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Clinical detection of abdominal aortic aneurysm in a 74-year-old man in chiropractic practice

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Received 30 July 2009; received in revised form 30 September 2009; accepted 12 October 2009

Key indexing terms:

Aortic aneurysm,
Abdominal;
Chiropractic;
Low back pain;
Diagnosis

Abstract

Objective: The purpose of this article is to present a case of abdominal aortic aneurysm to illustrate its clinical detection through history and physical examination and the importance of this condition to the chiropractic clinical setting.

Clinical Features: A 74-year-old retired man consulted a doctor of chiropractic for chronic low back pain. The history and physical examination confirmed chronic sacroiliac and a lumbar facet dysfunction. After 5 weeks, the patient stated he had stomach cramps. After this, a more thorough abdominal examination was done. The doctor of chiropractic detected an enlarged pulsatile mass upon abdominal palpation.

Intervention and outcome: The patient was sent to the cardiologist and had successful surgery within weeks.

Conclusion: An abdominal aortic aneurysm has specific symptoms and associated risk factors. If known risk factors are present, a clinical examination needs to be carried out, even though sensitivity of the clinical examination may be low. It should be a differential diagnosis in every male patient older than 50 years with low back pain. In case of suspicion, the patient should be referred for advanced imaging.

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Introduction

Most types of low back pain are caused by biomechanical disorders, but sometimes may be caused

by visceral disease.¹ One of these causes is *abdominal aortic aneurysm* (AAA), defined as an aortic diameter more than 30 mm.^{2,3} Many case studies have been written; however, the prevalence is not well known. It has been suggested to be 5% in men older than 50 years.² Abdominal aortic aneurysm is 10 times more common in 65- to 75-year-old men compared with women of the same age. Often, they are asymptomatic;

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but they can present as low back pain.⁴ About 50% of the patients presenting to a doctor of chiropractic complain of low back pain. Although most of these patients have no underlying pathology, the doctor of chiropractic must be aware that in some of these patients AAA can be the cause of their low back pain.⁵ The following case describes a patient with AAA and concurrent low back pain, who was referred for further examination after a pulsating abdominal mass was found on physical examination.

Case report

A 74-year-old retired man consulted a doctor of chiropractic for chronic low back pain. The low back pain developed slowly and was rated on a pain scale as 5 of 10. The most painful region was at the right sacroiliac joint and radiated to the patellar region. There was also a dull ache at the erector spinae muscle region. The pain worsened with walking, standing, and most particularly while stair-climbing. The patient's pain diminished when he was lying down. Previous treatments by other therapists, namely, chiropractic, general medical practitioner, physiotherapist, and manual therapist, were without permanent results. The patient reported no known accidents that may have caused back injury. The patient was a heavy smoker, but had stopped 15 years ago. Further history was unremarkable. He was not using any medication.

The physical examination showed normal vital signs. The orthopedic examination showed the following results: Adam's test showed a left concave s-curve scoliosis with ribs raised on the right while standing, increasing during forward flexion. There was reduced lumbar range of motion in right lateral flexion and extension, and prone sacroiliac joint springing revealed a painful right sacroiliac joint. The neurologic examination was positive for the following tests: no Achilles and patellar reflexes were found. There was hypoesthesia on the right L4 to S1 dermatome. Erector spinae and piriformis muscles were bilaterally painful on palpation. The chiropractic spinal and postural examination showed a leg length difference of 1.5 cm on the right while lying supine, coinciding with posterior inferior positioning of the right posterior superior iliac spine. Left lumbar facet joints were hypomobile.

The working diagnosis was chronic, moderate sacroiliac and lumbar facet dysfunction complicated by muscle hypertonicity of the piriformis and erector spinae muscles. Treatments were planned for 10 weeks, once a week followed by reexamination. The first 3

treatments used Thompson drop technique. After the third treatment, the patient noted that the daily pain had improved; however, the pain would return after 1 day. Trigger point therapy was used during the fourth treatment to reduce the hypertonicity. A side posture lumbar adjustment was applied at treatment 5; and together with the trigger point therapy, it provided immediate relief of the low back pain.

During the fifth treatment (week 5), the patient stated he had a stomach ache while lying supine that was aggravated in side lying. The aches were described as sharp intermittent pain. Therefore, abdominal examination was performed immediately. Strong pulsations were found with light palpation over the middle of the abdomen. With deeper palpation, the aorta was estimated at 5 cm in diameter; and aortic bruits were detected by auscultation. Because an aortic aneurysm was suspected, the patient's general practitioner was informed immediately. An ultrasound examination was conducted the following day, and the abdominal aorta was measured to be 5.3 cm. Within 2 weeks, surgery was performed. Five months later, the patient had completely recovered from surgery.

Discussion

Abdominal aortic aneurysm is an unusual cause of low back pain, compared with the frequency of mechanical low back pain. Abdominal aortic aneurysm is uncommon before 50 years of age and is asymptomatic in 66% to 75% of cases.^{4,6} When there are signs, the classic complaints are back ache and abdominal pain.¹ It is important to know the signs and symptoms and the risk factors because the diagnosis is often not obvious. This results in a misdiagnosis in 20% to 30% of cases.⁷

Patients may mention hip, flank, groin, or buttock pain in addition to their back or abdominal pain.^{6,8} The pain is often vague; but when there is compression of an AAA on an adjacent structure such as a vertebral end plate, the pain may be described as sharp or stabbing.⁶ Patients may also report nausea, weight loss, early satiety, or a feeling of fullness.^{7,8} Distal embolization or aortic occlusion due to thrombosis may give leg symptoms, with symptoms of sudden ischemia, painful cyanotic toes, and palpable pedal pulses. A rupture or dissection (in which hemorrhage into the media separates the layers of the vessel) causes more acute pain and has a sudden onset.^{6,7} The patient described in this case did have low back pain radiating into the

leg, but did not show any signs of thrombosis as described above.

Age, sex, smoking, and family history are the most significant AAA risk factors.³ The majority of those diagnosed with AAA are 65 years and older.⁸ Abdominal aortic aneurysm is 5 to 10 times more common in men than in women.^{2,6,7} This particular patient matches the criteria for risk factors of age, sex, and history of smoking. A history of smoking, defined as a consumption of more than 100 cigarettes in a lifetime, is a significant risk factor.⁹ Cessation of smoking is the only modifiable factor associated with AAA expansion.²

First-degree family members of a known aneurysm patient, male relatives in particular, are also at increased risk.¹⁰ It is not known whether the patient had any relatives with AAA.

One more positive association with AAA is atherosclerotic disease, which includes coronary heart disease and claudication.^{4,6,8,9} Patients who have had abdominal imaging performed in the past 5 years are less likely to have AAA larger than 4.0 cm.⁹ This patient did not have any other health complaints, which means that he either did not have any of the above-mentioned risk factors or that he had not been questioned about it. No single risk factor or characteristic will definitively prove AAA because it is a multifactorial disorder with multiple genetic and environmental risk factors.¹⁰

The usefulness of the clinical examination to detect AAA is limited. However, Mechelli et al⁸ state that abdominal palpation and auscultation are important, especially when there is a suspicion of a nonmechanical or abdominal pathology for low back pain or when patients do not respond to the treatment. Another reason for clinical examination is when the clinical history gives a suspicion for AAA. In this case, the abdominal palpation was not performed at initial examination because of presenting symptoms; but the change in pain pattern warranted the examination to be done at a later visit.

The abdominal aorta can be palpated at or slightly above the umbilicus in the epigastrium in the supine position with the knees bent.⁶ In thin people, an abdominal pulse can easily be felt. In the case of AAA, a prominent and often nontender, strong, pulsatile mass is felt.^{7,8} The accuracy of detecting AAA is dependent upon the patient's girth as well as the size of the aneurysm. When the patient's girth is 100 cm or greater, very few AAAs are palpable. However, as aneurysm size increases, the chance of clinical detection increases.¹¹ This means that, in an obese patient, when

the history has enough signs and risk factors present, a referral for an ultrasound evaluation may be warranted.¹² In this average-sized patient, the AAA was so large that it was easy to find with palpation.

In addition to abdominal palpation, auscultation for abdominal or femoral bruits may be useful for clinical detection of AAA. Auscultation is performed along the course of the aortic and femoral arteries. However, absence of a bruit does not exclude an aneurysm.⁸ In this patient, auscultation was performed after the pulsatile mass was found on abdominal palpation and proved to strengthen the diagnostic suspicion.

Abdominal aortic aneurysm is often an incidental finding with lumbar spine radiography.⁶ Prior practitioners/therapists did not perform radiography, although the age of the patient may have been a reason to do so. Some authors have researched the viability of screening for AAA; however, abdominal palpation is not a very sensitive tool for this.^{3,4,13} It is however suggested that screening of male smokers in the 65- to 75-year age group may be useful to diagnose asymptomatic abdominal aneurysms.^{7,8} Because some of the risk factors were present, a screening palpation could have been done. These risk factors may be an indicator for an abdominal examination.

Compared with abdominal palpation, ultrasound is an effective screening tool in men, but not in women.¹⁴ An initial screening test in men older than 65 years reduces mortality by half from AAA in the population.^{3,13,15} In this patient, the aneurysm was confirmed by ultrasound examination.

Elective surgical repair of AAA has associated risks. Operative mortality rates vary from 1.4% to 5.8%, with a complication rate of 32.4%.^{4,8,16} Therefore, aneurysms are not repaired until they are at least 43 mm; some studies even mention diameters of larger than 50 to 55 mm.^{8,16} Greatest mortality is seen in patients with associated morbidity and those awaiting surgical repair for AAA, but age alone is not a limitation to surgery as seen in this patient.^{4,16}

Conclusion

An AAA has specific symptoms and associated risk factors. If known risk factors are present, a clinical examination needs to be carried out, even though the sensitivity of the clinical examination is low. It should be a differential diagnosis in every male patient older than 50 years with low back pain. In case of suspicion, the patient should be referred for advanced imaging.

Acknowledgment

The authors would like to thank John Nee for proofreading this manuscript.

Funding sources and conflicts of interest

No funding sources or conflicts of interest were reported for this study.

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