INPLASY

Risk factors for abdominal aortic aneurysm in general populations: A systematic review and meta-analysis

INPLASY2023120024
doi: 10.37766/inplasy2023.12.0024
Received: 06 December 2023
Published: 06 December 2023

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2023120024

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 06 December 2023 and was last updated on 06 December 2023.

INTRODUCTION

Review question / Objective To systematically explore the risk factors associated with AAA in the general population using a meta-analytic approach.

Rationale Abdominal aortic aneurysm (AAA) has a high mortality rate upon rupture. Considering that most AAAs are asymptomatic before rupture, screening for the disease is particularly important. Some countries have already implemented AAA screening programs. However, while such programs have demonstrated effectiveness in reducing mortality and rupture rates by enabling timely diagnosis and reducing healthcare costs, exploring the risk factors of AAA can reduce its incidence by identifying high-risk populations and facilitating early interventions targeting modifiable risk factors.

Condition being studied The main risk factors for AAA include advanced age, male gender, smoking history, coronary heart disease, hypertension, peripheral artery disease, previous myocardial infarction, and a family history of AAA. In young patients, they include genetics and inflammatory diseases, while risk factors for AAA in elderly individuals still need further investigation.

METHODS

Search strategy (1) "Abdominal Aortic Aneurysms" OR "Aneurysms, Abdominal Aortic" OR "Aortic Aneurysms, Abdominal" OR "Abdominal Aortic Aneurysm" OR "Aneurysm, Abdominal Aortic"; (2) "Screening" OR "Mass Screenings" OR "Screening, Mass" OR "Screenings, Mass" OR "Screenings"; (3) "Factor, Risk" OR "Factors, Risk" OR "Risk Factor" OR "Population at Risk" OR "Risk, Population at" OR

"Populations at Risk" OR "Risk, Populations at" NOT "surgical repair".

Participant or population Studies that examined the general adult population.

Intervention Studies that reported ≥3 factors for the risk of AAA.

Comparator Not applicable.

Study designs to be included Cross-sectional, case-control, and cohort studies.

Eligibility criteria cross-sectional, case-control, and cohort studies.

Information sources PubMed, Embase, and Cochrane Library.

Main outcome(s) studies that reported on the effect estimates for risk factors related to AAA.

Data management The two authors independently extracted the relevant information from the included studies according to the standard procedure. Inconsistencies were discussed by the team until a consensus was reached.

Quality assessment / Risk of bias analysis The study's methodological rigor was assessed using the Newcastle-Ottawa Scale (NOS), which evaluates three domains: selection (4 items), comparability (1 item), and outcome (3 items). The scale ranges from 0 to 9.

Strategy of data synthesis The pooled analyses were then conducted using a random-effects model, taking into account potential variability across the included studies.

Subgroup analysis Subgroup analyses were also performed according to country, and the differences between subgroups were compared using an interaction t test, which assumed the data distribution in subgroups meet normal distribution.

Sensitivity analysis Sensitivity analysis was performed to assess the stability of pooled conclusions by sequentially removing individual studies.

Language restriction English.

Country(ies) involved China.

Keywords abdominal aortic aneurysm; risk factors; systematic review; meta-analysis.

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