Abstract

Background and Purpose— One of the main drawbacks in the management of patients with acute brain injuries is the absence of a widely available and rapid diagnostic test. The objective of our study was to assess whether Phosphorylated Neurofilament H(pNF-H) might provide useful diagnostic information in the early evaluation of such patients and weather levels of the neurofilament correlated with different clinical variables.

Methods— A total of 90 patients presenting to the critical care department of Cairo University were prospectively studied. Patients were stratified according to the presenting pathology into 3 main groups: Traumatic Brain Injury, Ischemic stroke and Cerebral Hemorrhage. Blood samples for phosphoryalted neurofilament H were assayed on admission and after 7 days. Neurofilament levels were correlated to Glasgow coma scale,CT findings and NIHSS on admission and after 7 days.Rankin score at 3 months was used to detect the degree of disability.

Results- Neurofilament H levels showed a negative correlation with GCS on admission and after 7 days in traumatic brain injury($r=0.66,0.78$),ischemic stroke($0.3,0.5$) and cerebral hemorrhage ($r=-0.56,0.65$) ; hence higher neuromarker levels were associated with lower GCS on admission and after 7 days. In traumatic brain injury patients, there was a negative correlation between neurofilament levels and Marshal CT scores on admission and after 7 days ($r=0.56.0.4$) hence higher neurofilament levels correlated with worse CT findings. In ischemic CVS, there was a negative correlation between neurofilament levels and ASPECTS CT scores ($r=0.64,0.89$). In both ischemic CVS and cerebral hemorrhage, NIHSS showed positive correlations with neurofilament levels.Patients who died or had the greatest (Rankin 6 and 5) after 3 months had the highest levels of Neurofilamnent on admission and after 7 days.The cut off level of Neurofilament to detect death and disability was 35pg/ml on admission(sensitivity 82%, specificity 78%) and was 11pg/ml after 7 days (sensitivity 87%,specificity 92%)

Key word : Acute brain insults Neurofilaments Ischemic CVS Cerebral Hge