rare and severe complication of aortic injuries. One of the first cases was described by Makins² in 1920, following which fewer than 30 cases have since been published.³ Post-traumatic pseudoaneurysms can present in a number of different ways, with the usual presentation being abdominal or back pain, with or without a pulsatile mass. Other presentations include thromboembolism,

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To cite: Abed H, Ball WR, Stone T, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2016-218356

Figure 1 Coronal CT image showing false aneurysm (arrow 1) arising from the inferior aspect of aortic bifurcation. The aneurysm is in continuity with pelvic mass lesion (arrow 2), which has the appearance of haematoma. Densities within the aortic wall can be seen and are in line with calcification in the wall.

Figure 2 Sagittal CT image showing false aneurysm (arrow 1) arising from inferior aspect of aortic bifurcation. The aneurysm is in continuity with pelvic mass lesion (arrow 2) which has the appearance of haematoma.

compression of adjacent structures, gastrointestinal bleeding and sudden rupture. Clinical signs can be detected from a few days to many years following the initial injury, with the longest reported time interval from injury to diagnosis being 42 years.⁴ The patient in the case reported here presented 14 years after a road traffic injury with symptoms of

abdominal pain and clinical signs of a retroperitoneal bleed, indicative of rupture.

The rupture of an abdominal aortic aneurysm or pseudoaneurysm is a catastrophic event with a uniformly fatal outcome if untreated. Diagnosis typically involves a triad of abdominal and/or back pain, a pulsatile abdominal mass and hypotension. However, it is not uncommon to lack one or two features of this triad and hence clinical diagnosis is not infrequently missed.⁵ As well as abdominal pain, the patient in this case presented with significant bruising within the subcutaneous fatty tissue surrounding the umbilicus, in keeping with 'Cullen's sign'. Cullen's sign, also known as periumbilical ecchymosis, was first described by the Canadian Gynaecologist Thomas S. Cullen as a result of a ruptured ectopic pregnancy in 1918.⁶ Traditionally, this is a sign typically associated with haemorrhagic pancreatitis; however, a wide range of causes of Cullen's sign have since been documented in the literature. There has only been one case reporting Cullen's sign caused by a ruptured abdominal aortic aneurysm⁷ and to the best of our knowledge, this is the first case reporting Cullen's sign as a clinical presentation of a ruptured post-traumatic abdominal aortic pseudoaneurysm.

In addition to Cullen's sign, to the best of our knowledge, this is the first case reporting postsacral bruising as a consequence of aneurysmal rupture. This is presumably due to retroperitoneal blood infiltrating through tissue planes into the postsacral tissues. Perianal bruising may also sometimes occur and is due to blood passing between the layers of the sigmoid mesocolon.^{8,9}

An indepth discussion was had in deciding the most appropriate management option for the patient in this case. An endovascular aneurysm repair was initially considered; however, in view of the patients' young age, and the established need for a bifurcated aortic stent graft, an open repair was deemed most appropriate. Additionally, with a mycotic aneurysm being considered, an open repair was considered preferable in a patient aged 42. Preoperative percutaneous placement of an aortic occlusion balloon in patients with ruptured abdominal aortic aneurysm or pseudoaneurysms has been found to be beneficial in certain cases.¹⁰ The patient in this case was haemodynamically stable, and it was also thought to be relatively straightforward to cross clamp the aorta well proximal to the false aneurysm rupture, hence the patient went for an immediate repair without a preoperative aortic occlusion balloon.

The case at hand presents an uncommon yet severe complication of blunt or penetrating abdominal trauma, with the case highlighting some of the atypical clinical signs of abdominal aortic aneurysmal rupture. We feel that clinicians need to be aware of these signs and when encountered, to have a low threshold for investigation. Additionally, consideration of

Learning points

- ▶ Recognition of some of the atypical presentations of a retroperitoneal bleed, including Cullen's sign and postsacral bruising.
- ▶ Post-traumatic pseudoaneurysms may occur many years after the original injury.
- ▶ Suspected retroperitoneal bleeding should be investigated early.
- ▶ Prompt treatment of ruptured aortic pseudoaneurysms is required and can be life-saving.

follow-up imaging for patients with a history of abdominal trauma may provide early diagnosis of post-traumatic pseudoaneurysm development, and hence prevent late presentation with more lethal outcomes.

Acknowledgements The authors wish to thank Dr David Hinwood, Consultant Radiologist at Royal Shrewsbury Hospital, who was also involved in the patient's care.

Contributors HA drafted the manuscript, WRB reviewed and revised the manuscript, TS reviewed the manuscript and provided the radiology figures and AH critically reviewed and revised the manuscript. All the authors saw and approved the final version.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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