Diabetes mellitus, a serious metabolic disorder, causes damage in many tissue and organs (1). It has a significant damaging impact on liver. This experimental study has been designed to investigate possible therapeutic and protective effects of oxytocin; a well-known antioxidant in several organs (2) on liver of STZ-induced diabetic rats which were treated with oxytocin before and after STZ administration.

4 experimental groups each containing 6 adult Wistar Albino rats were established. 1) control group: 1 ml of saline solution was injected intraperitoneally (i.p.) for 5 days, 2) STZ group: a single dose of STZ 65 mg/kg, freshly dissolved in 1 ml of saline solution was injected i.p., 3) pre-oxytocin group: 5 µg/kg of oxytocin was injected i.p. for 5 days prior to the administration of a single dose of STZ injection, 4) post-oxytocin group: 5 µg/kg of oxytocin was injected i.p. for 5 days beginning by 28th days following the administration of single dose of STZ injection. Rats with blood glucose levels of 200 mg/dl or higher were considered to be diabetic and included in the study. Sacrification at the end of the 4th week, liver tissue samples were taken to be processed for light microscopy. Blood samples were processed for malondialdehyde (MDA), glutathione (GSH) and advanced oxidation protein products (AOPP) measurements. Paraffin sections from liver, stained with Haematoxylin and Eosin (H&E), were evaluated under a light microscope. Body weights of experimental animals were measured and all data were analyzed by Graph-Pad Prism.

Liver injury, based on disrupted arrangement of hepatocyte plates, sinusoidal dilatation, hyperemia, vasocongestion, pyknotic nuclei in degenerated hepatocytes was scored by using a scale ranging from 0 to 3 (0: none; 1: mild; 2: moderate; and 3: severe) for each criterion. Control group reflected a normal liver parenchymal histology. In STZ group, swollen, hypertrophied hepatocytes with pyknotic nuclei, hyperemia, vasocongestion and sinusoidal dilatations reflected prominent tissue damage. Microscopic analysis of tissue sections from pre-oxytocin group demonstrated a reduction in the severity of liver parenchymal damage. Tissue degeneration in post-oxytocin group was quite similar to that of STZ group. According to the biochemical data, oxytocin treatment led to a decrease in liver tissue damage which was more prominent in pre-oxytocin group compared to post-oxytocin group.

We can conclude that oxytocin pretreatment reduced the degree of liver injury in STZ-induced diabetic rats by providing a cellular protection against oxidative stress produced by STZ-induced diabetes mellitus.


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