Summary of the DVM thesis No15167, Faculty of Veterinary Medicine, Urmia University.
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Title of thesis: The effect of oxytocin and its antagonist microinjections into piriform cortex on neuropathic pain induced by tibial nerve transection in rats: roles of opioidergic and serotonergic systems

Summary: The piriform cortex is one of the large areas of the cerebral cortex that is responsible for actions such as smell, stress and epilepsy. Brain imaging has suggested an important role for the piriform cortex in pain processing. Oxytocin, opioid and serotonin receptors are found in this area of the brain. In this study, following microinjections of oxytocin and antagonists of oxytocin receptors (L-368,889), opioid receptors (naloxone) and serotonin receptors (ketanserin) in separate and combined treatments into the piriform cortex, their effects on neuropathic pain have been discussed. On the first day of the timeline of the study protocol, the neuropathic pain model was created by ligation and then cutting the tibial branch of the sciatic nerve. On the 7^{th} day of the study, guide cannulas were implanted on the right and left sides of the piriform cortex. On the 14^{th} day of the study, after microinjection of the tested drugs, mechanical allodynia was recorded using Von Frey filaments. Microinjection of oxytocin (5 and 10 ng/site) into the piriform cortex alleviated mechanical allodynia by increasing the 50% paw withdrawal threshold (PWT 50%). Prior microinjection of L-368,899 (20 ng/site), naloxone (100 ng/site) and ketanserin (100 ng/site) into the piriform cortex inhibited the hypo-sensitivity effect of oxytocin. Referring to the results, it can be said that oxytocin in the piriform cortex directly through oxytocin receptors and also in cooperation with opioid and serotonin receptors might be involved in neuropathic pain processing.

Keywords: Oxytocin, Piriform cortex, Neuropathic pain, Rats.