Association between the expressions of oxidative damage biomarkers with severe induced traumatic traumatic brain injury in rats.

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Introduction

Traumatic brain injury (TBI) is a major cause of morbidity and mortality globally. Conventional diagnosis of TBI is based on neuroimaging techniques. However, recent studies have identified several markers as potential predictors of outcomes following TBI. The main goal of this study was to link the expression of antioxidant enzymes; Glial fibrillary acidic protein (GFAP), Neuron Specific Enolase (NSE) and S100B in the brain of rats with severity of induced TBI in rats.

Methodology

Forty rats were divided into two groups. Sever TBI group (n=20) and sham group (n=10) weight drop injury device was used to induce TBI in rats. After anesthesia and craniotomy, brain trauma was produced by impacting the cortex with dropping weight. Sham group underwent craniotomy procedure but did not receive injury.

Results

Serum expression of GFAP, NSE, and S100B was measured using enzyme-linked immunosorbent Assay kit after 6, 24, and 72 hours. GFAP showed the strongest association with severe TBI after 6 hours, R^2 was 0.916.

Discussion

Severity of TBI might be linked with the expression of oxidative damage markers, and might be considered as one of the diagnostic tools regarding the severity of TBI.