month and 14% (8 of 56) on the 6th month. Median serum sodium was 138 (136–141) mmol/L at admission, 140 (137–145) mmol/L on the 7th day, 139 (137–143) mmol/L on the 10th day and 140 (138–144) mmol/L on the 14th day. Higher sodium serum values at admission (p = 0,002), 7th day (p = 0,009), 10th day (p = 0,001) and 14th day (p = 0,048) were associated with unfavorable functional outcome at 28th day of follow-up. This association was not observed on the 3rd and 6th month. The analysis of serum sodium values as a categorical variable with a cut-off of 140 mmol/L, showed that values equal to or above 140 mmol/L at admission (p = 0,005), 7th day (p = 0,006) and 10th day (p = 0,001), were associated with worst functional outcomes at day 28 of follow-up.

Conclusion. Higher levels of serum sodium were associated with unfavorable functional outcome on the 28th day after aSAH, but not on the 3rd and 6th months.

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000525

Biomarkers in the prognostic evaluation of ischemic stroke: Is there benefit in the measurements of TREM-1 and TREM-2 in the acute phase?

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Introduction. Stroke is a complex process in which initial cerebral ischemia is followed by secondary injury from innate and adaptive immune responses. Cerebral ischemia causes the release of highly immunogenic components or damage-associated molecular patterns (DAMPs) from the brain into the systemic circulation. These DAMPs activate and recruit peripheral immune cells to injured brain regions. As a consequence, toxic or proinflammatory and protective or anti-inflammatory processes are activated after stroke. We report the results of a study focused on the evaluation of serum levels of triggering receptors expressed on myeloid cells (TREM proteins), a family of cell surface receptors that participate in a variety of cellular processes and are activated almost immediately after the onset of brain ischemia, to determine their prognostic value and association with validated stroke scales.

Methods. We investigated 50 patients with acute ischemic stroke who were admitted within 24 h of event onset at the intensive care unit or neurovascular emergency unit of the Hospital de Clínicas. All patients provided venous blood samples for the measurement of triggering receptor expressed on myeloid cells type 1 (TREM-1) and type 2 (TREM-2) within 24 h of the acute event and on the third and fifth days after the stroke. Neurological stroke severity and global disability were determined with the National Institutes of Health Stroke Scale (NIHSS) and modified Rankin Scale (mRS) at the same three times and at the time of hospital discharge. After four years the patients were reevaluated using the mRS. The patients were subdivided into two groups according to the NIHSS score (NIHSS $\leq$ 6 and NIHSS > 6) and the mRS score (mRS $\leq$ 2 and mRS > 2), which were employed as neurological outcome measures.

Results. The mortality rate reached 28% after four years. TREM-1 and TREM-2 levels were elevated in stroke patients compared to healthy controls with the same risk factors. The serum level of TREM-1 within 24 h also presented the best correlation with the neurological outcomes at hospital discharge (NIHSS and TREM-1: $p = 0.021$; mRS and TREM-1: $p = 0.049$). Both neurologic scores showing favorable outcome (NIHSS $\leq$ 6 and mRS $\leq$ 2) at hospital discharge were correlated with the TREM-1 protein concentration within 24 h, with low predictive value. The serum concentrations of TREM-1 protein within 24 h after stroke was significantly higher in patients with poor outcome (mRS > 2) at hospital discharge ($p = 0.021$).

Conclusion. Blood biomarkers may be useful in acute stroke by suggesting stroke severity, correlating with clinical findings, or providing prognostic value. In this study, TREM-1 was found to be the best prognostic biomarker.

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000545

IL-23 and IL-17 in Acute Ischemic Stroke: Correlation with Stroke Scales and Prognostic Value

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Introduction. Ischemic stroke causes a broad spectrum of motor, sensory and cognitive impairments. There is an urgent need for accurate outcome prediction after acute ischemic stroke for physicians, patients, and their families to aid in early and informed decision-making about therapies, palliative care, or rehabilitation. In clinical practice, the prognosis is based on well-validated stroke scales, but they have limitations, and blood biomarkers measurements may improve the predictive capability. Inflammation plays a crucial role in brain damage following stroke with different local and peripheral activation pathways involved in post-ischemic neurodegeneration and neuroprotection mechanisms. For this study, we selected two important interleukins involved in the post-ischemic inflammatory process: interleukin 23 (IL-23) and interleukin 17 (IL-17).

Methods. Fifty consecutive patients with acute ischemic stroke admitted to the neurovascular emergency unit or intensive care unit at Hospital de Clínicas de Porto Alegre within 24 h of stroke onset were enrolled. All patients provided venous blood samples for IL-23 and IL-17 measurements within 24 h of the acute event and on the third and fifth day after the stroke. Neurological stroke severity and global disability were determined with the National Institutes of Health Stroke Scale (NIHSS) within 24 h of the acute event, on the third and fifth day after the stroke, and at the time of hospital discharge. The modified Rankin Scale (mRS) was applied at the same times and after four years. For short-term and long-term neurological outcome

analysis, the patients were subdivided into two groups: favorable (NIHSS ≤ 6 and mRS ≤ 2) and poor outcome (NIHSS > 6 and mRS > 2).
Results. Both neurological scores for a favorable outcome at hospital discharge that were related to IL-23 protein within 24 h and on the fifth day had a low predictive value. The other measurements did not show predictive capacity during the hospital observation time or after four years. There was a significant increase in median serum concentrations of IL-23 on the fifth day ($p < 0.001$) and in IL-17 median levels on the third day compared to the first 24 h after the acute injury ($p < 0.001$). However, there was no correlation between IL-23 and IL-17 levels with the dichotomization of neurological outcomes at hospital discharge and after four years.
Conclusion. Neither IL-23 nor IL-17 had sufficient predictive power to be of clinical use to predict outcome after stroke. Thus, the research for better biomarkers with clinical prognostic relevance and the potential to improve the bedside management of stroke patients needs to be continued.

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000604

Rethinking hemoglobin threshold in aneurysmal subarachnoid hemorrhage

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Introduction. Anemia is common in spontaneous subarachnoid hemorrhage (SAH). Despite the growing recognition that SAH patients may benefit from higher hemoglobin levels, the optimal hemoglobin concentration to trigger red blood cell transfusion is not clearly defined.
Objectives. To evaluate the impact of hemoglobin concentration on functional status after SAH.
Methods. Retrospective analysis of all adult patients with aneurysmal SAH admitted from 1st January 2018 to 31st December 2019 at a Neurocritical Care Unit (NCCU) of an University Hospital. Functional outcome was evaluated by Glasgow Outcome Scale (GOS) on the 28th day and 3rd month after the acute neurological event, considering favorable GOS 4 or 5 and unfavorable GOS 1, 2 or 3.
Results. Sixty-five patients were included, 43 females (66.2%), with a median age of 55 (IQR 47.5–66.5) years. Hunt and Hess score of 4 or 5 was observed in 25 (38.5%) and Fisher score of 3 or 4 in 58 (89.2%). NCCU mortality was 12,3%. Among the patients with a registered medical follow-up, mortality was 9.4% (6 of 64) on the 28th day and 14.0% (8 of 57) on the 3rd month. Hemoglobin < 10 g/dL was present in 5% of patients at presentation, in 39% at day 7, in 34% at day 10 and in 59% at day 14 after the event. Lower hemoglobin levels at admission (p = 0,001), day 7 (p < 0,001), day 10 (p < 0,001) and day 14 (p = 0,001) were associated with unfavorable GOS on the 28th day after the event. The threshold level that showed an association with unfavorable GOS on the 28th day after the acute event was hemoglobin < 12 g/dL at admission (p < 0,001) and < 10 g/dL at day 7 (p = 0,001), day 10 (p < 0,001) and day 14 (p = 0,004). Although there were an association between unfavorable GOS on the 3rd month after the acute event and lower hemoglobin levels at day 7 (p = 0,002) and day 10 (p = 0,04), no significant cut-off was identified. Hemoglobin level at day 21 did not impact 28 day or 3 month GOS. Regardless of the assessment day, hemoglobin level had no association with the development of vasospasm or delayed cerebral ischemia.
Conclusion. Functional outcome at 28 days after subarachnoid hemorrhage were significantly worse between patients who have hemoglobin concentration inferior to 10 g/dL during the first 14 days of NCCU admission. Higher hemoglobin goals rather than a restrictive approach to transfusion may impact SAH outcomes.

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000643

Quality of Life of Patients Discharged from The Neurocritical Care Unit at A University Hospital in Bogotá, Colombia

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Introduction. From the beginning of intensive care units, mortality has decreased, but the subsequent sequelae of the disease, impact on quality of life and economy, has been studied recently (1–4). In Colombia, there are few studies in neurocritical pathologies (5,6). As seen in literature, neurocritical pathologies such as moderate or severe traumatic brain injury (TBI), subarachnoid haemorrhage (SAH), ischemic stroke (ischemic stroke) or hemorrhagic stroke, subdural and epidural hematomas, can have an impact on quality of life (7,8), in return for the usual activities (9).
Objectives. The main objective is to know patients' quality of life discharged from the intensive care unit due to a neurocritical pathology in 2017. Also, to know the time to return to work or usual daily activity.
Methods. A descriptive cross-sectional study was carried out, patients discharged from the intensive care unit (ICU) with the diagnoses of moderate or severe traumatic brain injury (TBI), subarachnoid haemorrhage (SAH), ischemic or hemorrhagic stroke, subdural and epidural hematomas. Information from 60 patients was collected. An EQ-5D-5L survey was applied to them on quality of life, work activity before hospitalization in 2017 and current, re-entry to work or time to resume their usual activities.
Results. Sixty people answered the questionnaire, the respondents considered that the quality of life decreased by an average of 63.8%, the quality-of-life modules most affected according to the EQ-5D-5L survey were: mobility and pain or discomfort. 38.3% never resumed their work activities, and 35% never resumed their usual activities to the date of this survey.
Conclusion. Patients discharged from the ICU due to a neurocritical pathology have a quality-of-life compromise, and a third of the patients will never resume their usual or work activities three years after discharge.