

Evaluation of Correlation Between Optic Nerve Sheath Diameter and Intracranial Pressure in Patients with Head Trauma

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Abstract

Introduction: Today, trauma is one of the major causes of mortality and the most common cause of death in first three decades of life. Head trauma is the most common one among all types of trauma. One of the non-invasive methods that meets monitoring of intracranial pressure is measurement of the optic nerve sheath diameter (ONSD) by ultrasonography device.

Objectives: The aim of this study is evaluation of the correlation between intracranial pressure and optic nerve sheet diameter by ultrasonography.

Materials and Methods: In this analytic cross-sectional study, 29 adult patients with traumatic brain injury (TBI) of both sexes with GCS≤8 were evaluated. In first 48 hours of brain injury, ICP was measured by both methods of gold standard and noninvasive method of determining ONSD using ultrasonography device with a linear probe of 6.5 • 7.5 MHz by an experienced person. Then, the results of two methods were compared using the Pearson correlation test.

Results: A positive strong relationship was observed between ICP ($R=0.77$, $p<0.000$). A statistical significant difference was seen between ICP means in first and second days and ONSD. ROC curve was indicative of the ability of ONSD in diagnosis of high ICP (above 15mmHg) and cut-off point for ONSD was 7.25 mm (100% sensitivity, 95% specificity).

Conclusion: This study revealed that evaluating ONSD by ultrasonography can be a good indicator of increased ICP in patients with severe traumatic brain injury.

Conflict of interest: non declared

Keywords: Craniocerebral Trauma/ Intracranial Pressure/ Optic Nerve Sheath Diameter