Effects of Blood Pressure and Blood Pressure–Lowering Treatment During the First 24 Hours Among Patients in the Third International Stroke Trial of Thrombolytic Treatment for Acute Ischemic Stroke

In this exploratory analysis of data from the International Stroke Trial (IST)-3, Berge et al sought to elucidate aspects of the highly debated issue of blood pressure management in the acute phase of ischemic stroke. The authors collected data on baseline systolic blood pressure (SBP), SBP variability, and SBP change from baseline in the first 24 hours from randomization and examined their effect on 7-day adverse event and mortality rates and 6-month functional outcome.

In multiple logistic regression analyses, a statistically significant increase in early adverse events was observed with higher baseline SBP and SBP variability. In the case of baseline SBP, this was driven by higher intracerebral hemorrhage rate (10% increase in odds for each 10-mm Hg increase in SBP), whereas in the case of SBP variability, early death was the major determinant (odds ratio, 1.36 for each 10-mm Hg increase in the SD of SBP).

Early SBP decline was associated with a nonsignificant increase in early ischemic stroke recurrence, but this was offset by a robust association with better long-term functional outcome ($P=0.001$) and lower rate of symptomatic intracerebral hemorrhage ($P=0.037$). Unsurprisingly, a similar pattern was observed with the use of blood pressure–lowering medications. No interaction with allocated treatment (intravenous thrombolysis) was found.

Despite the limitations (nonrandom allocation of blood pressure management, multiple testing), the findings of this analysis are interesting and suggest that blood pressure management in the first hours after ischemic stroke might merit closer attention as a potential therapeutic target. See p 3362.

Summary of Evidence on Early Carotid Intervention for Recently Symptomatic Stenosis Based on Meta-Analysis of Current Risks

The main goal of this meta-analysis by De Rango et al was to summarize the available evidence about the timing of revascularization of recently symptomatic carotid artery. The current suggestion from the guidelines is that revascularization is attempted within 2 weeks from stroke or transient ischemic attack, albeit the quality of available evidence has allowed only a class IIa recommendation. The authors pooled data from 47 studies reporting periprocedural risks within 0 to 15 days, 0 to 7 days, and 0 to 48 hours after carotid endarterectomy or carotid artery stenting. They report on several end points, but the following main patterns emerge:

- The periprocedural stroke risk was similar for procedures performed on days 0 to 7 and 0 to 15, $\approx 3.3\%$ for carotid endarterectomy and 4.8% for carotid artery stenting
- Stroke as the index event was associated with a higher periprocedural stroke risk than transient ischemic attack both for carotid endarterectomy (5.0% versus 1.6%) and carotid artery stenting (8.0% versus 2.1%) performed within the first 15 days.
- Early revascularization (within 48 hours from stroke or transient ischemic attack) seems to carry a higher complication risk. A pooled periprocedural stroke risk of 5.3% for carotid endarterectomy and 5.4% for carotid artery stenting were found. Again those with stroke as an index event had a significantly higher risk of $\approx 8.0$ compared to $\approx 2.7\%$ after transient ischemic attack.

Shortcomings of the study include moderate to considerable heterogeneity of included studies, small number of studies reporting data from within the first 48 hours after stroke, lack of data from randomized controlled trials (data were derived from registries and case series). The findings of this meta-analysis suggest that revascularization can be performed with acceptable complication risk within 15 days from the index event, although with caution in the early phase (within 48 hours), especially in those presenting with stroke.

Value of Computed Tomographic Perfusion–Based Patient Selection for Intra-Arterial Acute Ischemic Stroke Treatment

Borst et al used data from the Multicenter Randomized Clinical trial of Endovascular treatment for Acute ischemic stroke in the Netherlands (MR CLEAN) to investigate the relationship between computed tomographic perfusion (CTP) parameters (core volume and penumbra), treatment effect, and 3-month functional outcome. CTP was not a prerequisite for the study and was obtained in a nonrandom way at the discretion of the investigators; 35% of the study population received CTP and were included in the final analyses.

Higher core infarct volume in CTP was related to poor functional outcome, but it did not interact with the treatment effect. On the contrary, even for CTP core infarct volume $\geq 70\text{ mL}$, which is associated with markedly worse functional outcome, a trend toward benefit from treatment was seen as well. The degree of mismatch was not related to either functional outcome or treatment effect. Overall, these findings suggest that although CTP-derived parameters can predict functional outcome, they are not as good as predictors of treatment effect. The findings contradict findings from previous studies that have highlighted the relationship between perfusion mismatch profile and outcome. On the basis of them, authors are justified to question the utility of CTP-based parameters for determination of endovascular treatment selection but given the nonrandom, nonstandardized data collection from many centers with different protocols and the relatively small number of subjects they should be viewed with caution and not as conclusive. See p 3375.
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