
Hand-held Ultrasound for Abdominal Aortic Aneurysm Detection



A prospective study of a screening programme using hand-held ultrasound, led by family physicians in primary healthcare (PHC) settings, suggests that the programme was easy to administer, rapid, and successful in the early detection of abdominal aortic aneurysm. The study is published in the journal PLoS ONE.

See Also: [Doppler Sound Database: A Useful Aid for Clinicians](#).

"Hand-held ultrasound could be a feasible tool for the PHC family physician, as it is easily repeatable and safe, without a risk of radiation. In the near future, technological advances may further improve the portability, reliability, and accuracy of hand-held ultrasound devices," authors of the study wrote.

Abdominal aortic aneurysms (AAA) are dilatations of the aorta measuring 3 cm in diameter or larger, commonly involving the infrarenal portion. Risk factors for AAA include age, male sex, smoking, hypertension, heart disease, family history of AAA, hypercholesterolaemia and low HDL-cholesterol. The prevalence is 4% in men aged 50–79 years and 7% in men aged 65–83 years. By contrast, in women aged 65–79 years the prevalence is less than 1%. Rupture, the most serious complication, correlates with the size of the AAA.

Ultrasonography is the gold standard tool for AAA screening due to its simplicity, safety, cost-effectiveness, reproducibility and public acceptance. Hand-held ultrasound, which entails reduced cost and easier handling, may be a good complementary tool for family physicians. This study assessed the reliability of a screening programme led by PHC family physicians using a hand-held ultrasound device to determine the prevalence of AAA and associated cardiovascular diseases in a Mediterranean population.

The prospective study population consisted of patients assigned to three urban, public PHC centres in Barcelona (Spain). The inclusion criteria were male sex and age 60 years or older. Participants were recruited by randomly-selected telephone calls. Ultrasound examinations were performed by four trained family physicians with a hand-held ultrasound device. AAA observed were verified by confirmatory imaging using standard ultrasound or computed tomography. Cardiovascular risk factors were determined.

The prevalence of AAA was computed as the sum of previously-known aneurysms, aneurysms detected by the screening programme and model-based estimated undiagnosed aneurysms. Of the 1,010 men screened, 995 (98.5%) men had normal aortas and 15 (1.5%) had AAA. Eleven out of 14 AAA cases (78.6%) had AAA on confirmatory imaging (one patient died).

The total prevalence of AAA was 2.49%. Ever smoking, hyperlipidaemia and coronary heart disease were the most prevalent risk factors associated with AAA. Multivariate logistic regression analysis identified coronary heart disease as the independent factor with the highest odds ratio.

In this study, patients had a median aortic diameter of 3.5 cm compared with 4.7 cm in patients diagnosed incidentally. "The probability of a ruptured aneurysm is directly proportional to size, and a significant difference of 12 mm may be a very strong argument in favour of a PHC AAA screening programme to avoid a large number of patients with ruptured AAA in whom a prior opportunity for detection is missed," the authors noted.

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