Screening for abdominal aortic aneurysm (AAA) reduced AAA mortality in Danish men 64 to 73 years of age

Lindholt JS, Juul S, Fasting H, Henneberg EW. **Screening for abdominal aortic aneurysms: single centre randomised controlled trial.** BMJ. 2005;330:750.

Clinical impact ratings: GIM/FP/GP ★★★★★★☆

QUESTION

In Danish men 64 to 73 years of age, does screening for abdominal aortic aneurysm (AAA) reduce specific mortality caused by AAA and all-cause morality?

METHODS

Design: Randomized controlled trial.
Allocation: Unclear allocation concealment.*
Blinding: Blinded (outcome assessors).*
Follow-up period: Mean 52 months.
Setting: 5 hospitals in Viborg County, Denmark.
Participants: 12 639 Danish men 64 to 73 years of age (mean age 68 y) born between 1921 and 1933 who were living in Viborg County, Denmark.
Intervention: Screening for AAA by abdominal ultrasonography (n = 6333) or no screening (control group, n = 6306). An AAA was deemed to be present if the infrarenal aortic diameter was ≥ 3 cm. Participants with AAA ≥ 5 cm were referred for surgical evaluation, and those with smaller aneurysms were offered annual scans to check for expansion.
Outcomes: Specific mortality caused by AAA, all-cause mortality, number of planned and emergency operations for AAA, number of ruptured AAAs, and number of life-years gained.
Patient follow-up: All participants were included in the intention-to-screen analyses.

MAIN RESULTS

The rates of specific mortality caused by AAA, emergency operations for AAA, and ruptured AAA were lower in the screened group than in the control group (Table). However, the rates of all operations combined and of planned elective operations were greater in the screened group than in the control group (Table). The groups did not differ for all-cause mortality (Table). The number of life-years gained by offering screening to 6333 men was 32 (95% CI 14 to 49) during the first 5 years, and this might be expected to increase with time.

CONCLUSION

In Danish men 64 to 73 years of age, screening for abdominal aortic aneurysm (AAA) reduced specific mortality caused by AAA but not all-cause morality.

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*See Glossary.

Screening for abdominal aortic aneurysm (AAA) vs no screening (control) in Danish men 64 to 73 years of age at mean 52 months†

Outcomes	Screening	Control	RRR (95% CI)	NNT (CI)
Specific mortality caused by AAA	0.14%	0.43%	67% (29 to 84)	350 (203 to 994)
All-cause mortality	14.8%	16.2%	8% (0 to 15)	Not significant
Ruptured aneurysms	0.13%	0.46%	73% (40 to 87)	300 (184 to 652)
Emergency operations for AAA	0.08%	0.32%	75% (34 to 91)	420 (239 to 1103)
			RRI (CI)	NNH (CI)
Planned elective operations	0.76%	0.17%	335% (126 to 736)	172 (119 to 279)
All operations combined	0.84%	0.49%	70% (9 to 165)	290 (156 to 1578)

†Abbreviations defined in Glossary; RRR, RRI, NNT, NNH, and CI calculated from data in article.

COMMENTARY

The study by Lindholt and colleagues is 1 of several large population screening studies (1), and it confirms previous findings, particularly those of the MASS trial (2), that screening for AAA reduces specific mortality caused by AAA. In men 64 to 73 years of age, about 3 AAA-related deaths were averted for every 1000 men invited for screening. However, the 75% reduction in emergency surgery among the screened population was offset by a 3- to 4-fold increase in the total number of aneurysm procedures.

Because the cost-effectiveness of screening is highly dependent on the underlying prevalence, screening a population with a low level of opportunistic identification of AAA and high prevalence will be most cost-effective.

Clearly, screening is effective in a population of men 64 to 73 years of age. But what are the most cost-effective screening strategies, mechanisms for achieving a high rate of compliance, cost-effectiveness in other populations, relative merits of different screening regimens, and effects of new operations of endovascular aneurysm repair in managing a screened population? Answers to such questions are likely to require a combination of research methods, including further clinical trials and the use of decision and economic modeling techniques (3).

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