

POSTER PRESENTATION

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Correlation between cerebral venous-arterial pCO₂ difference with jugular venous oxygen saturation as global cerebral ischemia in severe traumatic brain injury

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Introduction

Traumatic Brain Injury (TBI) remains a leading cause of morbidity and disability and is considered a major public health concern. Ischemia is considered a relevant factor in TBI for prognosis, but its diagnosis in the early phases is still a problem. Now jugular venous oxygen saturation (SjVO₂) is used to evaluate blood flow and cerebral metabolic rate as well as the cerebral venous-arterial pCO₂ difference (VADpCO₂) as a marker of low cerebral blood flow. Besides, there's no statement of VADpCO₂ to guide medical therapy, consider as a not specific for global cerebral ischemia, but its observation over time may be useful.

Objectives

The goal of this study was to compare the correlation between VADpCO₂ and SjVO₂ on the assessment global cerebral ischemia in severe TBI.

Methods

This prospective observational, correlational study was conducted at the Intensive Care Unit Centro Médico Nacional del Bajío UMAE 1, in León Guanajuato, between August 2013 and December 2014. Patients were admitted in the intensive care unit after severe TBI, defined by an admission Glasgow Coma Scale < 8. We placed a catheter on right jugular bulb in all patients and corroborate the localization by X-Ray and CT-Scan. We took serial samples of jugular bulb catheter and arterial blood gases every 6 hours from admission or if the patient had a neurological worsening. The measurements of the SjVO₂

were assessment in normal flow between 55-75%, high cerebral blood flow > 75% and low cerebral blood flow < 55%. The data were recorded such a VADpCO₂ in each measurement.

Results

We included twenty-nine patients in the study, with a median age of 36 (interquartile range 24-56) years). One hundred and sixteen samples were taken. The distribution was 14.6% for low cerebral flow, 53.4% for normal cerebral flow and 31.8% for high cerebral flow. There was a statistically significant difference between the groups with VADpCO₂ $F_{(2,113)} = 45.29$, $p = < 0.001$. There was a change in the median of VADpCO₂ in the different

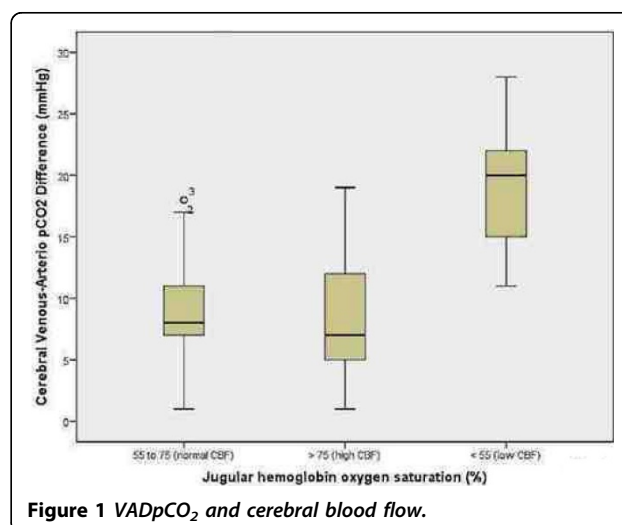
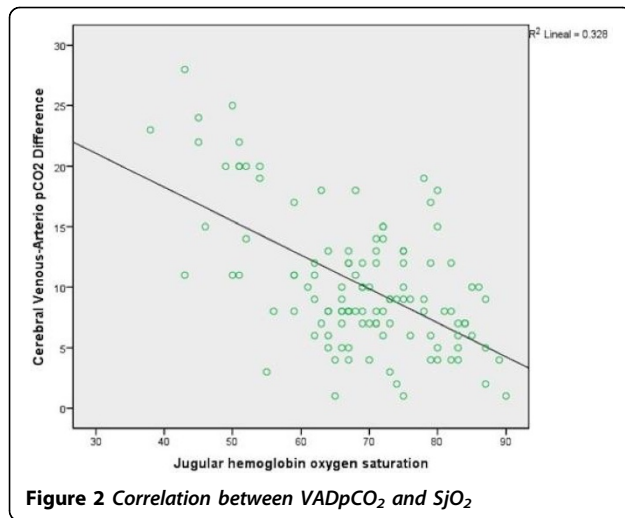


Figure 1 VADpCO₂ and cerebral blood flow.



subgroups, SjVO₂ < 55% (19.12 ± 5.08 mmHg), SjVO₂ 55 to 75% (8.94 ± 3.63mmHg) and SjVO₂> 75% (8.3 ± 4.58 mmHg), with an alpha error of 0.05 (Figure 1), and moderately strong negative correlation between SjVO₂ y VADpCO₂ r=- 0.57 (Figure 2)

Conclusions

There is a moderately strong correlation between SjVO₂ and VADpCO₂ that may be used for the correlation for global cerebral ischemia in the assessment of multimodality monitoring in neurocritical care in severe TBI.

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