Case Report

Pregabalin and amitriptyline for treatment of below level central neuropathic pain following spinal cord injury : a case report

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Abstract

Central neuropathic pain is an unsolved mystery in terms of pathophysiology and treatment. Various pharmacological agents have been tried but without consistent effectiveness. This case report describes effective use of combination of pregabalin and amitriptyline in central neuropathic pain following spinal cord injury.

key words **: Pregabalin, amitriptyline, spinal cord.**

Prevalence of postspinal cord injury pain is variable but averages 65% with onethird of the cases rating their pain as severe[1]. Demirel *et al*[2] reported incidence of pain following spinal cord injury to be 61%. Rintala *et al*[3] stated that prevalence among community based sample in spinal cord injured males was 75%, and central pain was found in 10.1% of the cases. New *et al* reported neuropathic pain as the most common pain category during inpatient rehabilitation. Finnerup *et al*[4] found pain and dysaesthesia at or below the level in 67% spinal cord injury cases and mechanical and thermal dysaesthesia or allodynia in 48% of the cases suggesting neuropathic pain may be the major component of the total pain experience. It has been found that 23% of the cervical and high dorsal injury cases and 37% of lower dorsal and lumbosacral injury cases were willing to trade possible recovery for pain[5]. Various drugs have been tried but none of them provided consistent benefit. Carbamazepine with amitriptyline studied in a case report provided better relief to the patient than either of the drug alone[6].

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Case report

A 24-year-male met a road traffic accident on October 19, 2006, which resulted in wedge compression fracture of C5 vertebra and C4 complete quadriplegia. Patient was managed conservatively at Department of Physical Medicine and Rehabilitation, SMS Hospital, Jaipur. Since November 16, 2006 patient started feeling abnormal sensations in bilaterally below knee anteriorly and mid thigh to soles and back posteriorly. There was a hot burning sensation and feeling of pins and pricks. This sensation was spontaneous without any aggravating factor and was slightly relieved by tepid sponging and range of motion (ROM) exercises. The discomfort was intermittent and worse at night.

On November 26, 2006 pregabalin was prescribed 75 mg twice daily, at this point of time the pain score on visual analogue scale was 5.2. The drug was titrated over a period of about 12 weeks to a maximum of 600mg per day. At the maximum dose patient reported decrease in intensity of pain but discomfort persisted. Amitriptyline 25 mg twice daily was added to a dose of 75 mg twice

daily of pregabalin. After 12 weeks of treatment patient showed complete relief in symptoms like burning and pin- prick sensations, with improved sleep. At this stage amitriptyline was withdrawn and pregabalin 75 mg twice daily was continued. After 4 weeks patient again complained of abnormal sensations of hot burning type. On addition of amitriptyline 25 mg bid patient showed a complete relief after two weeks. On withdrawl of pregabalin symptoms reappeared after two weeks. No side-effects to the drugs were observed.

Discussion

Central neuropathic pain is a disabling condition physically as well as emotionally in patients with spinal cord injury. Different pharmacological strategies were experimented over the years but none of them is an established modality of treatment of central neuropathic pain following spinal cord injury.

Pharmacological agents like tricyclic antidepressants and anticonvulsants have been tried but none of the agent has strong hold in treatment protocol for central neuropathic pain following spinal cord injury. Amitriptyline exerts its effect in two ways-inhibiting uptake of serotonin and norepinephrine and degradation of endogenous opioids inhibition to make them more available to modulate pain messages and thus provides pain relief with antidepressant action.

Pregabalin has both anticonvulsant and anxiolytic effects. Its effect appears to be mediated by its binding to a2d subunit of voltage gated calcium channels which is thought to modulate calcium ions into hyperexcited neurons with a subsequent reduction in release of neurotransmitters such as glutamate and substance P. According to Siddall *et al*[7] pregabalin showed a significant reduction in pain scores and improved sleep in spinal cord injured patients in a placebo controlled trial.

Both amitriptyline and pregabalin afford some benefit when administered alone for central neuropathic pain in spinal cord injured patients but fails to provide a consistent and complete relief, which is obtained by the combination of these two drugs. As we know the pathophysiology is multifactorial, so this enemy is required to be challenged at all the neurochemical fronts. Pain perception is modulated by hyperexcitation of the spinothalamic neurons[8], which in turn can be due to excitation of sodium channels[9], calcium channels[10] or neuroinflammation[11]. So a multifaceted action provided by the combination through action of these two drugs on monoamine uptake, endogenous opioids and volatage gated calcium channels and substance P is the likely reason of better outcome in neuropathic pain associated with spinal cord injury. Thus an overall improvement in patient's status can be expected with this combination in terms of pain relief, anxiolytic and antidepressant effects and improved sleep. Further studies are needed to document the effect of this combination in a larger number of patients.

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