Spinal cord stimulation for intractable chronic upper abdominal pain: a case report of the first patient in New Zealand

Haitham Al-Mahrouqi, Zea Munro, Richard H Acland, Martin R MacFarlane

Abstract

We present the first patient in New Zealand to undergo Spinal Cord Stimulation (SCS) for intractable upper abdominal pain. The patient was a 53-year-old man with a 20-year history of debilitating upper abdominal pain associated with chronic pancreatitis secondary to pancreatic divisum. Prior to the SCS, he was prescribed 680mg of morphine sulphate equi-analgesia a day. Despite the intense analgesia, he still suffered monthly attacks of upper abdominal pain requiring hospitalisation. Nine months after implanting a Spinal Cord Stimulator, the monthly attacks ceased, his background pain was effectively controlled and the need for opioids decreased to 510mg of morphine sulphate equi-analgesia a day.

Spinal cord stimulation (SCS) is a type of neuromodulation which has gained significant popularity in recent years for managing certain chronic pain syndromes. It involves delivering low voltage electrical current in the posterior extradural space.

The exact mechanism of pain relief is still not entirely understood. Possible mechanisms include inhibition of the peripheral noxious stimuli from reaching the spinal cord through concomitant stimulation of the dorsal horns or increased inhibitory action of gamma-aminobutyric acid in the dorsal horn.¹

There is good evidence for the efficacy SCS in the management of Failed Back Surgery Syndrome, Complex Regional Pain Syndrome² and Refractory Angina Pectoris.³

Recent reports on the use of SCS for chronic abdominal pain show promising results.⁴,⁵ Most patients with chronic abdominal pain reported about 50% decrease in pain and a reduction in opioid use.

In this article we report the first patient in New Zealand to undergo SCS for intractable upper abdominal pain secondary to pancreatic disease.

Case report

The patient is a 53-year-old man who first presented with an acute attack of pancreatitis at the age of 35 years with no apparent cause found; He had a cholecystectomy. Despite that, he suffered monthly unprecipitated attacks of acute pancreatitis.

An exploratory laparotomy revealed pancreatic divisum for which he underwent decompression and Roux-en-Y pancreatico-jejunostomy. This operation relieved his symptoms for approximately 5 months before the onset of further monthly attacks of upper abdominal pain again requiring hospitalisation. After 10 years of monthly
suffering, he underwent a splanchnic neurolytic block. This gave some short term pain relief.

In early 2011, he was being prescribed 680mg equivalent of morphine sulphate daily (IM pethidine, oral oxycodone SR, oral methadone), and 1200mg of gabapentin. The patient had a trial of a Spinal Cord Stimulator (SCS) where a lead with electrodes was inserted percutaneously to lie at the T7/8 level and then a one week trial of spinal cord stimulation which proved very beneficial in relieving his pain. The temporary lead was removed and definitive surgery planned. This took place in July 2011 and a permanent lead with eight electrodes was inserted percutaneously into the extradural space at L2/3 level and the passed in a cephalad direction to lie centred at the T8/9 level, the lead being connected to an Implantable Pulse Generator (IPG) placed subcutaneously in the abdominal wall.

At 16 months follow-up, the patient described no attacks and minimal pain (Table 1). He uses the SCS for a few hours two to three times a day and has managed to reduce the opioid dose at this stage to 510mg of morphine sulphate equi-analgesia a day.

Socially, the patient described life as ‘beautiful’ once again; now being able to work uninterrupted and travel without having to think about medication and possible hospitalisation.

Table 1. Pain score and use of opioid before and 9 months after spinal cord stimulation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Before SCS</th>
<th>Nine months after SCS</th>
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<tr>
<td>Morphine sulphate equi-analgesia</td>
<td>680mg (not including in hospital dosing)</td>
<td>510mg (and decreasing)</td>
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Discussion

In this case report SCS has been successful to date in managing a refractory upper abdominal pain. The patient is essentially pain free and has reduced his reliance on opioid analgesia. The effect has been maintained for 9 months and still continues to date.

Effectiveness—The efficacy of SCS has been validated in the management of Failed Back Surgery Syndrome, Chronic Regional Pain Syndrome and Refractory Angina Pectoris. Recently, SCS has been found to be effective in relieving chronic visceral abdominal pain. The effect appears to be maintained long term with a persisting reduction in pain score, analgesia requirement and improvement in patient satisfaction.

Appropriateness—There is an increasing amount of evidence to support the notion that a similar result is achieved in chronic pancreatitis as with the case presented in this article. The use of SCS has been investigated in patients with a similar profile to our case. A positive response to the initial trial of SCS appears crucial for
predicting the outcome of permanent implantation. The result at 16-month follow-up appears promising; with a reduction in pain scores and opioid use. Our patient had a trial of SCS prior to permanent implantation.

Safety—To date there have been no serious concerns regarding the safety of SCS. The most common complications associated with the procedure are infection and lead migration. With regards to the safety of using the procedure for chronic pancreatitis; Kapural et al\(^7\) reported 3 patients of 24 experiencing adverse outcomes; 2 of which resulted in device removal due to infection, and 1 case of lead migration.

Fiscal neutrality—In addition to the results of the procedure, SCS has also been shown to be cost-effective, with the initial cost and follow-up being offset by a reduction in contact with health services and analgesia.\(^8\)

Chronic pain is a debilitating condition that hinders both physical and psychological functioning. Increasing the inclusion of patients with chronic visceral abdominal pain as an indication for SCS will allow patients suitable for the procedure the improvement in productivity and quality of life.

Conflicts of interest: Nil.

Author information: Haitham Al-Mahrouqi, Trainee Intern, University of Otago, Christchurch; Zea Munro, Trainee Intern, University of Otago, Christchurch; Richard H Acland, Consultant, Pain Management Centre and Spinal Unit, Burwood Hospital, Christchurch; Martin MacFarlane, Clinical Director, Department of Neurosurgery, Christchurch Hospital, Christchurch

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Correspondence: Richard H Acland, Burwood Spinal Unit, Cnr Mairehau & Burwood Roads, Private Bag 4708, Christchurch. Fax: +64 (0)3 3836814; email: Rick.Acland@cdhb.health.nz

References: