LETTERS TO THE EDITOR

Regarding "Long-term outcomes and resource utilization of endovascular versus open repair of abdominal aortic aneurysms in Ontario"

A population-based study by Jetty et al[1] demonstrated a significant reduction in 30-day mortality (adjusted hazard ratio [HR], 0.34; 95% confidence interval [CI], 0.20-0.59) with endovascular repair (EVR) relative to open surgical repair (OSR) of abdominal aortic aneurysms (AAAs) but no significant difference in 5-year mortality (adjusted HR, 0.95; 95% CI, 0.81-1.05). To determine until when the perioperative survival advantage with EVR compared with OSR is sustained, we performed a meta-analysis of randomized controlled trials (RCTs) of EVR vs OSR for AAAs.

MEDLINE, EMBASE, and the Cochrane Central Register of Controlled Trials were searched using PubMed and OVID. Studies considered for inclusion met the following criteria: the design was a RCT, the study population was patients with an unruptured AAA, patients were randomly assigned to EVR vs OSR, and main outcomes included follow-up all-cause mortality. Our search identified three well-known RCTs: the Dutch Randomized Endovascular Aneurysm Management (DREAM),[2] Endovascular Aneurysm Repair (EVAR) 1,[3,4] and Open Versus Endovascular Repair (OVER)[5] trials. The method of Williamson et al[6] was used to obtain the HR estimates and variances, because the number of patients at risk at each of several time points for the graphed curves was available in all three RCTs.

We assessed 6-, 12-, 18-, and 24-month HRs for all-cause mortality because the DREAM[2] and OVER[5] trials reported results only up until 2 years. The three RCTs demonstrated a statistically nonsignificant benefit of EVR over OSR for all-cause mortality at each follow-up. Study-specific estimates were combined using inverse variance-weighted averages of logarithmic HRs in both fixed-effects and random-effects models.

All analyses were conducted using Review Manager 5.0 software (Nordic Cochrane Centre, Copenhagen, Denmark). Pooled analysis (representing 2314 patients) demonstrated a statistically significant reduction in all-cause mortality with EVR relative to OSR in fixed-effects models at 6 months (HR, 0.59; 95% CI, 0.40-0.88; $P = .009$) and 12 months (HR, 0.68; 95% CI, 0.48-0.96; $P = .03$), but no statistically significant difference at 18 months (HR, 0.82; 95% CI, 0.59-1.13; $P = .22$) and 24 months

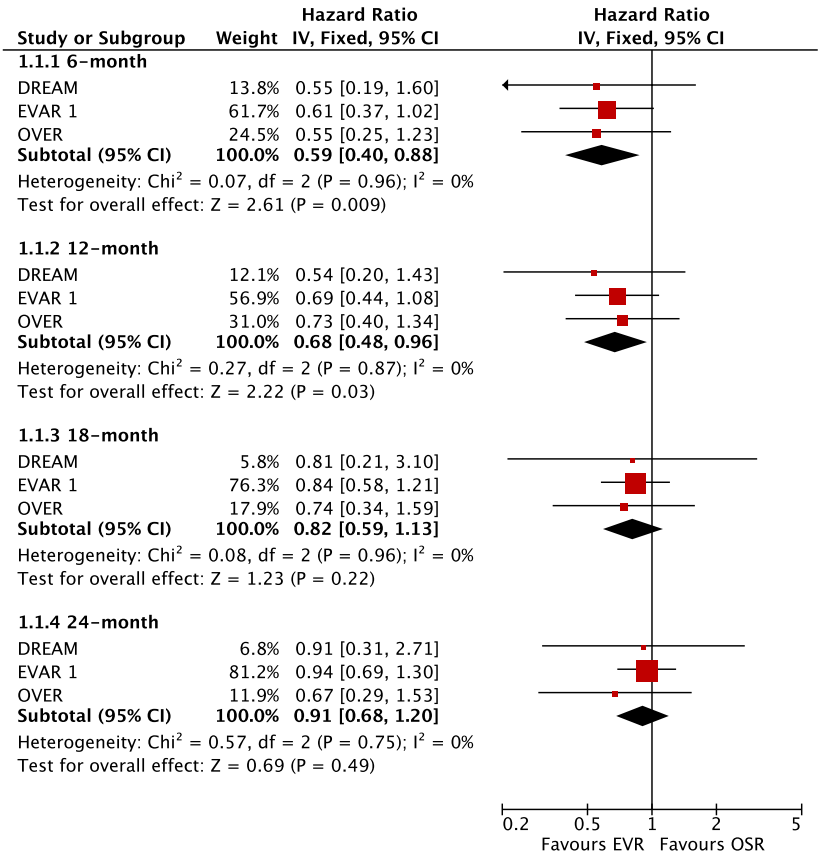

Fig. Forrest plot according to follow-up duration. *CI*, Confidence interval; *EVR*, endovascular repair; *IV*, inverse variance; *OSR*, open surgical repair.

(HR, 0.91; 95% CI, 0.68-1.20; $P = .49$; Fig). There was minimal trial heterogeneity and, accordingly, little difference in the pooled result from random-effects modeling.

The results of our analysis suggest that the perioperative survival advantage with EVR compared with OSR may be limited to only the first postoperative year. One possible explanation for the early convergence of all-cause mortality is that patients surviving the stress of OSR may be somewhat less likely to die in the first year than patients undergoing EVR because the latter group is not subjected to OSR; that is, the perioperative survival advantage resulting from EVR may largely be based on postponing death among higher-risk patients from the perioperative period to the subsequent year.[2] Another possible explanation is the failure of EVR to prevent rupture of the AAA. In the EVAR 1 trial, with 8-year follow-up,[4] graft rupture occurred in 25 (4.2%) of per-protocol 598 patients after EVR, with a high mortality of 72.0%.

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Regarding "A closer look at meta-analyses of observational data"

We read carefully the article by Jonker et al. entitled "Meta-analysis of open versus endovascular repair for ruptured descending thoracic aortic aneurysm".[1] Observational studies were retrieved in the meta-analysis. When dealing with meta-analyses, in particular with meta-analyses of nonrandomized data, some key points in the building up process of the analysis must be considered.

The first issue not investigated in this article is the quality of studies included. Meta-analyses of observational studies face the challenge of incorporating studies with various quality levels. Including studies of various quality levels can mask or can have a reverse effect.[2] The "Newcastle-Ottawa Scale" for assessing quality of nonrandomized studies in meta-analyses is quite comprehensive and has been recommended by the Cochrane Nonrandomized Studies Methods Working Group.[3] Furthermore, the authors did not include a table on the quality evaluation of the studies retrieved in their work, as conventionally recommended.

The second issue is the "publication bias." Since published studies are more likely to find their way into a meta-analysis, any bias in the literature is likely to be reflected in the meta-analysis as well, and in particular, in the case of meta-analysis of observational data.[2,4] A simple graphic test such as the funnel plot could have excluded this bias by showing in the graph a symmetrical distribution of the studies included.[5] Unfortunately, the investigation of this bias was not performed in this work. These drawbacks make the accuracy of the pooled estimates of the analysis questionable.

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Reply

We would like to thank Navarese et al for their interest and reaction regarding our meta-analysis about the outcomes of open and endovascular repair of ruptured descending thoracic aortic aneurysms (rDTAA). We agree that meta-analyses of non-randomized studies have considerable limitations, which we have addressed in the limitations section at the end of the article. Currently, no randomized controlled trials or large prospective studies have compared the outcomes of open and endovascular repair of rDTAA, and the optimal approach for this emergency remains unclear. Given the rarity of this condition, and its emergent nature, it will be very difficult to ever realize a randomized study investigating the outcomes of rDTAA after both treatments. In the absence of level I evidence, we decided to perform a meta-analysis of the available studies between 1995 and June 2009, in order to provide more insights into this rare but lethal disease, by reporting the overall results of open and endovascular repair of rDTAA in the literature. Despite the described limitations of such a meta-analysis, we believe that our methodology was adequate and that the article provides a concise summary of the published outcomes, which could, therefore, improve the current knowledge about the management and outcomes of rDTAA.

Although the suggestions of Navarese et al might have improved the methodology of our meta-analysis, we doubt that these would have changed the inclusion and exclusion of the