Role of Oxytocin in deceleration of early atherosclerotic inflammatory processes in adult male rats

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Abstract:

Abstract: Objective: The study aimed to examine the effect of exogenous OT administration on the inflammation and atherosclerosis in adult male rats and its possible mechanisms. Thirty adult male rats equally divided into three groups. Control group fed regular diet; group II fed control diet supplemented with L-methionine for 10 weeks. Group III received L-methionine and oxytocin treatment for 10 weeks. RT-PCR analysis showed that OT administration increased oxytocin receptor mRNA (2 fold, P, 0.05). Blood samples were evaluated for total homocysteine, interlukin-6 (IL-6), monocyte chemoattractant protein-1 (MCP-1) and C-reactive protein (CRP) by ELIZA. lipid profile, nitric oxide (NO), malondialdehyde (MDA) and reduced glutathione (GSH) were determined. Specimens from aorta were processed for immunohistochemical staining for Aorta nuclear factor _B (NF-κB) p65 protein. Result showed that OT administration to group III decreased the plasma levels IL-6, MCP-1 and CRP levels which were elevated in group II. Moreover, there was decrease of the oxidative stress of group III in terms of increased plasma levels of NO and GSH and decreased plasma levels of MDA in blood. In addition, rats of group II showed histological abnormalities manifested by thickening and ulceration of the aortic wall. Marked increased expression of NF-κB in aorta of in group II was detected. However, OT administration restores the histological structure of the aorta and decreased the expression of NF-κB in aorta of group III similar to the control group. Conclusion: OT has anti inflammatory pathway in atherosclerosis as it decelerates atherosclerosis by decreasing the proinflammatory responses through many mechanisms, mainly the up regulation of its receptors.

Keywords:

oxytocin, atherosclerosis, inflammation, methionine

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