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Osteopontin as indicator of Traumatic Brain Injury severity and progression

Androulis Antonios¹, Derventzi Anastasia², Kataki Agapi², Chondrogianni Maria¹, Stefanis Leonidas¹, Gasparinatos Gerasimos¹, Voumvourakis Konstantinos¹, Zografos George³, Boviatis Efstathios¹ and Konstadoulakis M Manoussos³

¹Attikon University General Hospital, Greece

²National and Kapodistrian University of Athens, Greece

³Hippokration General Hospital, Greece

Osteopontin (OPN) plays an important role in the pathogenesis and progression of chronic inflammatory and autoimmune diseases. OPN has been indicated to exert both pro-inflammatory and neuroprotective roles in acute neuro-inflammation and brain injury in animal models, nevertheless, its role in traumatic brain injury (TBI) in humans has not been investigated. Therefore, OPN protein levels were studied in cerebrospinal fluid (CSF) obtained from neurosurgical patients treated for chronic subdural (chrSDH), acute subdural and epidural hematomas (AcSDH+EDH) and brain contusions (n=32), as well as other dementias, including normal pressure hydrocephalus (NPH), vascular dementias and Parkinson's disease (n=20). OPN ELISA data were correlated with patient pre-operative and post-operative Glasgow Coma Scale (GCS) score and other clinicopathological data. CSF acquired during the clinical assessment of individuals free of neurodegenerative disease served as controls (n=12). Chronic hematomas, hydrocephalus and other neurodegenerative conditions were characterized by significantly increased OPN as compared to controls (p=0.0019, 0.002 and 0.013, respectively). In acute TBI groups, OPN increase was greater than tenfold and correlated with clinical severity (p=0.000 and 0.015 for mild and severe AcSDH+EDH groups respectively, as compared to controls). Furthermore, OPN correlated with post-surgery rate of recovery in severe AcSDH+EDH patients. OPN was seen drastically decreased to near-control levels in the fully recuperated (post-operative GCS≥14) as compared to the poorly recovering patients (p=0.036). This evidence demonstrates the potential role of OPN as clinical severity and cognitive decline indicator in TBI patients and advocates monitoring OPN in the CSF as means of patient staging and prognosis.

Biography

Androulis Antonios is a qualified Neurosurgeon operating as Complex Spine Fellow at Attikon University Hospital and Director of Neurosurgery at IASO General Hospital. He is currently pursuing his PhD at National and Kapodistrian University of Athens (UoA), Greece. His research work focuses on issues of cerebrospinal surgery and in vitro models for studying neurodegenerative and immunosuppressive neuropathies. Present study was performed at Laboratory of Surgical Research, 1st Dept. of Propaedeutic Surgery, UoA in collaboration with the Attikon University Hospital Departments of Neurosurgery and Neurology.

a.androulis@gmail.com

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