CASE REPORT

Successful open surgical repair of an infrarenal, abdominal aortic aneurysm (AAA) in a young Malawian female: A case report

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Case presentation

A 39-year-old woman presented to Queen Elizabeth Central Hospital in Blantyre, Malawi with a 3-week history of worsening peri-umbilical abdominal pain radiating to the lower back associated with anorexia, nausea and vomiting. There was no history of trauma, diarrhoea, obstipation, fevers, or urinary symptoms. She reported history of 'spinal surgery' performed 6 years prior due to a herniated intervertebral lumbar disk. Collateral history from the primary spinal surgeon revealed that a simple laminectomy was done and the risk of causing an aneurysm was very low. Patient was not a smoker and was without other significant medical or significant family history. Systemic review was unremarkable. On physical examination, she was afebrile (36.9°C). Her height was 1.65 m with a body mass index (BMI) of 23 kg/m^2. Abdominal examination revealed a 3 cm wide by 8 cm long non-tender and pulsatile mass 2 cm to the left of the umbilicus and the rest of examination was normal. Full blood count showed a normocytic anaemia of 10 g/dl but other parameters were normal. The following tests were either normal or negative: liver and renal function tests, serum electrolytes, HIV, hepatitis B and C and syphilis serology. A transabdominal ultrasound scan showed an infrarenal fusiform abdominal aortic aneurysm (AAA) originating from left anterolateral aspect of the abdominal aorta ending just at the bifurcation of the aorta. It had a left eccentric mural thrombus (1.9 cm thick and 5.4 cm long) which did not extend into either iliac arteries. There was no peri-aortic gas, fluid collection or stranding detected and the rest of the ultrasound scan was normal (Figures 1–4). Magnetic resonance imaging could not be done due to previous spine implant and computed tomography (CT) could not be done due to inaccessibility. Chest radiography did not show features of a dissecting thoracic aneurysm (Figure 5) and echocardiography showed a normal-sized aortic root.

Surgical treatment

The patient underwent open abdominal vascular surgical repair in the absence of percutaneous endovascular repair (EVAR) facilities. Midline abdominal incision was made, mesentery were reflected and bowels were mobilised. Transperitoneal dissection along the Treitz ligament revealed a 10-cm, mobile aneurysm which was dissected free. The infrarenal aorta, external and internal iliac arteries were dissected for clamping. Proximal aorta and both iliac arteries were clamped. The aneurysm was opened and intramural thrombus removed, which was later confirmed histologically to be an organising haematoma. Both common iliac arteries showed no aneurysmal changes and were flushed with normal saline. A 26-mm straight woven Dacron graft was then inserted and sutured infrarenally. Aneurysm sac was then sutured over the graft with no leaks. After 1 day of intensive care unit stay, she was moved to the general ward. Repeated imaging of the aorta was unremarkable. She was discharged on the seventh postoperative day and follow-up at 3 months was unremarkable.

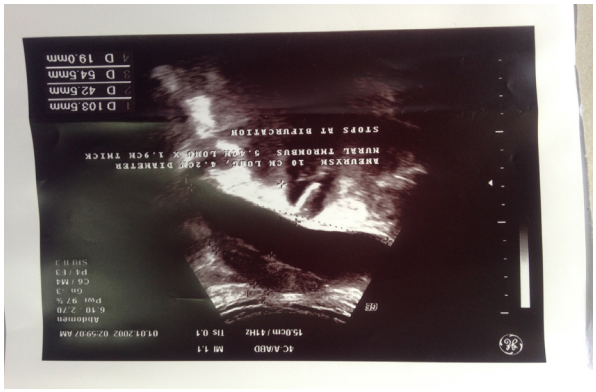

Figure 1: Aneurysm dimensions

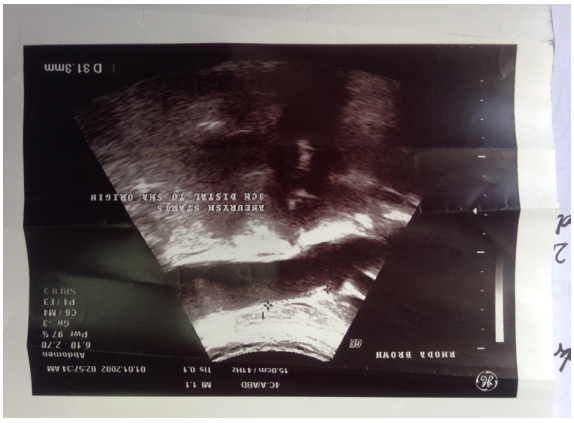

Figure 2: Aneurysm origin

https://dx.doi.org/10.4314/mmj.v31i4.7

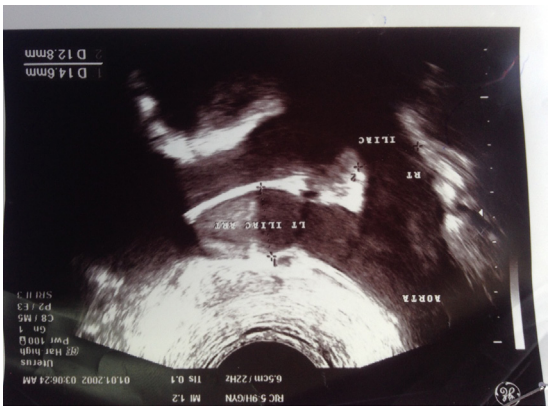

Figure 3: Common iliac arteries spared

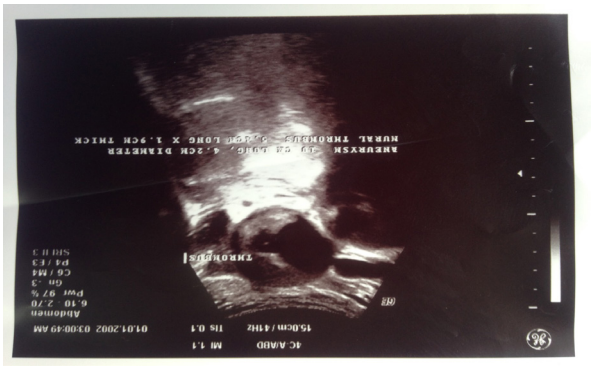

Figure 4: Mural thrombus eccentric to the left

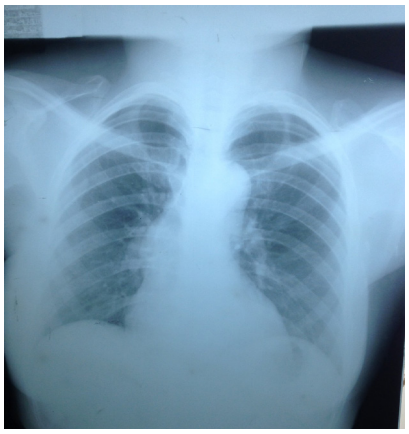

Figure 5: Normal chest radiograph

Discussion

Aortic aneurysmal disease is defined as focal dilation of the aorta at least 50% above the normal (2 cm) diameter. Aortic aneurysmal disease can be classified by: location relative to renal arteries, involvement of the vessel layer walls, morphology, diameter and aetiology[1]. AAAs are the most common type (80%)[2,3]. Symptoms are frequently non-specific during the early stages, which may result in considerable diagnostic delays by non-suspecting clinicians1. The true incidence of aneurysms in our setting is unknown and global epidemiology varies, but the prevalence of 2.9–4.9 cm AAAs range from 1.3% for middle-aged men to 12.5% for geriatric men and 0% and 5.2% for women, respectively[4,5]. AAAs pose a risk of complications such as rupture, which can prove fatal in a setting with limited vascular surgery capacity like Malawi. Based on the 2013 Global Burden of Disease study, the age-standardised death rate attributable to aortic aneurysm in 2013 was 2.6 per 100,0006. The exact mechanisms underlying pathogenesis of AAA, though unclear, appear to be altered biochemical, immunological, mechanical and genetic systems that lead to gradual proteolytic degradation of arterial vessel walls by matrix metalloproteinases such as gelatinases and matrilysin and macrophage elastase[1,7].

The clinical presentation in our case was unusual due to young age at presentation and lack of the typical risk factors associated with the development of AAA like advanced age, male gender, Caucasian race, a positive family history, hypertension, smoking, the presence of other large vessel aneurysms or atherosclerosis[2]. The previous history of spinal disk herniation may suggest an underlying connective tissue disease such as Marfan syndrome, Ehlers-Danlos syndrome or Loeys-Dietz syndrome, although the clinical history and examination findings did not meet set criteria for clinical diagnosis and genetic testing for relevant mutations was not available in our setting[3]. Symptoms of AAA are frequently minimal during the early stages and a high index of suspicion is essential to make the diagnosis. After a diagnosis is made, the risk of rupture should be weighed against the risk of surgical complications for each patient[8]. AAAs variedly dilate over time, with estimated mean aneurysm growth rate for small aneurysm (3.0–5.4 cm) at 2.21 mm per year[9]. The 5-year overall cumulative rupture rate of incidentally diagnosed aneurysms in population-based samples is 25–40% for aneurysms larger than 5.0 cm; thus, elective surgery is recommended for such[2,10]. Our patient was operated early due to worsening of symptoms. Two surgical approaches can be employed; the first one is open surgical repair, which is considered gold standard (operative mortality rate of 4–8.4%) and 5-year postoperative survival of 70% for patients ≤75 years old[11]. The second approach is minimally invasive EVAR, which has a 15–52% risk of endoleaks[12]. Guidelines of the Vascular Society and the National Screening Committee (UK) recommend that asymptomatic aneurysms ≤4.5 cm in diameter should be followed up with ultrasound every 6 months, and those 4.5 to 5.5 cm every 3 or 6 months[13].

Conclusion

AAA, though uncommon, should be considered in any patient presenting with abdominal and lower back pains. The diagnosis of AAA can be elusive, especially when the symptoms are non-specific, particularly in the early phase, leading to considerable diagnostic delays by non-suspecting clinicians. We recommend abdominal imaging with basic modalities like ultrasonography in the workup of abdominal pain of undifferentiated aetiology to facilitate earlier identification of these vascular problems, which can timely inform definitive management. Even in the absence of EVAR, open repair remains a safe and durable option for the management of AAAs.

Authors' contributions (roles)

GM, PC, WM, SC and EB conceptualised, drafted, reviewed and edited the manuscript.

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None.

Conflict of interests

None to declare.

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