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Case Report

Sphenopalatine Ganglion Block Relieves Chronic Abdominal Wall Pain!

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ABSTRACT

Chronic abdominal wall pain is often difficult to manage with physical/occupational therapy, analgesic medications, and invasive procedures. We report the first case of a transnasal sphenopalatine ganglion block that repeatedly provided greater than 80% pain relief for a patient suffering from intractable chronic abdominal wall pain. A 28-year-old female with Crohn's disease presented with intractable chronic abdominal wall pain after several abdominal surgeries. Imaging did not demonstrate any pathological abnormality. Physical therapy, occupational therapy, pharmacological medications, transcutaneous electrical nerve stimulation, trigger point injections with steroids, transversus abdominis plane block, and surgery provided minimal relief. Considering that sphenopalatine ganglion block has previously relieved pain of various etiologies, we offered it to this patient. Long cotton-tips were soaked in Lidocaine 4% topical solution and were advanced into each nasal sinus until gentle resistance was met and left in place for a total of 15 minutes. This process was repeated two more times, for a total of 45 minutes. After the first SPGB, the patient had 80% pain relief that lasted for 3 weeks, with significant improvement in her daily function. Since then, the patient has been receiving this block monthly, for a total of six times so far. Each time, the patient has been experiencing the same effect, with sometimes even more than 80% pain relief.

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Purpose of Article

The purpose of this article is to expand the knowledge regarding the use of the sphenopalatine ganglion block and suggest a new way of treating chronic abdominal wall pain.

Introduction

Chronic abdominal wall pain is a poorly recognized, debilitating clinical problem that occurs in 2% to 3% of patients with chronic abdominal pain. These individuals have no demonstrable pathologic abnormality, and the diagnosis is made based on clinical grounds. Only few clinical trials for treatment of this condition exist [1]. Injection of local anaesthesia in combination with steroids provides relief for some patients, but for others, pain persists despite these treatments. Treatment with neurectomy is an option for some individuals, but it is also not entirely effective [2]. We report the first case of a transnasal sphenopalatine ganglion block that repeatedly provided greater than

80% pain relief for a patient suffering from intractable chronic abdominal wall pain.

Case Presentation

A 28-year-old female with past medical history of Crohn's disease and asthma presented with intractable chronic abdominal wall pain after several abdominal surgeries. The patient reported a year and a half of "very severe," constant, left upper quadrant abdominal pain that she described as throbbing, stabbing, sharp, cramping, gnawing, aching, and pulling. She rated the pain as 9/10 on the Numeric Rating Scale. The pain would improve slightly with ice/heat and lying down and would get significantly worse with walking, standing, and climbing stairs. The pain would interfere with that patient's ability to work, socialize with friends, participate in recreation/hobbies, perform household chores and physical exercise, have sexual relations, and sleep. The patient reported frequently feeling anxious, discouraged, and depressed because of the pain.

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Multiple x-rays, MRIs, CT scans, and Emergency Department visits did not demonstrate any pathological abnormality. The patient had tried physical therapy, occupational therapy, muscle relaxants, selective serotonin reuptake inhibitors, transcutaneous electrical nerve stimulation, trigger point injections with steroids, transversus abdominis plane block, and surgery to help manage the pain. However, all of these treatments provided only minimal relief. Considering that the sphenopalatine ganglion block had previously been shown to relieve pain of various etiologies, we offered this treatment option to this patient [3-7].

During the procedure, the patient was positioned supine and hemodynamics were monitored with a non-invasive blood pressure cuff and pulse oximeter. Long cotton-tips were soaked in Lidocaine 4% topical solution and were advanced, non-traumatically, into each nasal sinus until gentle resistance was met, and left in place for a total of 15 minutes (Figure 1). This process was repeated two more times, for a total of 45 minutes (Figure 2). The cotton-tip applicators were removed, intact, and the patient was monitored for an additional 10 minutes before being discharged home.



Figure 1: Supplies needed for our sphenopalatine ganglion block.



Figure 2: Our patient receiving the sphenopalatine ganglion block at our pain clinic.

After the first sphenopalatine ganglion block session, the patient, for the first time, had 80% pain relief that lasted for three weeks and had significant improvement in her daily function. Since then, the patient has been receiving this block monthly, for a total of six times so far. Each time, the patient has been experiencing the same effect, with sometimes

even more than 80% pain relief. Recently, she has been experiencing pain relief that has been lasting for more than 3 weeks at a time, and her new baseline pain level is 1 to 2 out of 10 on the Numeric Rating Scale. One time, the patient missed her monthly appointment secondary to hospitalization for another medical condition. When she missed the monthly appointment, over the course of two months, her baseline pain became 4 out of 10 on the Numeric Rating Scale. However, since the start of these sphenopalatine ganglion block treatments, the patient no longer has excruciating abdominal wall pain. The patient reports that this is the only treatment that has so far provided her significant benefit.

Discussion

Chronic abdominal wall pain affects about 1 in 1800 individuals, and it is four times more prevalent in females than in males [8]. Despite its widespread prevalence, physicians often do not suspect this condition and may misdiagnose and/or improperly treat patients with this condition [9]. Pain is typically localized to a specific area of the abdomen and is mediated by A-delta nociceptors. The pathogenesis of chronic abdominal wall pain involves entrapment of the cutaneous branches of the T7 through T12 nerve roots that extend anteriorly from the spine and travel toward the rectus sheath, within a neurovascular bundle, surrounded by a collection of adipose tissue. When the adipose tissue gets disrupted, compressed, or herniated, pain occurs. Mechanical abnormalities like tissue scarring, edema, or fibrosis can lead to the entrapment of these nerves [10]. Also, oral contraceptive use and pregnancy increase the risk of this condition secondary to hormone-induced fluid redistribution and retention in the abdominal wall [11, 12].

Given that our patient was female and had a history of multiple abdominal surgeries, she had significant risk factors for chronic abdominal wall pain. When physical/occupational therapy, invasive procedures, and administration of analgesic medications did not provide our patient with sufficient pain relief, we decided to explore the sphenopalatine ganglion block, a technique first described by Sluder in 1908 [13].

The sphenopalatine ganglion is a collection of parasympathetic nerves from the greater petrosal nerve, located in each unilateral pterygopalatine fossa, and contains the largest collection of neurons outside the brain [14]. Post-ganglionic sympathetic neurons and somatic sensory afferent branches of the maxillary division of the trigeminal nerve are thought to also pass through this ganglion. Nervous system impulses passing through the sphenopalatine ganglion, arising from these various nervous system branches, can be viewed as a situation similar to automobiles from various streets, entering and merging into a traffic circle, and exiting to other streets away from the circle. Through the administration of the sphenopalatine ganglion block, both the parasympathetic nerves of the greater petrosal nerve and the sympathetic neurons can be blocked.

Pain is transmitted through the Sympathetic Nervous System. It is believed that all the sympathetic neurons are interconnected through the Sympathetic Nervous System in the body [15]. Therefore, if we can somehow block a portion of this nervous system, pain can be relieved in other parts of the body. However, typically, it is difficult to gain access to the Sympathetic Nervous System, as most parts of this system are buried deep inside the body, requiring deep injections or invasive

surgery to be reached. The only exception is the sphenopalatine ganglion, which is exposed to the outside world via the nose and is just covered by 1 to 2 mm thick layer of connective tissue and mucous membrane [16]. Based on this theory, blocking the sphenopalatine ganglion could result in pain relief in other parts of the body through descending inhibition of nociceptive transmission in the spinal cord.

There are several commercially available devices available to perform sphenopalatine ganglion blocks, but the administration of this block via the use of just long cotton-tips soaked in viscous Lidocaine 2% makes this treatment simple and inexpensive [3]. The fascinating aspect of this block is that not only does it treat numerous pain conditions, including headaches of various etiologies, neck pain, back pain, post-operative shoulder pain, and now chronic abdominal wall pain, but it also, somehow, provides long-term effect. Even after the temporary effects of local anaesthetic wear off, some patients continue to experience significantly less pain. This is an incredible phenomenon that would benefit from further investigation.

Conclusion

Chronic abdominal wall pain is often difficult to manage with physical/occupational therapy, analgesic medications, and invasive procedures. This case demonstrates that the lidocaine sphenopalatine ganglion block could be a simple, safe, non-expensive, non-invasive, and effective treatment option for those affected by chronic abdominal wall pain.

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Conflicts of Interest

None.

Author Contributions

Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Resources, Validation, Visualization, Writing – original draft, Writing – review and editing: DL, MA, PA, MA, CE, FG.

Consent to Participate

The patient has given written informed consent to publish her data for scientific reasons provided her anonymity is maintained.

Ethical Approval

Not applicable.

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