

Inhibitory effect of gabapentin for interstitial cystitis/bladder pain syndrome in rats

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Interstitial cystitis/bladder pain syndrome (IC/BPS) is a chronic bladder inflammation characterized by pelvic pain and urinary symptoms, such as urinary frequency and urgency. The etiology of IC/BPS is still not completely understood, and effective drug treatments have not been established. Therefore, the present study confirmed whether repeated intravesical injection of lipopolysaccharide (LPS) causes long-lasting painful and overactive bladder in rats. We further tested the effect of gabapentin on those symptoms in a rat model of LPS-induced chronic cystitis. In the histological examination, LPS-treated showed a greater inflammatory response, severe fibrosis and abnormally thick re-epithelialization. LPS revealed hyperalgesia in the region between the anus and urethral opening at 1day post-administration compared with controls, with no recovery over 21 days. In the cystometry, LPS-treated showed bladder hyperactivity at any times tested. Gabapentin showed significant analgesic effects, and significantly prevented the increased frequency of the voiding observed in the bladders of the LPS-treated. These results suggest that LPS-induced cystitis model shows long-lasting painful and overactive bladder in pathological condition, and gabapentin is effective on both symptoms in this chronic cystitis model.