

Research in context

Evidence before this study

We searched PubMed and Embase, from inception to 3 June 2022, for studies which have assessed the association of blood pressure lowering and infarct size in patients with acute ischaemic stroke, using the keywords “ischaemic stroke”, “blood pressure” and “infarct size/volume” without any language restriction. Few randomised controlled trials with small sample sizes report that early use of oral antihypertensive treatment does not change the size of cerebral infarction in patients with acute ischaemic stroke. While observational studies show conflicting results for a reduction in blood pressure being associated with larger size of infarction, uncertainty persists over whether different levels of blood pressure control influence cerebral infarction after thrombolysis treatment for acute ischaemic stroke.

Added value of this study

This imaging analysis pertains to data derived from the international ENCHANTED study, the only randomised controlled trial that has compared a management strategy of intensive blood pressure lowering towards a systolic target of <140 mm Hg within 1 h with the longstanding guideline-recommended level (systolic target <180 mm Hg) of control, during and for up to 72 h after, the use of intravenous thrombolysis treatment for eligible patients with acute ischaemic stroke. The primary analysis for the size of cerebral infarction, measured centrally using MiStar software on CT scans performed at 24 to 36 h post-randomisation, did not differ significantly between groups, after adjustment for various confounding variables. The neutral result was consistent in sensitivity analysis using all available follow-up brain imaging, and in analysis across 10 pre-specified subgroups of patients.

Implications of all the available evidence

These results provide evidence to reassure clinicians that intensive BP initiated within 6 hours from the onset of symptoms to a systolic target of less than 140 mm Hg within 1 h may not significantly change the size of cerebral infarction in patients who receive intravenous thrombolysis after acute ischaemic stroke with predominantly mild to moderate levels of neurological severity. Further clinical trials are necessary to better define the safety and efficacy of this treatment in relation to the level of control of blood pressure and in certain high-risk patients, such as those who receive endovascular treatment for acute ischaemic stroke from large vessel occlusion.