

Neuro anesthésie

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Further insights into blood pressure threshold in patients undergoing mechanical thrombectomy under general anesthesia: a single-center, retrospective, cohort study

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Position du problème et objectif(s) de l'étude:

General anesthesia (GA) can cause increased hemodynamic instability during mechanical thrombectomy (MT), but it may also improve brain tolerance to hypotension by reducing metabolic demand. This study aimed to investigate the potential association between various blood pressure (BP) thresholds proposed in literature and three-month neurological outcomes in a large cohort of patients undergoing mechanical thrombectomy under GA.

Matériel et méthodes:

This retrospective cohort study obtained local IRB approval and used a non-opposition form to obtain patient consent. We included adult patients with anterior vessel occlusion stroke who underwent MT under GA between March 2014 and June 2019. BP thresholds were based on literature review. MT was divided into pre- (T1) and post- (T2) recanalization periods. Mean Arterial Blood Pressure (MABP) thresholds of 70/80/90 mmHg and relative decreases of 20% and 40% were used. A cumulative period of at least 10 minutes, or more than 60% of the time with MABP < 70 mmHg during T1, and a minimum of 45 minutes with MABP > 95 mmHg during T2 were considered. The threshold of 140 mmHg was retained for Systolic Blood Pressure (SBP) at T1 and 160/170/180 mmHg for T2. The primary outcome was functional independence at three months, while symptomatic intracranial hemorrhage was a secondary outcome. Multivariate regression models were used to assess the association between BP thresholds and outcomes.

Résultats & Discussion:

270 of the 332 eligible patients had a TICI reperfusion score $\geq 2b$ and were analyzed. Anesthetic management included the use of thiopental or etomidate for induction and volatile anesthetics for maintenance, with almost all patients receiving curare and aminic support. 50.3% of patients had an unfavorable outcome (modified Ranking Score 3-6), out of which 36 patients were deceased by the 90-day follow-up. Intracranial hemorrhage occurred in 12.6% of patients. No significant association was found between any of the blood pressure thresholds and functional independence at three months or intracranial hemorrhage.

General anesthesia reduces brain metabolism and may make the brain less vulnerable to blood pressure reduction. A noninvasive determination of personalized BP thresholds through a cerebral blood flow surrogate may be more appropriate than the classical approach of maintaining BP below or above a predetermined value.

Conclusion:

This single-center study found no association between blood pressure and three-month functional independence for acute ischemic stroke patients treated by mechanical thrombectomy under general anesthesia.

These findings have important implications for the management of hemodynamic variability during mechanical thrombectomy and can help guide clinical practice in neuro-intensive care.

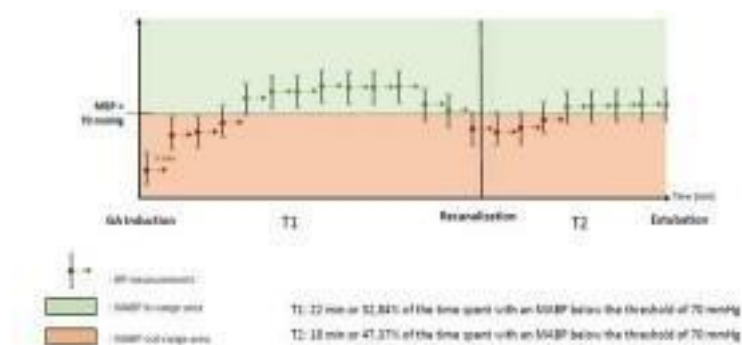


FIGURE 1 – Timeline of the procedure and measure of exposition

This figure illustrates the two operating times, T1 and T2, which were used to evaluate changes in blood pressure targets during different stages of the procedure. The figure also shows an example of the calculation of variables associated with the threshold of 70 mmHg for mean blood pressure. The patient spent 22 minutes out of range during T1 and 18 minutes out of range during T2. MAP = Mean Arterial Blood Pressure

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