

Ruptured abdominal aortic aneurysm presenting as groin pain

Richard M Lynch

Introduction

RUPTURED abdominal aortic aneurysm is a common preventable cause of death, responsible for approximately 5800 deaths in men and 3500 deaths in women in England and Wales in 1999, equivalent to 2.2% of all deaths in men aged 60 years and over and 1.2% of deaths in women over the age of 65 years.¹ The prevalence of abdominal aortic aneurysm is increasing and has a male-to-female ratio of 6 to 1.² Approximately 75% of abdominal aortic aneurysms will eventually rupture, an event associated with mortality in excess of 80%.²

Case history

A 67-year-old male presented to the accident and emergency department complaining of a one-hour history of sudden onset severe pain in his right groin, which radiated to his buttock. Past medical history included ischaemic heart disease, asthma, and hypothyroidism. The patient underwent a pacemaker insertion three years earlier. Medications included aspirin, isosorbide mononitrate, sotalol, terbutaline and thyroxine. Examination revealed a noticeable pallor, a heart rate of 63 beats per minute and a blood pressure of 166/93. Abdominal examination identified a soft, non-tender and non-distended abdomen. There was no evidence of an inguinal or abdominal mass. Femoral pulses were recorded as grade III. Morphine was administered for pain relief and a referral was made to the on-call surgical team.

Surgical review, performed approximately one hour later, suggested a palpable mass in the abdomen but, before any further investigations or treatment could be considered, sadly he suffered a cardiac arrest and died. This occurred approximately two and a half hours after the initial onset of pain. Post mortem examination revealed a ruptured abdominal aortic aneurysm overlying the lumbar plexus on the right psoas muscle which caused irritation of the L1 and L2 branches of the lumbar plexus — the genitofemoral nerve — resulting in referred pain to the groin in the absence of any detectable swelling.

A literature search, to determine the accuracy of diagnostic modalities commonly used in the diagnosis of abdominal aortic aneurysm, was performed using MEDLINE from 1966 to the present and EMBASE from 1988 to the present, supplemented by a bibliographic search of papers already identified and a hand search of vascular and surgical journals.

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Diagnosis

Opportunistic detection of a clinically unsuspected abdominal aortic aneurysm during physical examination, or investigation for another reason, is the most common way that abdominal aortic aneurysms are diagnosed.³ Forty-eight per cent of abdominal aortic aneurysms in a district general hospital were discovered clinically, 37.4% were discovered radiologically, and 14.6% were discovered at laparotomy.³ Of those diagnosed radiologically, subsequent physical examination showed that one-third were palpable and missed at presentation. The average size of those discovered clinically ($6.48 \text{ cm} \pm 1.32 \text{ cm}$) was significantly larger than those discovered either radiologically ($5.37 \text{ cm} \pm 1.44 \text{ cm}$, $P < 0.001$) or at laparotomy ($5.43 \text{ cm} \pm 1.48 \text{ cm}$, $P = 0.039$).

The accuracy of physical examination in the diagnosis of abdominal aortic aneurysm has a sensitivity of 68% and a specificity of 75%.⁴ Sensitivity increases with aortic diameter, from 61% for those of 3.0 to 3.9 cm, to 69% for those of 4.0 to 4.9 cm or greater, and 82% for abdominal aortic aneurysms of 5.0 cm or greater.⁴ A 1.0 cm increase in abdominal aortic aneurysm diameter doubles the odds of detecting it on clinical examination. An abdominal girth of less than 100 cm further increases sensitivity to 91%. Palpation of abdominal aortic aneurysm appears to be safe and has not been reported to precipitate rupture.

Ultrasound is accurate in the detection of non-ruptured abdominal aortic aneurysms, with a sensitivity 98.9% and specificity 99.9%, but is substantially less accurate in the diagnosis of rupture, with a high false positive rate of 33% and low specificity of 62%.⁵ In cases of suspected rupture, computed tomography scanning is a superior diagnostic tool to ultrasound, with a sensitivity of 88% and a specificity of 88%.⁶

Conclusion

Clinical examination plays an important part in the detection of abdominal aortic aneurysm and has moderate overall sensitivity; however, it cannot be relied upon to exclude them, especially if rupture is a possibility. Larger abdominal aortic aneurysms are usually palpable and more likely to be detected on clinical examination, particularly in patients who do not have a large abdominal girth.

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