Is more evidence needed for thrombectomy in basilar artery occlusion? The BASICS and BEST meta-analytical approaches

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INTRODUCTION

The benefit of mechanical thrombectomy for stroke associated with anterior circulation large vessel occlusion (LVO) is well established and among the most effective treatments in medicine.1 Stroke associated with basilar artery occlusion (BAO) was not included in the seminal thrombectomy randomised clinical trials (RCTs). BAO accounts for 1% of the ischaemic strokes and 5%–10% of the LVO, but 70%–80% of BAO victims evolve to death or full dependence.2 3 The terminal nature of the brainstem and thalamic circulations may predispose to such dismal outcomes.

Only two RCT designed to assess the efficacy of early (<6–8 hours since symptoms onset) thrombectomy for BAO treatment, the BEST and BASICS trials.2 4 Given the prior evidence for thrombectomy benefit for anterior circulation stroke is well settled; BAO stroke shares a similar physiopathology with very poor prognosis; the two available BAO trials had limited sample sizes but large absolute differences on the functional outcomes; we propose that an aggregated analysis of the BEST and BASICS trials should be performed under a Bayesian approach.

RESULTS

A Bayesian random-effects meta-analysis was modelled with a prior choice of μ effect parameter based on the results of the HERMES collaboration, in which thrombectomy was associated with a higher odd of modified Rankin Score (mRS) 0–3 at 90 days (OR 2.25, 95% CI 1.80 to 2.82).1 Thus, a Gaussian prior with mean 0.811 (2.25 in the logarithmic OR scale) and SD 0.414 (percentile 2.5 corresponding to the null effect, since a prior hypothesis of a thrombectomy deleterious effect was highly unlikely) was appropriate (online supplemental figure 1). A conservative prior distribution was chosen for the heterogeneity parameter τ (half-Normal, scale 0.5).5 The code (R language, bayesmeta 2.5) and data are available on request to the authors. The PRISMA guidelines was followed.

METHODS

Thrombectomy RCTs designed for the enrollment of BAO-associated stroke patients were eligible for inclusion. The only exclusion criterion was the endovascular intervention time window: only early (6–8 hours) thrombectomy was considered. The MEDLINE and EMBASE databases were searched for articles in any language inception to October 2020. The descriptors ((basilar) OR (vertebrobasilar)) AND (stroke) AND (thrombectomy) were used within the filter ‘RCT’. The ClinicalTrials.gov database was also searched.
trials authors, with the full individual-level database, will be able to perform a more comprehensive analysis, including subgroup stratification and/or meta-regression. A Bayesian approach may not be the ‘BASICS’, straightforward method, but it is probably the ‘BEST’ one for this scenario.

**DISCUSSION**

Although the individual trials resulted inconclusive, the Bayesian meta-analysis with an enhanced sample size and power suggested a functional outcome benefit for thrombectomy in BAO stroke patients. In view of the potential signal of benefit, we would advocate for the initiation of long-term clinically-led registries, especially in low-income and middle-income countries, where the greatest burden of the disease lies. Although our result is promising, we acknowledge that the BEST and BASICS

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**REFERENCES**