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Case Report

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Epidural Ketamine in FBSS: An Effective Long-Term Therapeutic Option For Unresponsive Pain

Gagliardi G*, Gagliardi V and Ceccherelli F

Department of Anesthesia and Intensive Care, AULSS 5 Polesana, Rovigo, A.I.R.A.S.- Padua, Italy

***Corresponding author**

Gagliardi G, Department of Anesthesia and Intensive Care, AULSS 5 Polesana, Rovigo, A.I.R.A.S.- Padua, Italy

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Introduction

Ketamine is a general anesthetic, non-competitive antagonist of NMDA receptors with analgesic properties. The efficacy of ketamine treatment of acute postoperative and chronic pain, has a moderate degree and evidence and is considered third-line drug [1].

The optimal route of administration of ketamine for the treatment of chronic pain is still not clear and the existing results are lacking. The oral administration seems to have a limited role in patients with chronic pain, and it is indicated only when other treatment options have had no effect [2].

The intramuscular administration has been proven effective for pain control only in a subset of patients [3]. The intravenous route is found to be effective for the control of pain without functional improvement in patients with chronic pain affected by algodystrophy [4].

The epidural administration has been used in different conditions, it hasn't been proven effective for the prevention of chronic pain post-thoracotomy, while it results to have a good outcome for the treatment of radicular pain from herniated lumbar disc, and in case of post-herpetic neuralgia resistant to other therapies [5-7].

In this case we used epidural ketamine and dexamethasone for intractable pain, which has resulted unresponsive to other treatment options.

Case Report

Male patient aged 64, suffering from failed back surgery syndrome (FBSS), with lower back pain due to a herniated disc L4-L5 treated with surgery.

After about a year, for the persistence of low back pain he was underwent at a surgical interspinous spacer implant at L4-L5 level. Later the residual pain was controlled with medication, cycles of physical therapy and rehabilitation.

Throughout this period the patient means a partial control of pain with alternating periods of remission and acute pain. because of the scant effectiveness of the treatment of pain and the presence of right lower limb paresthesia, which are symptoms related to the presence of spinal stenosis, the patient undergoes additional surgery lumbar laminectomy and stabilization of the lumbar spine (Figure 1).

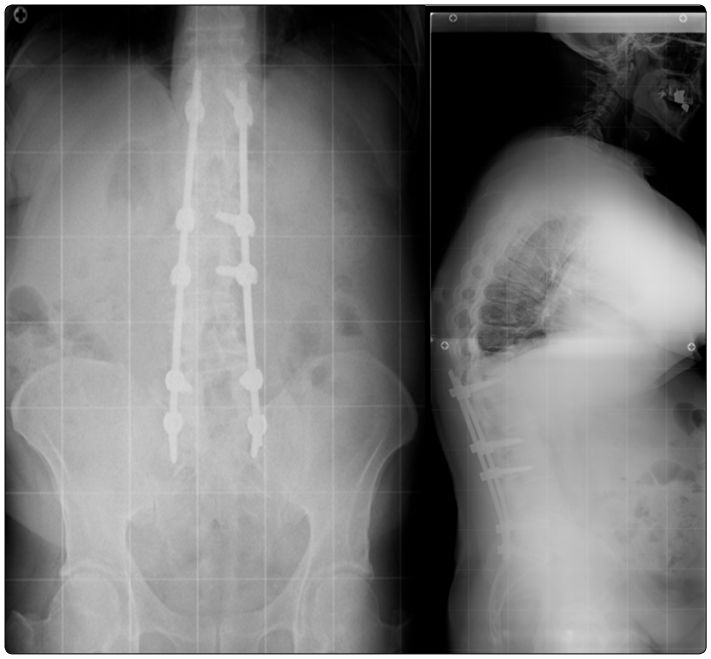

Figure 1: X-ray of the vertebral column, both antero-posterior and latero-lateral projections. They show the position of the stabilisation bars.

After surgery there was a brief period of improvement in pain, but after two months from the surgery, there was a recurrence of low back pain which has now become a continuous bar, presence of paresthesia and dysesthesia in the legs with walking difficulties and weakness. Drug therapy was undertaken with pregabalin,

acetaminophen, tramadol, ketorolac and paroxetine, but the control of pain remains difficult. Given the persistence of pain is positioned a spinal cord stimulator (SCS), but this system is removed after 3 months because ineffective.

The conditions of the patient when he has come to our evaluation were as follows: continuous pain lumbar back to the column with areas of allodynia in correspondence with the scar at the level of L3, L4, L5, S1. Dysesthesia and paresthesia to the lateral regions of the legs, numbness in the soles of the feet. Claudication spinalis to 50 meters. The measure of pain with VAS and with the McGill Pain questionnaire (Figure 2) showed a high intensity of pain.

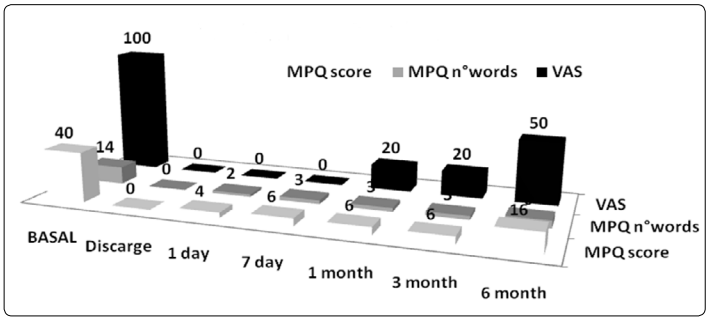

Figure 2:

Given the poor response to therapies which have previously been placed indication to treatment with epidural ketamine. After placement of electrocardiogram and blood pressure monitoring, secured to a peripheral venous access, the epidural injection was performed in the space L3-L4 using a needle 18 G. the total volume injected was 12 ml with the following drugs: 8 mg of dexamethasone (2 ml), 30 mg S-ketamine (6 ml), levobupivacaine 0.5% 10 mg (2 ml).

After drug administration, there was a slight drop in blood pressure treated with volume expansion.

The patient reported gradual improvement in spontaneous pain, paresthesia and dysesthesia at lower limb. We observed no side effects related to ketamine administration. After 60 minutes the patient resumed spontaneous walking without side effects. At the 24 hours control we observed maintenance of pain improvement, this is only a mild pain on the right sacroiliac joint. The controls a 7 days, 14 days, 1 month, 3 months confirms the significant reduction of spontaneous pain, no limp, and disappearance of paresthesias. The weakness persists for prolonged ambulation. Throughout the period of follow-up has also seen a reduction in intake of analgesics, but not in continuous treatment as needed, and the average intake was two doses a week, but was continued intake of paroxetine. Given the good pain control has been sent to a rehabilitation program to strengthen muscle. At the 6 month control an increase of the pain occurred, amounting to about the 50% of the symptomatology of the beginning.

Discussion

The selection of this patient for treatment with epidural ketamine administration has been suggested by the failure of all the other therapeutic treatments and the persistence of the clinical signs of central sensitization (allodynia, hyperalgesia).

The treatment with epidural ketamine in combination with dexamethasone had an immediate pain relief which is maintained with good quality for an extended period, confirming that ketamine can be effective, even with prolonged effect, for the treatment of chronic neuropathic pain in responders subjects [8].

Assumptions that can be done to explain this result, apart from acting on pain due to inhibition of NMDA receptors, we must consider the role that ketamine on spinal microglia, their hyperactivation after nerve injury contributes to neuropathic pain, the preferential inhibition of microglial BK channels may account for the preferential and potent analgesic effects of S-ketamine on neuropathic pain [9].

But the most important mechanism of ketamine for the interpretation of the long-term result seem to be tne effect on depressive disorder that is closely associated with the presence of neuropathic pain. As reported in the literature ketamine can have a rapid effect to alleviate the symptoms of depression and as a single dose is able to attenuate even at low dosages depressive behavior in rats with neuropathic pain [10, 11]. The biomechanism was due to a reduction of functional connectivity in networks that play a critical role in the pathophysiology of depression [12]. The results of these studies indicate that ketamine may be able to prevent or interrupt efficiently the interdependence between pain and depression, an action that becomes essential for the treatment of chronic pain [13].

Ketamine is a third line drug for chronic pain control, but based on of these considerations and the result observed, absence of adverse effects and good results observed on pain control, reinforces the notion that administering epidural ketamine may be considered in those subjects in which there are evident signs of chronic pain and depressive aspects, unresponsive to other treatment options.

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