

Treatment of Painful Stump with Lidocaine Patches

Dr. María Vázquez Guimaraens

MD specialist in Physical Medicine and Rehabilitation and PhD in Neuroscience, Servizo Galego de Saúde (SERGAS), Spain

***Correspondence to:** Dr. María Vázquez Guimaraens, MD specialist in Physical Medicine and Rehabilitation and PhD in Neuroscience, Servizo Galego de Saúde (SERGAS), Spain.

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Received: 27 May 2018

Published: 06 June 2018

Keywords: *Lidocaine; Stump Pain; Phantom Limb Pain; Scar Hyperalgesia; Rehabilitation*

Abstract

Phantom limb pain and scar hyperalgesia are recurrent problems after amputation. The neuropathic nature suggests the involvement of both peripheral and central neurological mechanisms, involving neuroplastic changes in the central nervous system and scar hyperalgesia is correlated with secondary mechanical hyperalgesia in the skin area around the scar.

The patient usually presents dysesthesia, pain in burning, stabbing, electric shock, or just itching making very difficult his recovery and rehabilitation.

Neuropathic pain has a negative impact on quality of life of the amputees and it required a specific pharmacologic therapy.

The lidocaine patch 5% is a topical analgesic, non-invasive and with minimal systemic absorption.

Treating scar hyperalgesia or phantom limb pain on the stump with topical lidocaine may reduce the activity of peripheral nociceptive afferents and thus decrease the likelihood of developing persistent phantom limb pain.

The aim of the present research is to investigate if a lidocaine patch 5% is effective for reducing phantom limb pain and primary or secondary scar hyperalgesia.

After the first adhesive dressing used all reported a pain relief between 70-80% and following one month of treatment, an improvement in walking pain and walking patterns was obtained. The patients indicated that the lidocaine patch provided mechanical protection for the scar; at this time, it was decided to discontinue treatment with opioids progressively. At 3 months, patients were treated with 5% lidocaine patches as the only treatment and reported a 100% improvement in pain and the physical examination showed no hyperalgesia, no allodynia and their quality of life increased.

None of the patients in the case series suffered any local or systemic adverse reactions to lidocaine plaster use and the patients' adherence to treatment was excellent in all cases.

Lidocaine patch was shown to be a safe, efficient treatment for localised post-traumatic or postsurgical neuropathic pain; our results also suggest that it significantly improves patients' functional level, and is associated with an improvement in occupational performance.

Introduction

The immediate repercussion of limb amputation in the first postoperative days is dominated by surgical wound pain and this pain is identifiable and limited to the surgical site. Surgical stump pain is often described as sharp, aching, and severe. It is primarily a nociceptive form of pain due to the extensive tissue trauma involved, however, the inevitable direct neural injury that occurs results in an important neuropathic component to the presentation [1,2].

Acute stump pain would be estimated to resolve in the first few weeks after amputation, however, ten per cent of patients will go on to involvement persistent stump pain. After the amputation of an extremity, pain frequently occurs, however for a better study of the sensations that appear in this post-amputation pain syndrome, these three terms are classified: phantom limb, phantom pain and pain in the stump [3]. This pain is defined as a painful sensation located in the stump, generally distal and should be suspected when the pain persists beyond the healing period; it is due to structural problems of the stump or to the pain of deafferentation resulting to a lesion of a nerve, nerve root or spinal cord [4].

It is therefore important to take a complete history as well as visually inspecting, palpating, and performing sensory testing of the stump to identify any tender points, dysaesthetic areas and any possible pathology [5].

Therehabilitationprogramsincludeinterventionsbythephysicalandoccupationaltherapyunderthesupervision and guidance of a physician. The principles of amputee rehabilitation, from pre-amputation to recovery into the work force and community, are reviewed. The authors discuss exercise techniques, training programs, and environmental modifications that have been found to be helpful in the rehabilitation of the amputee.

The prosthesis devices are intended to help the walking and the performance of the activities of the daily life of the amputee of the lower limb. The functional success of prosthesis depends on the level of amputation, age, etiology and post amputation pain as well as other factors that can complicate this process [6-9].

Materials and Methods

We studied five clinical cases of patients with supracondylar lower limb amputations evaluated in Physical Medicine and Rehabilitation Unit during 2017 due to difficulties in adapting their prosthesis too painful in the stump.

The inclusion criteria were above or below knee amputations, three months or more after surgery, after complete wound healing. Patients with history of central nervous system disease or a major psychiatric disease, known hypersensitivity to local anaesthetics, skin irritation on the stump and pregnancy were excluded.

The 75% of the sample walked with the prosthesis independently and only 25% required the use of a cane as a technical aid.

The five cases presented independence for general activities, a job that does not require standing for a long time or walking; they couldn't transport heavy materials or walk long distance but they can be independent and live with the family.

The pain of the stump described it as lancinating, which increases with friction and walking, in addition they sometimes referred to paroxysms. There was no recent traumatic history, infectious symptoms or other additional symptoms.

In the physical examination performed, we found in all cases data of allodynia, hyperpathy and hyperalgesia in the distal stump and pain on the area of the scar. Regarding the shape of the stump, three were conical and two rectangular, all had a length from the greater trochanter between 25 and 30 cm. The tone of the stump was flaccid in two cases, normal in two others and spastic in one of them. None had adhesions, muscle contractures or circulatory disorders.

Regarding the state of the skin, the most frequent chemical disorders were dermatitis (3 cases) and warty hyperplasia (2 cases), without fungal infection, chronic ulcers or pyoderma.

When analysing the gait, three patients presented a walking pattern with excessive lateral inclination of the trunk and the other two had a gait in abduction because of the pain and tried to compensate with a width of the support base.

The studies carried out did not indicate any abnormality, X-rays and bone scans showed no bone spurs, osteomyelitis, fractures or other alterations. In two cases, a nuclear magnetic resonance study was performed due to the suspicion of the existence of neuromas, which were rejected.

After measuring that the prosthetic was correctly adjusted, it was decided to start in the five patient's treatment with physical therapy (massage, magneto therapy and ultrasound) and pharmacological treatment

with minor analgesics and pregabalin. In the absence of pain relief, it was decided to suspend the prescribed physical therapies and treatment was started with third-level analgesics (oxycodone).

In two cases infiltration of 1% lidocaine was performed on the scar, the allodynia disappearing, but this technique was very painful for the patients. As there was no improvement in any case, it was decided to provide patches of lidocaine at 5%, covering the painful scar, once a day for an interval of twelve hours.

Results

All the patients were male, the mean age was 56.3 years and none of them had a medical history of interest; the cause of the amputation was traumatic and taken more than ten years after surgery.

After the first adhesive dressing used all reported a pain relief between 70-80% and following one month of treatment, an improvement in walking pain and walking patterns was obtained. The patients indicated that the lidocaine patch provided mechanical protection for the scar; at this time, it was decided to discontinue treatment with opioids progressively. At 3 months, patients were treated with 5% lidocaine patches as the only treatment and reported a 100% improvement in pain and the physical examination showed no hyperalgesia, no allodynia and they quality of life were increase.

None of the patients in the case series suffered any local or systemic adverse reactions to lidocaine plaster use and the patients' adherence to treatment was excellent in all cases.

Discussions

Subsequently the amputation of an extremity, pain frequently occurs, however this post amputation pain syndrome they are classified in these three terms: phantom limb, phantom pain and pain in the stump [10].

Pain in the stump is defined as a painful sensation located in the stump, generally distal and should be suspected when the pain persists beyond the healing period; it is due to structural problems of the stump or a lesion of a nerve, nerve root or spinal cord [11].

Loss of a limb produces a permanent disability that can impact a patient's self-image, self-care and mobility. The speciality of Physical Medicine and Rehabilitation is fundamental in the management of this process [12].

A prosthetic device is intended to help the walking and the performance of the activities of the daily life of the amputee of the lower limb. The functional success of prosthesis depends on the level of amputation, age, etiology, post amputation pain as well as other factors that can complicate this process [13-14].

The amputee who is prosthetized, who due to conditions cannot use his prosthesis, has a great risk of suffering different repercussions, especially psychological ones, since this situation can affect his corporal perception and self-confidence. For all this, we must bear in mind that a scar or painful in a stump will delay its prosthetic adaptation and will limit the use of it in the short term [15-17].

The lidocaine patch is a topical medication adhesive bandage with 5% lidocaine that must be taken into account when diagnosing this condition. A stump with localized pain at fingertip accompanied by allodynia/hyperalgesia will be predictive of a good response to this type of drug. The adhesive dressing provides pain relief since it stabilizes the membrane potential in the nociceptive fibers, producing a decrease in pain and the symptoms that accompany neuropathic pain. Being a topical hydrogel dressing, it provides painful scars with a refreshing sensation as well as a mechanical protection of the scar when using prostheses [18-20].

Conclusion

The use of a prosthesis that does not fit properly can lead to complications that adversely affect the gait and the level of activity of people who suffer an amputation. Identifying the factors that can cause this situation seems highest.

In our clinical experience, 5% lidocaine patches are a safe, effective pharmacological treatment and have certified us to control pain, even removing third-level analgesics; in addition, a central analgesic effect of lidocaine has been implied.

All the patients in our study showed great satisfaction with their degree of recovery. The reports of the use of lidocaine patch 5% for pain in the amputation stump and phantom limb pain are still scarce, so the present case report demonstrates that this can be a viable alternative in cases of refractory neuropathic amputation pain.

This drug has demonstrated to be a good treatment option in post amputation pain, meanwhile it reduces pain intensity and allodynia/hyperalgesia, consequently improving the quality of life of our patients.

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