

Transcranial doppler in non-severe Traumatic Brain Injury

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Background: The role of Transcranial Doppler Ultrasound (TDU) in the prognostic orientation of cases with severe TBI is known, but its application to evaluate cases with mild or moderate severity is actually unknown.

Methods: Patients with non-severe TBI were prospectively evaluated to demonstrate the applicability of transcranial doppler in the acute period for orientation in prognostic, with its probable inclusion among the variables of prognostic calculators; as well as the association of variables as serum biomarkers and with the different types of lesions evidenced with Computed Axial Tomography.

Forty non-severe Traumatic Brain Injury patients were evaluated within the first 24 hours of the lesion, a computerized axial tomography image was obtained, parameters were measured by transcranial doppler of bilateral middle cerebral artery; in addition to obtaining serum sample (3 vials of 1cc) that were kept freezing at -80 degrees for subsequent measurement of IL-1, IL-6 and tumor necrosis factor alpha, neurospecific enolase and S100beta. Statistical analysis was performed with SPSS V.23 software.

Results: The results with cytokines did not show a significant difference between the medians of IL-1, IL-6 and THF-alpha and the groups with and without alteration in UDT (hypoperfusion and non-hypoperfusion); in the analysis by type of lesion on CT, patients with subdural hematoma by CT and a substantially lower concentration of IL-1 (45pg/ml), IL-6 (460pg/ml, $p=0.029$) and TNF- α (94pg/ml, $p=0.0001$) compared to patients who did not have this lesion (186 pg/ml, 649 pg/ml and 388 pg/ml, respectively). A decrease in perfusion by transcranial doppler (VMF below 35 cm/s) correlated positively with the presence of Subarachnoid Hemorrhage and Parenchymal Hemorrhage ($p=0.045$, $p=0.039$, respectively). We conclude that, in patients with non-severe traumatic brain injuries, the evaluation with transcranial doppler also plays an important role in prognostic orientation; in addition and even without the computerized axial tomography data, it can facilitate the classification for risk of development secondary neurologic complication.

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