

Change in Smoking Habits After Having Been Screened for Abdominal Aortic Aneurysm

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WHAT THIS PAPER ADDS

Smoking cessation is a fundamental part of taking care of patients with abdominal aortic aneurysm (AAA), yet little is known about how to support this group of patients. This base-line study of 65-year-old smokers attending AAA screening helps us to understand the modest effect of standard healthcare counselling. There was a reduction of smoking in all groups; however, those with AAA reduced their smoking more than those with a normal or sub-aneurysmal (25–29 mm) aorta. They also recalled more often having been counselled to stop smoking. Further research is needed to identify a more effective support.

Objectives: To study smoking habits among men with abdominal aortic aneurysm at screening at 65 years of age, and during follow-up, as a base-line study to evaluate future interventions.

Design: Nested case–control study.

Patients and methods: Between 2006 and 2011, 8150 65-year-old men (compliance 85%) were screened for AAA in Uppsala County, Sweden. Among 292 men with an aortic diameter of at least 25 mm, 77 were active smokers at the time of screening. At follow-up of smoking habits in 2012, 53 men (69%) participated in this study, 28 had an AAA of at least 30 mm and 25 a sub-aneurysmal aorta (SAA) 25–29 mm at baseline. For each case, one control was randomly selected, all active smokers with aortic diameter less than 25 mm at baseline, matched for age and year of screening. Telephone interviews were performed at a median 34 months (range: 4–67) after screening.

Results: Men with AAA had hypertension more often than controls (68% vs. 23%, $p < .001$). Men with AAA and SAA reported more smoking years than controls ($p = .017$). Cessation rate among patients with AAA did not differ significantly compared with men with an aorta less than 30 mm (29% vs. 15%, $p = .159$), but they had reduced their consumption of cigarettes/day significantly more than men with SAA and controls (–8.2 vs. –3.0 vs. –4.5, $p = .030$). Men with AAA recalled having been informed about the importance of smoking cessation at the time of screening more often ($p = .031$). There was no difference in growth of the AAA between those who continued, and those who quit smoking (2.03 vs. 2.01 mm/year, $p = .982$), but the study was not powered to study AAA growth.

Conclusions: Although counselling in a normal healthcare setting had some effect, the results indicate a need to tailor interventions to further increase smoking cessation rates among men diagnosed with both AAA and SAA.

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INTRODUCTION

The most severe complication of abdominal aortic aneurysm (AAA) is rupture with high mortality rate, even after surgical repair. Patients with AAA are often asymptomatic but the disease can be detected by screening persons at risk with ultrasound imaging.^{1–5} After 13 years of follow-up after screening, all-cause-mortality was reduced with 3%

in the entire population of elderly men invited to screening in the UK.⁶ Interestingly, the reduction of mortality was not confined to aneurysm-related deaths. For instance, in the 10-year results of the MASS trial the screened population had a reduction of 141 aneurysm-related deaths, but also a reduction of 124 deaths related to ischaemic heart disease.⁷ Although not specifically reported, the authors hypothesize that this reduction of non-aneurysm-related mortality may be related to smoking cessation and secondary prevention among the patients with detected AAA.

Swedish AAA screening has shown that the prevalence of the disease was lower than expected, suggesting that there is a change in epidemiology probably related to changes in

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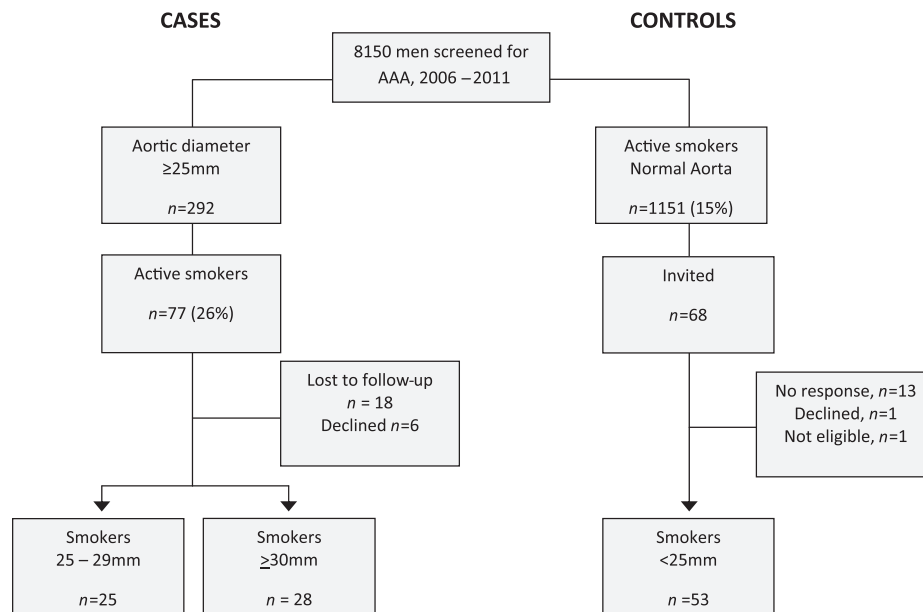


Figure 1. Study design.

smoking habits⁸ and similar findings were reported from the UK.⁹ Thirteen per cent of the general 65-year-old male population screened for AAA in the Swedish study reported current smoking at screening and 63% had ever smoked.⁸ Among those having AAA, however, 33% were active smokers and 87% had ever smoked. There is a substantially stronger association between ever smoking and AAA than the association between ever smoking and coronary or cerebrovascular disease.¹⁰ The number of smoking years and pack-years among past and current smokers are correlated with the development and progression of aortic aneurysms.² A correlation between smoking cessation and decreased growth rate of the aneurysms among patients under surveillance also has been shown.^{2,11} Smoking cessation for AAA patients is cost-effective, because of increased long-term survival, as well as a decreased need for surgery.¹² Despite this great importance of smoking, and of smoking cessation, among patients with AAA, no data were found on how normal healthcare affects long-term smoking habits in this patient group.

Although the most common definition of AAA in men is an aortic diameter of at least 30 mm,¹³ there is accumulating evidence that men with an aortic diameter in the range 25–29 mm at the age of 65, very often develop AAA later in life^{14–16} and have an increased risk of cardiovascular events in general. This group, which is approximately the same size as those with an AAA,^{8,16} is often referred to as having a “sub-aneurysmal aorta” or an “aneurysm in formation”. In this investigation the term sub-aneurysmal aorta (SAA) was chosen.

The aim of this study was to assess smoking habits in a contemporary cohort of 65-year-old men invited for AAA screening, and the importance of the screening result on smoking cessation over a 5-year follow-up period. The purpose of such a descriptive study was to form a basis for further research aimed at developing a tailored intervention

programme to help 65-year-old men with a dilated aorta to stop smoking.

PATIENTS AND METHODS

A total of 8150 men were screened for AAA in the County of Uppsala, Sweden between September 2006 and December 2011. Two hundred and ninety-two men were diagnosed with an aorta of at least 25 mm, among whom 77 were active smokers at the time of screening. Eighteen smokers did not participate in the continued research programme for the following reasons: two died, 11 declined active participation in the research, three did not respond, and two did not speak Swedish. At follow-up, four men could not be reached and two declined participation in this particular study (Fig. 1).

Among the 53 men (69% of the original cohort of 77 smoking men with a screening detected aorta ≥ 25 mm) constituting the study population of this investigation, 28 had an AAA of at least 30 mm and 25 had a SAA of 25–29 mm. For each case ($n = 53$), one control, a smoker at the time of screening with a normal aortic diameter, matched for age and time of screening, was randomly recruited to participate in the study (Fig. 1). Selection of controls took place with a lottery system based on personal identity code. In all, 68 potential controls were invited, 13 did not answer, one declined actively, and one claimed he had not been a smoker at baseline. Follow-up interviews for cases and controls were performed at a median of 34 months (range 4–67 months) after baseline screening.

The regional ethical review board in Uppsala approved the study.

Routines regarding smoking cessation

The patients with both AAA and SAA were informed by telephone or at a follow up visit, by the doctor or a

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