Short-Term Blood Pressure Variability After Successful Re-Canalization is Associated With Discharge Outcomes in Large Vessel Occlusion Strokes

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• Introduction

Blood pressure management after large vessel occlusion strokes (LVOs) affect early neurological deterioration as well as long term clinical outcomes in acute ischemic stroke. Depending on extent of re-kanalization, blood pressure and its variability may result in extension of core infarct. Evidence to guide post re-kanalization blood pressure (BP) changes is currently lacking. Our objective was to assess the role of blood pressure variability in predicting discharge outcomes in successfully re-kanalized (TICI 2b-3) LVOs.

• Methods

The study includes retrospective analysis of 182 LVO stroke patients between the years 2015-19. Anterior circulation LVO stroke patients, who were successfully re-kanalized (TICI 2b-3) within 6 hours of time since last seen normal were included in this retrospective analysis (n=87). BP measurements were collected hourly for the first 24 hours post re-kanalization. Squared average real BP variability (ARV^2) was calculated for systolic (SBP) and mean blood pressures (MAP). We compared four quartiles of ARV^2 (Q1 the least and Q4 highest variability) using dichotomous outcome variables - modified Rankin Scale (mRS) ≤ 2; and mRS ≥ 5. The outcomes were adjusted for potential confounders including age, tPA, use of conscious sedation vs General Anesthesia (GA) and hemorrhagic events.

• Results

When the baseline characteristics compared for all 4 blood pressure variability quartiles, the groups were similar. Favorable outcomes (mRS ≤ 2) were also significantly higher (aOR: 0.17 [0.03 – 0.80], p=0.034) in Q1 of the ARV^2 MAP (45%) compared to the Q4 patients (18%). While 50% of patients in SBP ARV^2 Q1 had favorable outcomes (i.e., mRS ≤ 2), only 23% of Q4 patients experienced such outcomes. (0.32 [0.08 – 1.20],p= 0.100 ) Even though the SBP ARV^2 result was not statistically significant, it followed the expected direction.

• Conclusion

Less blood pressure variability (ARV^2) for MAP- in the first 24 hours after TICI 2b-3 re-kanalization of LVOs is associated with a discharge mRS ≤ 2. Impact of blood pressure variability (ARV^2) on long-term functionality outcomes in successfully re-kanalized LVO stroke patients needs further detailed exploration.

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