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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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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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