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Title **Controlling Hypertension and Hypotension Immediately Post-Stroke (CHHIPS) – A Randomized Controlled Trial**

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Aim

To determine whether manipulation of blood pressure (BP) – by 1) reducing raised levels with labetalol or lisinopril within 36 hours of cerebral hemorrhage or infarction (depressor limb) or 2) increasing low BP levels with phenylephrine within 12 hours of cerebral infarction (pressor limb) – alters death and dependency at two weeks or long-term mortality. Secondarily, to determine the safety of such therapy in terms of early neurological deterioration, the efficacy of sublingual lisinopril and intravenous labetalol compared to matching placebo, and the cost effectiveness of such treatment.

Conclusions and results

We found no significant difference in death or dependency at 2 weeks between those receiving active depressor treatment with lisinopril or labetalol compared to those receiving placebo. However, fewer people than projected were recruited to the trail. Active treatment was not associated with an increase in early neurological deterioration, despite significantly greater reductions in BP at 24 hours and 2 weeks with active therapy compared to placebo. Active treatment was generally well tolerated, and no major safety problems were identified. Treatment discontinuation rates were similar in active and placebo groups. Survival analysis showed lower mortality at 3 months in the active treatment group than in the placebo group (p=0.05). The pressor arm was closed early due to recruitment problems. Hence, conclusions regarding acute post-stroke pressor therapy cannot be drawn from this study.

Recommendations

Oral and sublingual lisinopril and oral and intravenous labetalol are effective BP lowering agents in acute cerebral infarction and hemorrhage and do not increase the likelihood of early neurological deterioration. The study was underpowered to detect a difference in disability or death at 2 weeks, the primary outcome measure.

Methods

See Executive Summary link at www.ncchta.org/project/1351.asp.

Further research/reviews required

Further work is needed to confirm these results and assess if the effectiveness of labetalol differs from lisinopril in terms of reducing death or dependency after acute stroke, and whether earlier lowering of BP post-stroke (than was achieved in CHHIPS) would be of greater benefit. We remain uncertain as to the best management of BP in acute stroke. The CHHIPS Pilot Trial would indicate that labetalol or lisinopril can safely reduce BP after acute stroke, and this may translate into decreased mortality at 3 months. These findings need to be acted on by formulating the definitive trial of BP lowering in acute stroke. The role for increasing BP in acute stroke remains unresolved, but the CHHIPS Pilot Trial entry criteria indicate that this therapy would apply to a very small number of people.

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