

## Neuroréanimation (HSA,AVC)

ID: 120

### CRANIUMS: CRAniectomy and Neuro Intensive Unit for adults with Malignant Stroke.

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

Malignant middle cerebral artery infarction (MMI) is a life-threatening consequence of massive ischemic stroke. When the intracranial pressure remains high in spite of medical treatment, decompressive craniectomy (DC) is the last resort, resulting in a significantly reduced mortality but with an increased risk of poor functional outcome (modified Rankin Score > 3). We aimed to identify risk factors associated with a mRS > 3 and investigated the effect of the timing of DC on functional outcome.

#### Matériel et méthodes:

We conducted a single-centre retrospective cohort study from January 1st, 2012, to December 31st, 2020. We included all the adults admitted to the intensive care unit (ICU) at the Hôpital Fondation Adolphe de Rothschild before and/or after decompressive craniectomy for MMI. We excluded patients with basilar or exclusively anterior cerebral artery stroke. We divided the patients into two groups depending on their functional outcome 90 days after the stroke: good (mRS 0-3) versus poor (mRS 4-6). We used a multivariate logistic regression analysis to identify the risk factors associated with a poor outcome occurrence. The factors selected were identified as clinically relevant. We then used a Wilcoxon test to determine the mRS at 90 days depending on the timing of surgery, with a cut-off at 48 hours after stroke onset. A p-value < 0.05 was considered significant. We had the approval of the local ethics committee.

#### Résultats & Discussion:

A total of 87 patients were included in this study. A poor functional outcome was reported in 69 (79.3%) patients. In the univariate analysis, the patient's age, high blood pressure, high cholesterol, increased ischemia on post-operative cerebral imaging, and hospital-acquired infections were significantly associated with a poor outcome. Successful reperfusion after endovascular treatment was obtained for 68% of the patients. In the multivariate analysis, three parameters were analysed. The only risk factor significantly associated with a poor functional outcome was an increased cerebral ischemia on post-operative CT scan (odds ratio=6.87 [1.64-47.35], p-value=0.02). We found no significant association between main characteristics of the ICU stay (shock, intracranial hypertension therapeutics, duration of mechanical ventilation) and poor functional outcome. Performing the craniectomy within 48 hours of stroke onset did not have a significant impact on the functional outcome at 90 days.

#### Conclusion:

After decompressive craniectomy for MMI, increased cerebral ischemia detected on cerebral post-operative imaging is significantly associated with a poor functional outcome. Once the craniectomy is performed, this parameter could be well considered to adapt medical ICU strategy and ethical considerations. Several limits to our study could explain the absence of association between outcome

and main characteristics of ICU stay. Further studies are necessary with a larger number of patients in order to study the impact of an “early” versus “late” decompressive craniectomy.

	<b>Odds Ratio</b>	<b>CI 95%</b>	<b>p-value</b>
Signs of malignant oedema on cerebral imaging	1.30	[0.24-5.81]	0.7
Successful reperfusion of thrombectomy	0.58	[0.11-2.32]	0.5
Increased cerebral ischemia on post-operative CT scan	6.87	[1.64-47.35]	0.02

**Table 1. Identifying risk factors associated with poor functional outcome: multivariate analysis.**

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