Endovascular therapy of inflammatory aortic aneurysms: a meta-analysis

CRD summary
This review assessed the effects of endovascular aneurysm repair (EVAR) in people with inflammatory aortic aneurysm. The authors concluded that EVAR appeared to be feasible and beneficial, however, further research is required. The conclusions should be interpreted with caution given the nature of the evidence identified and the lack of a quality assessment; the need for further research seems appropriate.

Authors' objectives
To assess the effects of endovascular aneurysm repair (EVAR) in people with inflammatory aortic aneurysm (IAA).

Searching
PubMed was searched from January 1999 to April 2005 for papers in English or German; the search terms were given. The reference lists of retrieved articles were checked, and general medical and specific journals were handsearched.

Study selection
Study designs of evaluations included in the review
Any study design appeared to have been eligible for inclusion. To be included, the studies had to report outcomes to at least 6 months. The mean follow-up in the included studies was 18 months (range: 1 to 109).

Specific interventions included in the review
Studies where the intended treatment was EVAR were eligible for inclusion. Studies that involved a combined treatment with open surgical repair were excluded. Commonly used stent grafts in the included studies were Excluder, Vanguard, Zenith and AneuRx.

Participants included in the review
Studies on people with IAA, diagnosed according to the Walker criteria, were eligible for inclusion. Studies on ruptured aneurysms, or mycotic or inflammatory aneurysms of arteries other than the aorta, were excluded. In the included studies, all participants except one were men and the mean ages ranged from 59 to 75 years. Seven participants were additionally treated with steroids and two participants were immediately converted to open surgical repair.

Outcomes assessed in the review
To be eligible for inclusion, the studies had to assess at least one of the following: changes in aneurysm diameter, peri-aortic fibrosis (PAF) or renal impairment, as well as primary technical success, clinical success and total mortality. The outcomes had to be assessed by computed tomography.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed papers for inclusion in the review.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Two reviewers independently extracted the data from the studies. Any discrepancies were resolved by re-checking papers and by consensus. Data on primary technical success (first 24 hours) and 30-day clinical success were extracted on an intention-to-treat basis.
Methods of synthesis
How were the studies combined?
A narrative discussion of the results was given. The incidence of outcomes in the included studies was summed to give a total, which was reported as a mean (and range) and percentage for each outcome.

How were differences between studies investigated?
Differences between the studies were discussed in the narrative.

Results of the review
Fourteen case studies (46 participants) were included.

Primary technical success was achieved in 44 (95.6%) of the 46 participants. Thirty-day clinical success was 93.4% (one participant developed thrombotic graft limb occlusion).

There were no procedure-related mortalities, and mortality at the end of study follow-ups was 13%. These deaths were reported in the studies to be unrelated to EVAR.

Maximum sac diameter decreased by a median of 11 mm (range: 0 to 60 mm) in 9 studies. Two studies reported that the sac shrank, but did not give details. Three studies reported that the aneurysm was excluded at the last follow-up.

Post-intervention PAF was reported in 43 participants: in 22 (51.2%) PAF regressed, in 18 (41.8%) it remained unchanged, and in 3 (7%) it progressed.

In the 11 studies that reported on renal impairment, 24 (58.5%) participants showed signs of renal impairment. Of these participants, 11 (45.8%) showed no renal impairment after treatment and 13 (54.2%) had no change in symptoms.

In terms of graft-related complications, 4 (9%) of those successfully treated had endoleaks: 3 with type III endoleaks and one with type II endoleak. Three other participants developed graft-related complications during the follow-up periods. Fourteen re-interventions in total had to be performed on 8 participants during follow-up.

Authors' conclusions
The results of this study were encouraging, showing that EVAR of IAA is feasible, it effectively excluded aneurysm, and reduced PAF and renal impairment in most people. The periprocedural and mid-term morbidity rates and mortality rates were low and the rate of need for re-intervention was acceptable. However, the authors implied that the evidence was insufficient and further research is necessary in order to draw a firm conclusion.

CRD commentary
The aims of this review were stated clearly, with the exception of the criteria for study design. Database searching was limited to one relevant database, although other attempts to identify studies were made. Only studies in English or German were sought, so it is possible that studies were missed. In addition, although the search was limited to the years 1999 to 2004, two of the included studies were published in 1997; it was not clear why the authors specified these search dates, or if they missed other relevant studies from earlier dates. The methods used to select studies and extract the data were given, and seemed adequate to reduce reviewer bias and error. There was no mention of any quality assessment of the included studies and the data presented appeared to have come from case studies. There was little information on the included participants (severity of disease, co-morbidities, etc.) and this may affect the generalisability of the review. The authors' conclusions about the success of this intervention should be interpreted with caution in view of these comments. However, the authors also comment that further research is necessary, which seems appropriate.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.
Research: A prospective, multicentre, randomised controlled trial is needed to enable a definite conclusion to be drawn about the effects of EVAR on IAA.

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