Cardiovascular risk in patients with small abdominal aortic aneurysms

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Abstract

Background Abdominal aortic aneurysm (AAA) is a cardiovascular health problem. Ultrasound screening has been shown to reduce the risk of AAA-related, but not all-cause, mortality. The recent introduction of screening in several countries has meant that thousands of patients with a small AAA (<5·5 cm) that does not require immediate treatment are diagnosed annually. We sought to investigate the cardiovascular profiles of patients with ectatic aortas and assess whether participation in screening reduces cardiovascular risk.

Methods We used three sets of data: from the National Health Service AAA Screening Programme (NAAASP) during the 2013–14 round that were linked with Health Episode Statistics (HES) (235,409 individuals); a subset of the Framingham Study population who had an abdominal CT scan in 2004–05 and were followed up for 10 years (1,383 individuals); and data for patients with a small AAA who had been in surveillance for at least 1 year in the UK Aneurysm Growth Study (UKAGS; 384 individuals with small AAA) or from a national UK audit (1,538 individuals with small AAA), to assess cardiovascular risk and events.

Findings In the linked NAAASP–HES cohort, cardiovascular mortality was 0·30% (95% CI 0·28–0·32%) for individuals with an abdominal aortic diameter of less than 2·5 cm; 0·81% (0·51–1·11) for those between 2·5 and 2·9 cm; and 1·30% (0·90–1·71) for those less than 3·0 cm. Death from a cardiovascular event was more likely for individuals with a small AAA than for those without AAA (risk ratio 4·33, 95% CI 3·15–5·97). In the Framingham cohort, abdominal aortic diameter was independently associated with cardiovascular events (hazard ratio [HR] 1·1, 95% CI 1·02–1·18; p<0.0001). An abdominal aortic diameter of more than 2·5 cm was also associated with cardiovascular events (HR 7·6, 95% CI 5·1–11·3; p<0.0001). In the UKAGS and audit populations, patients were not more likely to take antiplatelet agents or statins after entering screening surveillance; cholesterol concentrations and blood pressure also increased.

Interpretation In these contemporary large cohorts of patients with small AAA, cardiovascular events and death were common and were the leading cause of death. The implication is that patients are not more likely to receive cardiovascular protection if they enter screening or
surveillance with existing protocols. Cardiovascular risk reduction interventions should be implemented in screening programmes in the future.

**Contributors**

AS responsible for data collection, visualisation and funding acquisition, and wrote the abstract. MB conceived and supervised the study. DS analysed the data and wrote the abstract.

**Declaration of interests**

We declare no competing interests.

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