THE EFFECTS OF PREGABALIN ON SOMATIC PAIN IN RATS
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Intro: Pregabalin, also known as Lyrica, is an effective pain-reducing drug for neuropathic pain when taken systemically. However, it has a long list of side effects. Recent studies in animals have suggested that peripheral application may also reduce pain in a neuropathic model, which may limit the side effects seen in systemic dispersal. Using a rat hind paw incision model, we tested the effectiveness of Pregabalin applied to the sciatic nerve for pain relief.

Methods: 30 Sprague Dawley rats were divided into three different groups consisting of ten rats each. The control group had an incision on the plantar surface of the left hind paw and 7 days of sciatic nerve saline infusion using an implantable osmotic pump placed on their backs. The Treatment group also had an incision on the same hind paw, but instead received a perineural infusion of 1% Pregabalin solution for 7 days. The Systemic Control group had a hind paw incision and then received an infusion of 1% Pregabalin in the subcutaneous space for 7 days. Pain behavioral tests were performed preoperatively, and on post-operative days 0, 1, 3, 5, and 7 using guarding scores, von Frey filaments, and Hargreaves’s method heat lamp testing.

Results: All subjects' pain behavior testing increased starting on the day of surgery that peaked 2 hours post-surgery, and then returned to baseline by the 7th day of testing. Guarding and heat lamp tests resulted in no significant difference between any of the groups. However, Von Frey testing showed a significant difference between the Systemic Control group and the other two groups with the Systemic Control group. The animals were sacrificed at the end of the study. Shortly following that procedure, the placement of the perineural catheter in each subject was verified. In many of the rats, the catheter had migrated away from the sciatic nerve.

Conclusion: Due to the migration of the sciatic nerve catheter, the results of our study are invalid and we cannot state whether perineural delivery of Pregabalin improves pain in this rat model. Subcutaneous delivery of Pregabalin improved pain scores in Von Frey testing, but not in guarding or heat lamp scores. Further testing with an improved method for securing the perineural catheter needs to be completed in order to answer our original question.