What are the risk factors for small AAA growth & rupture?

Do statins help?
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RESCAN an international project 2009-13

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*Individual patient data meta-analysis of aneurysm growth in 18 studies, with >15000 persons*

RESCAN methods

Potential studies identified from a systematic review of small AAA growth (BJS 2011) & meeting abstracts

Request to authors for data (age, gender, smoking, medical history, drug history with sequential aortic diameter measurements with dates, also dates of AAA repair, rupture or death

18 studies
15475 patients
228 ruptures

Mainly external ultrasound diameters

Growth rate increases with aortic diameter

average growth rate 2.2 mm/y
similar in men & women

Factors influencing AAA growth rate

• Increasing aneurysm diameter

• Smoking increase growth rate by 20%

• Diabetes decreases growth rate by 25%

• Cholesterol, blood pressure, statins, anti-hypertensive drugs and aspirin had no effect

• Year of enrolment 1985-2008 had no effect

Statin use & aneurysm growth rates

Mean growth 2.1 mm/y

Australia
England 3
USA
Canada
Sweden
UK

Summary

Effect on growth rate (mm/yr)
Rupture rate of small aneurysms is low & doubles for each 0.5cm increase in diameter

Factors influencing small AAA rupture rate

- Increasing aneurysm diameter
- Age, 140% per decade
- Sex, 4-fold increase in women
- Current smoking, 2-fold increase
- Blood pressure, 30% per 10mmHg mean pressure
- Year of enrolment 1985-2008, 4% per annum, perhaps a statin effect

Risk factors for small aneurysm rupture

Increasing with:
- female gender
- increasing age
- mean arterial pressure
- smoking (stronger than growth effect)

Decreasing with:
- time (possibly a statin effect??)

Physical factors control rupture
Biological factors control growth