Ultrasound screening for abdominal aortic aneurysms: Advantages for men, but not for women

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Men benefit from one-time screening for abdominal aortic aneurysms via ultrasound. Studies provide proof that their risk of dying is reduced, the abdominal aorta ruptures less often, and emergency surgery can be avoided more often. Far fewer data are available for women and they show no relevant differences between the groups investigated. This is the result of the final report published on 28 May 2015 by the German Institute for Quality and Efficiency in Health Care (IQWiG).

Rupture is often fatal, even if emergency surgery is performed

An abdominal aortic aneurysm (AAA) is described by doctors as a pathological dilation of the main abdominal artery (aorta). Its diameter varies depending on age and sex; an abdominal aorta with a diameter of 3 cm or more is called an AAA. The risk increases with age, whereby women are markedly less often affected than men.

Most AAAs cause no problems, that is, they are asymptomatic. However, the larger the size of the AAA, the greater the danger that this large blood vessel will rupture. Without treatment such a rupture quickly results in death. But even if patients reach a hospital on time and emergency surgery is still possible, about 40% of patients receiving open surgery and about 20% receiving endovascular surgery die.

Screening aims to lower risk of death

In contrast, if an AAA is detected in time and a patient can undergo elective surgery, the chance of survival is considerably higher: Depending on the type of surgery (endovascular or open) in Germany between 1.3% and 3.6% of patients die (30-day mortality).

The aim of screening via ultrasound is to identify, monitor, and treat an AAA before a rupture occurs. In some countries, for example, Sweden, the United Kingdom, and the United States, this type of screening is already performed in people with a higher risk of an AAA (risk populations).

3 out of 4 studies investigate only men

The Federal Joint Committee (G-BA) commissioned IQWiG to search for studies comparing one-time screening via ultrasound with a different screening strategy (e.g. using a different diagnostic technique) or no screening. The focus of the assessment was on patient-relevant outcomes.

A total of 4 randomized controlled trials (RCTs) could be included in the assessment: 2 from the United Kingdom, 1 from Denmark, and 1 from Australia. Participants were enrolled between 1988 and 1999. Three studies included only men aged 65 years or older; 1 of the 4 studies also included women, but they only comprised 6.8% of the study Population.

Men who undergo screening have better chances of survival

Data on men aged 65 years or older were summarized at different times of analysis (4-5, 10, and 13-15 years after screening) for the outcomes

"overall mortality" and "AAA-related mortality". For all of these times, IQWiG sees proof of a benefit of screening in men for both outcomes.

For women, data are only available on overall mortality at one time (4-5 years). However, due to lack of statistically significant differences between the groups investigated, the benefit of screening for AAA in women is not proven. Data on AAA-related mortality are lacking.

Screening can reduce the frequency of ruptures in men

The data on the outcomes "frequency of ruptures" and "emergency surgery" show a similar picture: In women, the available data again showed no relevant differences. In men, results differ somewhat depending on the time of analysis. Overall however, IQWiG acknowledges a benefit of ultrasound screening, as AAA ruptures and emergency surgery occur less often.

Increase in elective surgery

The data also show that the frequency of elective surgery increases with screening. On the one hand, this is the specific aim of screening and is therefore to be expected. On the other hand, these interventions, even if they are not emergencies but planned, result in hospitalization and potential complications such as bleeding, heart attacks or strokes. As this situation occurs more often and earlier in groups that undergo screening, this can be regarded as a disadvantage of screening, which, however, loses importance in view of the advantages. Again, this indication of a disadvantage applies only to men, but not to women.

The IQWiG report cannot draw conclusions on health-related quality of life and psychosocial aspects of screening, as the available data on these

issues were not evaluable or data were completely lacking.

Adapt screening to current circumstances

According to the data available, screening for AAA in men is one of the very few screening methods for which an effect on mortality is proven. On the basis of the results of this benefit assessment, it thus seems meaningful to introduce one-time screening for AAA in men from the age of 65. However, as the IQWiG researchers point out in their report, there are indications that the results are not transferable one-to-one to the current situation in Germany.

On the one hand, data from several European countries indicate that the frequency (incidence and prevalence) of AAA has decreased in the past 10 to 20 years. This seems plausible, as an important risk factor, cigarette consumption, has decreased. However, the benefit of screening for AAA might then be lower than observed in the studies included. This means that more men would need to be screened to avoid one case of death.

On the other hand, current sources, including registry data from England, indicate that the age at which an AAA occurs has shifted upwards. If this is the case, greater effects would be achieved in older men. In addition, the age of 65 years would then no longer be the most suitable age for screening.

Comprehensively inform target group about advantages and disadvantages

The introduction of population-based screening for AAA in Germany should be accompanied by quality assurance measures. For instance, clear case definitions should exist and quality standards should be

specified. In addition, it should be ensured that people with a diagnosis of AAA or an abnormal screening result can be followed up. Finally, the target group should be informed about the advantages and disadvantages of screening for AAA in a comprehensive and objective manner.

Process of report production

IQWiG published the preliminary results in the form of the preliminary report in December 2014 and interested parties were invited to submit comments. At the end of the commenting procedure, the preliminary report was revised and sent as a final report to the commissioning agency in April 2015. The written comments submitted are published in a separate document at the same time as the final report. The report was produced in collaboration with external experts.

More information: www.iqwig.de/en/projects-resul … -aneurysms.3767.html

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