Effect of intraarticular tramadol administration in the rat model of knee joint inflammation

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Abstract
Local administration of exogenous opioids may cause effective analgesia without adverse symptoms from the central nervous system. Experiments show that peripheral antinociceptive effect of opioids is observed especially in inflammatory pain. The aim of the research was to estimate the effect of tramadol on nociceptive process at the level of peripheral nervous system, after its local administration in the model of knee joint inflammation.

Tramadol was administered intraarticularly into the rat knee joint, before the inflammation as a preemptive analgesia and, for comparison, after the intraarticular injection of carrageenan. The research determined the influence of tramadol injection on pain threshold for thermal stimuli, development of inflammatory processes using the measurement of joint edema and motor function following the induction of knee joint inflammation in the rat. Functional assessment of knee joint with inflammation, in terms of rats’ mobility and body position as well as joint loading and mobility were studied.

The results of the experiments show that local administration of tramadol induces antinociceptive effect. The effect of tramadol, which elicits a decrease in inflammatory edema, appears not only after its administration after carrageenan when inflammation was already present, but also in the case of its injection prior to carrageenan in the scheme of preemptive analgesia.

The results of the described research show that not only morphine but also another opioid, tramadol, widely used in clinical practice, inhibits nociception, edema and functional impairment of the paw after its local application directly to the inflamed knee joint.

Key words:
intraarticular administration, knee joint inflammation, tramadol, rats