

Systolic pressure target after endovascular thrombectomy in acute large-vessel occlusion ischemic stroke patients: Comment on ENCHANTED2/MT

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Patients with large-vessel occlusion ischemic stroke continue to have high mortality and disability rates after mechanical thrombectomy with or without intravenous alteplase treatment. Elevated blood pressure during the perioperative period is associated with higher mortality and disability prevalence rates.^[1] Thus, lowering post-procedure systolic pressure is a potential approach to improving patients' outcomes. The guideline^[2] recommends a systolic pressure of <180 mmHg before and after mechanical thrombectomy without randomized clinical trial evidence.

Recently, Yang et al.^[3] reported the results of the multicenter, open-label, blinded-endpoint, and randomized controlled trial ENCHANTED2/MT, which aimed to determine if a more aggressive blood pressure goal is beneficial in patients with acute ischemic stroke. Patients were required to have a diagnosis of large-vessel occlusion acute ischemic stroke and a successful endovascular thrombectomy procedure followed by hypertension (defined as ≥ 2 successive measurements of systolic blood pressure ≥ 140 mmHg for >10 min). The randomization arms were <120 mmHg versus 140–180 mmHg for 72 h, and the primary outcome was assessed by a shift analysis of the modified Rankin Scale at 90 days. The 821 patients who were prospectively enrolled

between 2020 and 2022 were randomized, and the source populations were derived from 44 hospitals in China. The trial was suspended in June 2022 due to safety concerns after an independent data and safety monitoring board reviewed the data. Unexpectedly, the primary results were that the more intensive treatment group was more likely to have worse outcomes and higher early neurological deterioration and disability rates than the less intensive treatment group.

This study again proved the complex relationship between blood pressure and functional outcomes after acute large-vessel occlusion ischemic stroke.^[1] This is an important trial that was built on accumulating observational data in the field and provided randomized trial evidence that more intensive blood pressure lowering (<120 mmHg) is not only neutral but harmful. In this regard, this study is of broad general interest to emergency departments and stroke centers, as blood pressure is a parameter that must be managed in all stroke patients' post-procedures.

However, several points need to be noted and comprehensively discussed before interpreting the results and applying them clinically. First, fig. 2 from the ENCHANTED2/MT trial paper^[3] suggested that a systolic pressure of

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<120 mmHg was only narrowly achieved in the more intensive treatment group during the first 3 days. Although current guidelines^[2] recommend a blood pressure of <180 mmHg, no optimal blood pressure target for patients with ischemic stroke who undergo mechanical thrombectomy has been identified to date.^[1] Taken together, doctors may need to employ individualized targets for systolic pressure control after mechanical thrombectomy based on the patient's prior medical history and current blood pressure condition as well as the success of occluded vessel recanalization. Second, blood pressure is elevated in approximately 75% of patients with acute stroke and usually decreases spontaneously over the subsequent few days.^[4] In the ENCHANTED2/MT trial,^[3] 267 (66%) patients in the more intensive treatment group and 261 (64%) patients in the less intensive treatment group had premonitory hypertension, limiting the likelihood that the post-stroke outcomes were due to premonitory hypertension rates. Spontaneous post-stroke hypertension may be a compensatory response to ischemic stroke; thus, relatively low blood pressure may be partly responsible for worse functional outcomes in the more intensive treatment group. Third, it is noteworthy that there was no difference in symptomatic intracerebral hemorrhage rates between the two groups, consistent with the previously published BP-TARGET trial,^[5] in which an aggressive systolic pressure goal of 100–129 mmHg after successful reperfusion in patients with ischemic stroke did not reduce intracerebral hemorrhage rates at 24–36 h when compared to a standard care systolic blood pressure goal of 130–185 mmHg, suggesting either a lack of protection at this level of more intensive treatment of systolic pressure or a lack of harm at this level of less intensive treatment of systolic pressure regarding symptomatic intraparenchymal hemorrhage transformation.

To answer the question of what the optimal systolic pressure target should be after mechanical thrombectomy in patients with acute large-vessel occlusion stroke, the results of ongoing relevant clinical trials and in future, more rigorously designed clinical trials are required.

AUTHOR CONTRIBUTIONS

Yunpeng Yuan: Writing – original draft. **Baozhu Wei:** Writing – original draft. **Wenyun Zhu:** Writing – original draft. **Yang Liu:** Writing – original draft. **Yingfeng Wan:** Writing – original draft.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST STATEMENT

Yunpeng Yuan, Baozhu Wei, Wenyun Zhu, Yang Liu, and Yingfeng Wan declare no conflicts of interest.

ETHICS STATEMENT

Not applicable.

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