CASE REPORT

Treatment of refractory neuropathic pain related to a brachial plexus injury

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Introduction

Neuropathic pain, i.e. pain resulting from functional changes in peripheral and central pathways subsequent to injury to the peripheral nervous system, offers a difficult challenge to therapy. Such pain is associated with abnormal tactile and thermal responses outside the territory of the injured nerve. It includes a great variety of pain syndromes, such as complex regional pain syndrome, phantom-limb pain, cancer pain, AIDS pain, trigeminal and postherpetic neuralgia, spinal cord injury and postoperative pain. Neuropathic pain reduces quality of life, including mood, physical and social functioning. Despite considerable advances in pharmacological therapy and neural blockades, there is still a lack of consensus about the optimal therapy of neuropathic pain. The analgesic efficacy of first-generation antiepileptic drugs (gabapentin, carbamazepine and valproic acid) and tricyclic antidepressants (amitriptyline) has been well-documented and has become the mainstay of the treatment of neuropathic pain syndromes.

There is some controversy about the use of opioids in the treatment of neuropathic pain, partly due to the use of multiple definitions of neuropathic pain, methodological shortcomings in the available randomised controlled clinical trials, different methods of pain assessment, the inappropriate use of terms such as efficacy and responsiveness, differential responses in spontaneous versus evoked pains and duration of follow-up. There are few trials indicating without bias and with relevant samples the efficacy and applicability of opioids in therapeutic strategies for neuropathic pain.

Case report

A healthy 41-year-old male electrician suffered an electric shock of 4000 V in the right upper limb in December 1987. He was referred rapidly to a Brazilian trauma centre. He had three cardiac arrests, remaining in coma for 22 days, aphasia for 15 days and experiencing tonic–clonic seizures. He was discharged after 52 days, still in severe pain, with allodynia, paraesthesia and numbness in the right upper limb. The diagnosis of brachial plexus avulsion was confirmed by computed tomographic myelography. After 2 years, despite the use of several analgesics and non-steroidal anti-inflammatory drugs, he still had constant and severe pain, and underwent microsurgery of the brachial plexus without significant improvement in function and pain. He was referred to us in July 1997, almost 10 years after the injury, taking carbamazepine (1200 mg per day), codeine (180 mg per day), amitriptyline (75 mg per day), diclofenac sodium (150 mg per day) and phenytoin (100 mg per day).
Despite this, the pain remained severe and constant, being referred at a level of 9—10 on a pain visual analogue scale. We changed the therapy to valproic acid (1500 mg per day), clomipramine (150 mg per day) and midazolan (15 mg per day), without any success. In December 1997, oral morphine 20 mg q4h and 10 mg q2h for breakthrough pain (morphine equivalent daily dose of 150 mg) was added to the therapy, resulting in complete pain relief (0 on the visual analogue scale). At 4 years’ follow-up, he remains asymptomatic on the same doses without significant adverse effects. He also reports a great improvement in his functional status, anxiety symptoms and quality of life.

Discussion

This case demonstrates the efficacy of opioids in neuropathic pain. The scientific literature recommends that tricyclic antidepressants and anticonvulsant drugs are the first-line therapy for neuropathic pain. Although there seems to be a consensus about the effectiveness of opioids in nociceptive pain, controversy remains over the analgesic effect of opioids in neuropathic pain. However, for refractory cases, opioid therapy may provide effective pain relief.\(^1,2,6\)

This patient presented with typical neuropathic pain related to a damaged nervous system confirmed by clinical assessment (numbness and allodynia) and computed tomographic myelography. Neuropathic pain syndromes classically described as resistant to opioids are those related to neoplastic invasion of nerves, central pain and brachial plexus avulsion.\(^2\)

In patients with chronic pain, opioids are usually given by mouth. The dose should be determined by titration over a few days, achieving optimal analgesic effect and managing individual side-effects, and given regularly in an opioid regimen for breakthrough pain. The morphine equivalent daily dose should be evaluated in all patients so that opioid rotation can be done if the first therapeutic strategy fails. Opioids, such as oxycodone, hydromorphone or methadone may be an option.\(^4\)

The efficacy of opioids in neuropathic pain is not well-recognised in the general trauma field, and earlier involvement of a pain service in the management of patients presenting neuropathic pain syndromes related to trauma is essential and should be emphasised.

We suggest that new randomised well-controlled clinical trials using opioids as an adjuvant therapy in neuropathic pain syndromes are needed. These studies should include larger and rigorously homogeneous samples, homogenous methods for pain assessment, long-term follow-up and appropriate use of terms like efficacy and responsiveness. Active placebos mimicking side-effects should be included in the double-blind design, and control of unmasking should be performed. Finally, individual titration of the dose and active management of side-effects are also essential for the success of the opioid therapy.

References