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Effects of Memantine (an NMDA receptor antagonist) intraperitoneal treatment on neuropathic pain induced by sciatic nerve ligation in rat.

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Background and Aim : Neuropathic pain is caused by damage or dysfunction in peripheral and central nervous system. Since the treatment of this type of pain is controversial and faced with many problems,in this study the possible effect of Memantine as an NMDA receptor antagonist for the treatment of neuropathic pain induced by sciatic nerve ligation or chronic constriction injury (CCI) in rats is examined.

Methods : This experimental study is done on 21 adult male Wistar rats weighing 200 to 250 g. Animals were randomly divided into 3 groups of 7:A sham CCI Surgical group ,a group receiving Memantine at a dose of 10 mg per kilogram chronically during the 14 days after surgery, a group receiving saline(as solvent(.Mechanical (Von Frey and Pin Prick) and thermal (hot plate and acetone) tests were done on animals on zeroth (before surgery), 3rd, 7th, 14th, 21st and 28th days after surgery. Finally, statistical analysis was performed using Graph pad software.

Results : Memantine significantly reduced the neuropathic induced thermal and mechanical allodynia and also hyperalgesia) p<.001(.

Conclusion : It is probable that chronic administration of Memantine, as an NMDA receptor antagonist, prevents the alterations which leads to neuropathic pain after nerve injury. so it could be infer that physio-pathologic events that leads to neuropathic pain after nerve injury includes NMDA hyperactivities induction, at least in part

Keywords : Neuropathic pain, Memantine , NMDA receptor antagonist