Research

Clinical Brief: Recognition of Abdominal Aortic Aneurysm

Dwain M. Daniel, DC[1]

Address: [1]Private Practice, Texas, USA.

Topics in Integrative Health Care **2011, Vol. 2(2) ID: 2.2007**

Published on **June 30, 2011** | Link to Document on the Web

ABSTRACT

Abdominal aortic aneurysm is one of the most commonly missed diagnoses in all healthcare professions. The condition usually occurs in individuals over the age of 50. Spontaneous rupture is not uncommon and when this occurs the results are deadly in a large majority of cases. This brief review will discuss high risk groups, value of screening, clinical examination and contraindications to manual therapies.

INTRODUCTION

A study was recently presented, based on the responses of 588 randomly selected doctors of chiropractic, that concluded that every 2.5 years a patient with an undiagnosed life-threatening condition will present in the typical chiropractic practice.[1] According to the findings of this survey a patient with a life-threatening abdominal aortic aneurysm (AAA) will present in the typical chiropractor's office every 11.8 years. This is not surprising as the chiropractic and medical literature are replete with reports of patients presenting with low back pain that is caused by an unruptured AAA, although asymptomatic AAA's are not uncommon.[2-7] The findings of this study should remind all physicians, not just chiropractors, of the possible presence of this relatively common, life-threatening condition.

Kent et al estimate the prevalence of AAA to be 1.1 million individuals in the United States.[8] Early recognition of this condition is essential. The mortality rate from a ruptured AAA is 80%, with 50% dying before they reach the hospital.[9] Conversely, elective surgical repair in high-risk patients has a 30-day survival rate of 93.2%[10] and a 50% five year survival rate.[11] Eckstein et al estimates that screening men over 65 years of age could reduce death rates from rupture of AAA by as much as 53%, and they state that the annual risk of rupture, based on size, is as follows:[12]

1. 3.0-3.9 cm: 0.4%
2. 4.0-4.9 cm: 1.1%
3. 5.0-5.9 cm: 10%
4. 6.0-6.9 cm: 23%
5. 7.0-7.9 cm: 33%
6. >8.0 cm: 50%

SCREENING

The U.S. Preventive Services Task Force *(USPSTF) reco*mmends that physicians provide abdominal ultrasonography screening to males aged 65 to 75 who have ever smoked. *The USPSTF found at least fair evidence that ultrasonography improves important health outcomes and concludes that benefits outweigh harms.*[13] **Table 1** shows other important risk factors for AAA, in addition to age, sex and tobacco use.[14,15]

Table 1. Risk factors for AAA*

Risk Factor	Odds Ratio
Smoking < 20 cigarettes/day	13.72
First degree family history	4.00
Use of statins	3.72
Low serum HDL	3.25
High total cholesterol	2.11
Hypertension	1.54

* Age, sex, and smoking = 20 cigarettes are not included in the table but are also risk factors. Sources: Forsdahl SH, et al. Risk factors for abdominal aortic aneurysms: a 7-year prospective study: the Tromso Study, 1994-2001. *Circulation* 2009, 119: 2202-2208[14] and Aggarwal S, Qamar A, Sharma V, Sharma A: Abdominal aortic aneurysm: A comprehensive review. *Exp Clin Cardiol* 2011, 16: 11-15. [15]

Men are the high risk group for developing AAA, but it should be noted even though women have one-fifth the number of AAA's they suffer one-third of the ruptures and have almost as many deaths as men.[16]

It is interesting to note that the number of people needed to be screened to prevent one disease-specific death for breast cancer (mammography) is approximately 2000 and colorectal cancer (colonoscopy) is 862. Only 350 people need to be screened to prevent 1 death from a ruptured AAA.[12]

Occasionally a radiograph taken in the course of a routine examination will reveal incidental plaquing of the abdominal aorta. This may indicate an AAA and warrants additional investigation. It should also be noted that lack of plaquing does not eliminate AAA as it is only present in 50% of cases.[17] **Figure 1** demonstrates the presence of a significant AAA found on routine radiographic examination.

Demonstration of AAA on lateral lumbar radiograph

Although it is not the ideal screening method, palpation of the abdomen has demonstrated value in detecting aneurysms larger than 5 cm in individuals who have a girth of less than 100 cm (39.37 inches). A study by Lederle and Simel indicated that the sensitivity of this method in that population is 76%, which gives this test reasonable accuracy to rule out an AAA.[18] The palpation method used in this study was described as follows:

- Place patient supine, knees flexed
- With both hands palm-down on abdomen, each index finger on either side of the pulsation (each systole should move fingers apart), begin cephalad and left of umbilicus.
- Measure width
- Aortas >2.5cm merit further evaluation

A second study of 200 subjects also reported similar sensitivity in individuals with larger AAA's who were not obese.[19]

Table 2 summarizes the guidelines issued by the *Journal of Vascular Surgery* as to the proper action to be taken with AAA.[20]

Table 2. Guidelines for assessment of AAA.*

Diameter of AAA	Assessment recommendation
< 3 cm	no further testing
3 to 4 cm	yearly ultrasound examination
4 to 4.5 cm	ultrasound examination every 6 months
> 4.5 cm	referral to a vascular specialist.

* Source: Kent KC, *et al*.: Screening for abdominal aortic aneurysm: a consensus statement. *J Vasc Surg* 2004, 39: 267-269.[20]

SPINAL MANIPULATION

Although all physicians should be more aware of AAA, those individuals practicing manual therapies should be particularly cautious. High-velocity spinal manipulation is considered a contraindication for patients with AAA according to almost all sources.[21-24] Although a review of the scientific literature could not identify any examples of spinal manipulation causing a rupture of AAA, logic dictates this is a potentially dangerous maneuver. Considering the significant numbers of spontaneous ruptures

occurring in high-risk populations it is reasonable to avoid utilizing forceful manipulation to this region of the body.

CONCLUSION

Based on the best available information, all physicians should consider the presence of AAA in any patient over the age of 50. In those patients, especially males with a history of smoking at any time in their life, abdominal palpation should be performed. High risk patients, regardless of palpation findings should be advised of their risk and the recommendation of ultrasonography made.

References

1. Daniel DM, Ndetan H, Rupert R, Martinez D. Recognition of undiagnosed life threatening conditions in chiropractic practice: a randomized survey. 2011; Toronto. 105.

2. Hocaoglu S, Kaptanoglu E, Hocaoglu S: Low-back pain in geriatric patients: remember abdominal aortic aneurysm. *J Clin Rheumatol* 2007;13:171-172.

3. Seckin H, Bavbek M, Dogan S, Keyik B, Yigitkanli K: Is every chronic low back pain benign? Case report. *Surg Neurol* 2006;66:357-360.

4. Patel SN, Kettner NW: Abdominal aortic aneurysm presenting as back pain to a chiropractic clinic: a case report. *J Manipulative Physiol Ther* 2006;29:409-7.

5. ten HR, Meijer RW, Heitbrink MA: [Back pain? Don't forget the abdomen]. *Ned Tijdschr Geneeskd* 2004;148:1125-1129.

6. Borenstein DG: A clinician's approach to acute low back pain. *Am J Med* 1997;102: 16S-22S.

7. Vernon LF, Peacock JR, Esposito AP: Abdominal aortic aneurysms presenting as low back pain: a report of two cases. *J Manipulative Physiol Ther* 1986;9:47-50.

8. Kent KC, Zwolak RM, Egorova NN, Riles TS, Manganaro A, Moskowitz AJ et al.: Analysis of risk factors for abdominal aortic aneurysm in a cohort of more than 3 million individuals. *J Vasc Surg* 2010;52:539-548.

9. Chambers D, Epstein D, Walker S, Fayter D, Paton F, Wright K et al.: Endovascular stents for abdominal aortic aneurysms: a systematic review and economic model. *Health Technol Assess* 2009;13:1-318, iii.

10. Filipovic M, Goldacre MJ, Gill L: Elective surgery for aortic abdominal aneurysm: comparison of English outcomes with those elsewhere. *J Epidemiol Community Health* 2007;61:226-231.

11. Scobie TK: Abdominal aortic aneurysms: how can we improve their treatment? *Can Med Assoc J* 1980;123:725-729.

12. Eckstein HH, Bockler D, Flessenkamper I, Schmitz-Rixen T, Debus S, Lang W: Ultrasonographic screening for the detection of abdominal aortic aneurysms. *Dtsch Arztebl Int* 2009;106:657-663.

13. Screening for Abdominal Aortic Aneurysm. U.S.Preventive Services Task Force . 2005. 5-10-2011.

14. Forsdahl SH, Singh K, Solberg S, Jacobsen BK: Risk factors for abdominal aortic aneurysms: a 7-year prospective study: the Tromso Study, 1994-2001. *Circulation* 2009;119:2202-2208.

15. Aggarwal S, Qamar A, Sharma V, Sharma A: Abdominal aortic aneurysm: A comprehensive review. *Exp Clin Cardiol* 2011;16:11-15.

16. Vouyouka AG, Kent KC: Arterial vascular disease in women. *J Vasc Surg* 2007; 46:1295-1302.

17. Yochum T: A Case of Life or Death. *J Neuromusculoskeletal Sys* 1994;2:93-96.

18. Lederle FA, Simel DL: The rational clinical examination. Does this patient have abdominal aortic aneurysm? *JAMA* 1999;281:77-82.

19. Fink HA, Lederle FA, Roth CS, Bowles CA, Nelson DB, Haas MA: The accuracy of physical examination to detect abdominal aortic aneurysm. *Arch Intern Med* 2000;160:833-836.

20. Kent KC, Zwolak RM, Jaff MR, Hollenbeck ST, Thompson RW, Schermerhorn ML et al.: Screening for abdominal aortic aneurysm: a consensus statement. *J Vasc Surg* 2004;39:267-269.

21. Wyatt LH: *Handbook of Clinical Chiropractic Care*, 2nd edn. Jones and Bartlett; 2005.

22. Gatterman M: Standards of practice relative to complications of and contraindications to spinal manipulative therapy. *J Canadian Chiropr Assoc* 1991;34:232-236.

23. Assendelft WJ, Bouter LM, Knipschild PG: Complications of spinal manipulation: a comprehensive review of the literature. *J Fam Pract* 1996;42:475-480.

24. Eck JC, Circolone NJ: The use of spinal manipulation in the treatment of low back pain: a review of goals, patient selection, techniques, and risks. *J Orthop Sci* 2000; 5:411-417.