

عنوان مقاله:

Obestatin inhibits apoptosis and astrogliosis of hippocampal neurons following global cerebral ischemia reperfusion via antioxidant and anti-inflammatory mechanisms

محل انتشار:

مجله علوم پایه پُزشکی ایران, دوره 22, شماره 6 (سال: 1398)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

Objective(s): Obestatin is a newly discovered peptide with antioxidant activities in different animal models. Recent studies have shown that Obestatin inhibits apoptosis following cardiac ischemia/reperfusion injury. Brain ischemia/reperfusion induces irreversible damage especially in the hippocampus area. This study aimed at examining the protective impact of Obestatin on apoptosis, protein expression and reactive astrogliosis level in hippocampal CA1 region of rat following transient global cerebral ischemia.Materials and Methods: Forty-eight male Wistar rats were randomly assigned into 4 groups (sham, ischemia/reperfusion, ischemia/reperfusion+ Obestatin 1, and 5 µg/kg, n=12). Ischemia induced occlusion of both common carotid arteries for 20 min. Obestatin 1 and 5 µg/kg were injected intraperitoneally at the beginning of reperfusion period and 24 and 48 hr after reperfusion. Assessment of the antioxidant enzymes and tumor necrosis factor alpha (TNF- α) was performed by ELISA method. Caspase-3 and glial fibrillary acidic protein (GFAP) proteins expression levels were evaluated by immunohistochemical staining 7 days after ischemia.Results: Based on the result of the current study, lower superoxide dismutase (SOD) and glutathione (GSH) (P<0.05) and higher malondialdehyde (MDA) and TNF- α levels were observed in the ischemia group than those of the sham group (P<0.01). Obestatin treatment could increase both SOD and GSH (P<0.05) and reduce MDA and TNF- α (P<0.05) versus the ischemia group. Moreover, obestatin could significantly decrease caspase-3 and GFAP positive cells in the CA1 region of hippocampus (P<0.01). Conclusion: Obestatin exerts protective effects against ischemia injury by inhibition of astrocytes activation and decreases neuronal cell apoptosis via its antioxidant .properties

کلمات کلیدی:

Apoptosis, Astrogliosis, Brain ischemia, Hippocampus, Obestatin

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