Outcomes of intensive systolic blood pressure reduction in patients with intracerebral hemorrhage and excessively high initial systolic blood pressure: post hoc analysis of a randomized clinical trial

SUMMARY:

- This is an important article on the management of blood pressure (BP) in atraumatic intracerebral hemorrhage. Patients with spontaneous atraumatic intracerebral hemorrhage (ICH) frequently have serious hypertension, not only because chronic hypertension is likely to be a key part of the underlying pathophysiology but also because elevated intracranial pressure may provoke a hypertensive response. Such a response could be adaptive, by raising the cerebral perfusion pressure, or could be maladaptive, by placing excessive pressure on weakened and leaky blood vessels, thus resulting in hematoma expansion and further neurologic deficit. Consequently, decreasing BP could be detrimental, by decreasing cerebral perfusion, or favorable, by decreasing pressure on the leaky vessels.

- The data available to date suggest that for patients with atraumatic ICH and elevated systolic blood pressure (SBP), decreasing the SBP to a target of <180 mm Hg does not produce any benefit over a target SBP <140 mm Hg (as established most recently in the Interventions to Reduce Acute Care Transfers [INTERACT] II trial and the parent trial for this analysis, the Antihypertensive Treatment of Acute Cerebral Hemorrhage [ATACH]-II trial).

- Most professional society recommendations therefore recommend maintaining BP at 140–180 mm Hg for these patients but to treat if the SBP exceeds 220 mm Hg. How far should the BP be decreased for patients with SBP >220 mm Hg? Only very little evidence is available to support any particular strategy. The existing weak evidence shows that patients with SBP >220 mm Hg have a higher risk of hemorrhage expansion and disability. Therefore, this subset might specially benefit from more aggressive BP management.

- The authors here examine the subgroup of people in the ATACH-II trial who had an initial SBP >220 mm Hg, and report (1) their rates of hemorrhage expansion and neurologic outcomes relative to those in the group with lower initial SBP and (2) how their outcomes differed according to whether they underwent BP lowering to a target of 140-180 or a more aggressive target of 120-140 mm Hg. In the trial, the BP lowering was required to occur within 4.5 hours of arrival.

- Among the 1,000 patients included, 228 had an SBP >220 mm Hg. Approximately one-third of hemorrhages were in the thalamus, 50% were in the basal ganglia, and the rest were in the cerebral lobes. Overall, patients with an initial SBP >220 mm Hg had similar clinical outcomes to those with lower initial SBP (38% death or severe disability at 90 days), and the rate of hemorrhage expansion was similar. Among those with SBP >220 mm Hg, intensive BP lowering to an SBP of 120-140 mm Hg was associated with a higher rate of acute neurologic deficit within 24 hours (15.5% vs 6.8%). The rate of adverse kidney events were also higher in the intensive-lowering group, but the 90-day outcome of severe neurologic disability/death was similar between groups.

- Overall, the findings highlight that we do not need to be much more aggressive for patients with SBP >220 mm Hg. In addition, and somewhat unexpectedly, the results show that the SBP is not even a clear marker of more serious disease. Importantly, there was no trial of allowing the patients to remain at 220 mm Hg; the BP in all patients was decreased to less than 180 mm Hg. Although there is no evidence against this practice, there is also no high-quality evidence supporting it. The current recommendations are to decrease the SBP to <180 mm Hg.
EDITOR’S COMMENTARY: In this subgroup analysis of a well-conducted RCT of patients presenting with atraumatic ICH and SBP >220 mm Hg, aggressive BP management to an SBP of 120-140 mm Hg did not offer a survival advantage over SBP lowering to 140-180 mm Hg. There was a hint of clinical harm in the more aggressive strategy.

RELATED SEGMENTS:
EM:RAP 2018 October - Blood Pressure Management in Neurocritical Care
CorePendium - Intracerebral Hemorrhage