Introduction:
Severe traumatic brain injury (TBI) is the leading cause of morbidity and mortality among young people. The aim of the study is to assess how plasma and cerebrospinal levels of YKL-40, independently or in combination with NSE, IL-6, TNF-α and CRP affect the clinical models and the outcome in TBI.

Methods:
30 patients with isolated severe TBI admitted to the Intensive Care Unit at the University Hospital “St. George”-Plovdiv from 2017 to 2018 were included. Cerebrospinal fluid (CSF) and plasma were collected on the 24th and 96th hour after the injury. CSF samples were also collected from 15 adult cadavers and served as an age-matched and gender-matched control group. Levels of YKL-40, NSE, IL-6 and TNF-α were analyzed with ELISA. GCS, APACHE III and Marshall Classification were determined prior to randomization and at the 96th hour after admission. Outcome was assessed as in-hospital mortality and at six months mortality.

Results:
The CSF level of YKL-40 in the TBI group was significantly higher compared to the control group (p=0.005). CSF levels of NSE are significantly higher compared to plasma concentrations on 24th hour in TBI patients. Mean plasma levels of YKL-40 and TNF-α were higher compared to CSF, but the difference was feeble. We found statistically significant difference in plasma levels of YKL-40 (p<0.001) and NSE (p<0.001) in patients with short survival. A significant correlation between plasma concentrations of YKL-40, TNF-α and NSE was determined.

Conclusion:
Plasma NSE concentration is the major independent variable which influenced the survival of TBI patients. Plasma and CSF YKL-40 levels along with NSE, reflect the inflammatory process and would provide new information about its dynamics in TBI patients.

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References: