

Efficacy of Pregabalin in Neuropathic Pain after Spinal Cord Injury

Sir,

Neuropathic pain refers to the persistent pain caused by the damage of nerve tissue (central or peripheral) itself or the abnormal function of pain sensory system caused by inflammation, which often manifests as persistent spontaneous pain and hyperalgesia.¹

Neuropathic pain is a common complication in patients with spinal cord injury with chronic and moderate pain as the main clinical manifestation. It has a long course of disease without a specific treatment, which can seriously affect the quality of life of patients. Spinal cord plasticity and central sensitisation are the main causes of pain in patients with neuropathic pain after spinal cord injury.

Changes in spinal cord plasticity and central sensitisation are the main causes of pain in patients with neuropathic pain after spinal cord injury. As the pathological mechanism of neuropathic pain after spinal cord injury is similar to epilepsy, antiepileptic drugs are often used in the treatment of such patients.

As a new type of antiepileptic agent, pregabalin can control the subunit $\alpha_2\text{-}\delta$ protein of voltage-dependent calcium channel in central nervous system through blood-brain barrier, thus inhibiting neuropathic pain.² Some studies have found that pregabalin can effectively alleviate the pathological pain of central nervous system in patients with spinal cord injury and can improve the sleep and anxiety of patients as well.³ Carbamazepine is an antiepileptic and anticonvulsant agent, which can inhibit T-type calcium channel and has the pharmacological effect of anti-neuropathic pain. Studies have shown that early intervention with carbamazepine may reduce the incidence of neuropathic pain in patients with spinal cord injury.⁴

The aim of this study was to compare the efficacy of pregabalin and carbamazepine in the treatment of neuropathic pain after spinal cord injury.

Eighty-six patients with neuropathic pain after spinal cord injury were selected as the study subjects. This research was approved by the Hospital's medical ethical committee. Patients with soft tissue and skeletal dysfunctional pain and inflammatory pain were excluded; women during pregnancy, menstruation and lactation were also excluded. All patients were randomly divided

into pregabalin group and carbamazepine group, 43 cases in each group.

The carbamazepine group was treated with carbamazepine oral with warm water, the dose was 1 mg two times/day, and gradually increased to 3 mg, if the patient could tolerate it. The pregabalin group was given oral pregabalin with warm water, the dose was 75 mg two times/day, and gradually increased to 150 mg two times/day, if the patient could tolerate it. Both groups were treated for four weeks. Visual analogue scale (VAS) was used to assess pain relief before treatment and 4 weeks after treatment, lower VAS score significant lesser pain. Data were analysed by SPSS version 21.0 software and independent sample t-test was performed. P-values <0.05 indicated statistical significance.

Among the 86 patients, 47 (54.65%) were males and 39 (45.35%) were females, the age was from 30 to 74 years with an average age of 57.13 ± 2.85 years, 50 (58.14%) were L1-4 injuries and 36 (41.86%) were T1-12 injuries.

Before treatment, the VAS score of pregabalin group was 8.62 ± 1.47 and the score of carbamazepine group was 8.59 ± 1.55 , without significant difference between the two groups ($p=0.927$). After four weeks of treatment, the VAS score of pregabalin group was 2.53 ± 0.68 , which was significantly lower than that of carbamazepine group (3.71 ± 0.92 , $p < 0.001$).

The results of this study showed that pregabalin had better therapeutic effect than carbamazepine and could significantly relieve pain symptoms of patients. Parsons *et al.* believed that pregabalin was safe and effective in the treatment of neuropathic pain after spinal cord injury, and patients were well tolerated.⁵ The author found that the all patients had good tolerance to pregabalin and carbamazepine, and both groups of patients persisted until the end of the treatment, no patients dropped out of the study during the treatment. As the medicine dosage is adjusted during the treatment, and the effective dosage is different for each patient, this study cannot confirm that pregabalin and carbamazepine are dose-dependent in relieving neuropathic pain after spinal cord injury.

CONFLICT OF INTEREST:

Authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

XY: Conception and design of the work; analysis of data for the work.

YZ, HY: Drafting the work and revising it critically.

JS: Design of the work, the acquisition, analysis and interpretation of data for the work.

YH: Drafting the work, final approval of the version to be published.

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Received: December 26, 2018; Revised: April 9, 2019;
Accepted: April 12, 2019

