

## REPORTE DE CASO

# Pacemaker implantation site neuralgia treated with lidocaine patches: case report\*

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### Abstract

Severe chronic pacemaker pocket pain neuralgia is a rare complication of implanted pacemakers, and may require surgical management. Etiology of this disease is unknown, many theories, however, have been postulated. This paper analyzes one successful case, managed with lidocaine patches, and reviews the literature.

**Key words:** pain, pacemaker, lidocaine, patches.

### Título

Neuralgia en el sitio de implantación de un marcapasos tratada con parches de lidocaína: reporte de caso

### Resumen

La neuralgia luego de la implantación de un marcapasos es una complicación rara que, muchas veces, requiere manejo quirúrgico. La etiología es desconocida; sin embargo, se han postulado diferentes teorías. Este artículo describe un caso exitoso de manejo médico con parche de lidocaína, y se hace una revisión del tema.

**Palabras clave:** dolor, marcapaso, lidocaína, parches.

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## Introduction

Severe chronic pacemaker-pocket pain is a relatively infrequent late complication (<1 %, [1, 2]) of both subcutaneous and subpectorally implanted pacemakers. The original description dates back more than thirty years[3]. In the more superficial implants, pain has been attributed to the lack of subcutaneous tissue between the pacemaker and the overlying skin[4, 5]. In both cases, neural damage due both to trauma and inflammation could be a cause of neuropathic pain[6]. Factors that have been associated with the development of chronic pain are: technical aspects of pocket creation, pocket location, and pocket size[4]. Histopathology of the capsule that surrounds the pacemaker pocket has shown proliferation of myofibroblasts, which suggests a continuous contraction of the scar tissue[3].

Severe chronic pacemaker-pocket pain has been managed with different therapies; the most frequent has been local injection of steroids[7], controversial because of the risk of infection associated. When this fails, however, a surgical approach has been advocated. Griffith et al.[5] report managing the discomfort by surgical reimplantation in a deeper location, while Gubner et al.[7] report the case of a patient successfully treated with the autologous injection into the pacemaker pocket of fatty tissue previously liposuctioned

through a stab wound in the inferior part of the umbilicus. Finally, Rudolph et al.[8], in a report of two patients with a complete resolution of their symptoms, proposed the management of pocket pain with dermis grafts. These same authors later increased the number of patients treated with dermis grafts to 15, followed for an average of three years[9], with two complications, a mild infection treated successfully and an expanding hematoma which required removal of the graft. In this paper, we present the successful treatment of one patient with lidocaine patches, a much less aggressive and less costly approach.

## Case Report

In March, 2009, a 20 year-old male high school student, from Santa Marta, a coastal city in the Colombian Caribbean, was referred to our clinic in Bogota for treatment of a progressive dystonia. The disease had started in the right upper limb 15 months before, and had progressively involved the face, neck, trunk, and finally the left upper limb. With a diagnosis of severe dystonia, the local neurologist had treated him with maximally tolerated doses of anticholinergic agents, benzodiazepines and levodopa. His symptoms, however, continued progressing relentlessly. CT scan and NMR showed bilateral anteromedial globus pallidus calcifications.

After informed consent, our surgical team implanted a bilateral deep brain stimulation system, under stereotactic guidance, in the ventral posterolateral segment of the internal globus pallidum, bilaterally. Postoperative impedances were normal (around 548 ohms). Stimulation parameters were right side monopolar 1-, 2 V, 90  $\mu$ s, 130 Hz; left side monopolar 5-, 2 V, 90  $\mu$ s, 130 Hz. After surgery, immediate symptomatic amelioration ensued, but maximal improvement was obtained three months postoperatively. Burke-Fahn-Marsden scale[10] changed from a baseline of 78 (6 – 8 – 16 – 8 – 12 – 12 – 2 – 2 – 12) to a current score of 2.5 (0 – 0 – 0 – 0.5 – 2 – 0 – 0 – 0 – 0).

The patient improved his capacity to eat without requiring assistance, has returned to school, and the axial contractures have significantly decreased in intensity. Five days following the surgical intervention, the patient developed an alodinic chest pain, 7-8 points in a 0-10 visual analog scale (VAS) in the right pectoralis major region, over the location of the pacemaker. Infection was ruled out. We treated the patient with lidocaine patches 5%, applied daily during 12 hours, for two weeks, when patient was discharged with a VAS of 3, and good response to oral analgesics. Since then the patient has been mostly pain free. He was last seen on May 5, 2011.

## Discussion

Neuromodulation for the symptomatic therapy of various disorders is an universally accepted therapy standard. This treatment implies the implantation of electrodes placed in the spinal epidural space or in diverse deep brain nuclei, and of a pulse generator (PG) that delivers electric current to the aforementioned structures to produce clinical control. The PG is frequently placed in a subcutaneous pocket in the pectoral, abdominal or back area. Implantable intrathecal pumps are indicated in spasticity and pain. The presence of the pump or PG is normally well tolerated, but some patients report mild or moderate local discomfort. Major or intolerable pain at the implantation site is an infrequently reported complaint. Oral analgesics, anticonvulsants, local blocks with anesthetics have been advocated with various and inconsistent results. In refractory cases, surgical pocket revision is an option. Potential drawbacks of this surgery include hardware damage, infection or inability to control pain. The first complication leads to a new surgery to reimplant the damaged elements, as well as, to a risk of infection. Meanwhile, the patient may temporarily lose the clinical benefit and neurological deterioration may occur. In psychiatric and some types of movement disorders and pain, this situation might be a severe problem, even with a risk of death. In the local relief of

pain, lidocaine patches work by distinct mechanisms, which may include blocking the conduction mediated by sodium channels[5], and the reduction of pain fibers in the zone of allodynia. Its efficacy has been demonstrated in various types of focal neuropathic pain[6].

This therapy has several advantages: Side effects are significantly reduced, compared with high dose analgesics, invasive treatments can be avoided, and costs are substantially lower. This case report could help substantiate a clinical trial to further prove the efficacy of this therapy.

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