

Case Report

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Percutaneous Nerve Block Catheter; A Novel Minimal Invasive Treatment for Patients with Abdominal Cutaneous Nerve Entrapment Syndrome (ACNES)

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Abstract

Anterior cutaneous nerve entrapment syndrome (ACNES) is a commonly overlooked [1] and ill understood cause of abdominal pain resulting in unnecessary, costly and potentially harmful diagnostic procedures [2-4]. The pain is often severe and can have a debilitating effect on the patient's quality of life. A good response to trigger point infiltration using local lidocaine injection has both a diagnostic and therapeutic purpose and can be performed freehand [5] or ultrasound guided [6]. If this therapy provides inadequate pain-relief, ultrasound guided transverse abdominis block [7,8] or a surgical neurectomy [11] should be discussed with the patient. We present a patient suffering from ACNES who was treated with a novel therapy where by a nerve block catheter was placed percutaneously in the region corresponding to the expected course of the intercostal nerve thought to be responsible for the pain. The patient was pain free after the procedure and remains so three months since the therapy took place. We suggest that the placement of a nerve block catheter could be an effective long-term treatment of ACNES in selected cases, preventing the necessity for surgical intervention.

Introduction

Anterior Cutaneous Nerve Entrapment Syndrome (ACNES), as the name suggests, is caused by the entrapment of one of the cutaneous branches of the intercostal nerves in the abdominal fascia. Despite it being well-documented, it is a commonly overlooked cause of abdominal pain. The prevalence of ACNES in patients presenting at the emergency department with chronic abdominal pain is approximately 2%; the condition has a higher incidence in younger, female patients with a normal body mass

index. Patients typically present with severe abdominal pain, which the patient can clearly specify with one finger. A positive Carnett's sign and/or Pinch test may be observed. The diagnosis ACNES can be established after a thorough patient history and physical examination. A good response to local infiltration with anaesthetic agents (eg Lidocaine) supports the diagnosis, and may have additional therapeutic benefits. If the pain-relief is inadequate, operative neurectomy can be considered. ACNES should be suspected in all patients who present with chronic abdominal pain with normal laboratory results and imaging. In

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the following case we demonstrate how a nerve block catheter, which was placed percutaneously in the region corresponding to the expected course of the nerve thought to be responsible for the pain, led to a complete eradication of the patient's pain symptoms. Such a therapy could be used as an effective long-term treatment of ACNES in selected cases, preventing the necessity for surgical intervention.

Case study

A 63 year old Caucasian woman, with no past medical history, presented at the surgical outpatient department complaining of constant right upper quadrant abdominal pain which had been present for the last 6 months. The patient described the pain as predominately nagging in nature, with periodic bouts of burning and numbness. The patient could precisely indicate where the pain was localised. This patient began experiencing the pain after developing a urinary tract infection, for which antibiotics had been prescribed. Despite the resolution of her other symptoms, the patient continued to suffer from abdominal pain. The pain was exacerbated by physical activity and after sitting for a prolonged period. The patient had initially been referred to the gastroenterologist; however a colonoscopy and echography showed no evident pathology. Gynaecological causes of the disease had also been excluded. The patient was not suffering from nausea, vomiting, or loss of appetite. Physical examination revealed paramedial localised tenderness in accordance with the right 12th thoracic intercostal nerve. The Pinch test and Carnett's sign were both positive.

Based on the patient history and physical examination, the provisional diagnosis of ACNES was made and the patient was initially treated with an injection of Bupivacaine 5 mg/ml 20 ml in combination with Kenacort 40 mg/ml 1 ml. At follow-up she reported a significant albeit temporary improvement in her pain symptoms after the injection; this improvement in symptoms supported the diagnosis of ACNES. This therapy was repeated two further times with similar results. Whilst the patient reported an overall decrease in the severity of the pain, the temporary effect of the treatment made this an impractical long-term solution. The patient was however reluctant to undergo a surgical procedure. In order to provide the patient longer-term pain relief, a nerve block catheter (Pajunk SonoTap 19G 600 mm with 40 holes) was placed percutaneously under ultrasound guidance in the region corresponding to the expected course of the 12th intercostal nerve, with the tip located between the posterior rectus sheath and the abdominal rectus muscle (Figure 1). The pain severity pre- and post-procedure was documented using the Visual Analogue Scale (VAS) pain score. The patient reported a reduction in her VAS-score from 6 to 0. The patient received instructions on how to operate the pump and how to remove the device once the pump was empty; this occurs approximately three days post-placement. At 3 week follow-up the patient reported to still be pain free and was discharged. At the time of writing this article, 3 months later, the patient reported to still be pain free.

Strengths and limitations

There are a number of advantages of this therapy. In comparison with surgery, it is far less invasive, the incision made is smaller and postoperative recovery is shorter. Furthermore,

the procedure can take place in an outpatient setting and general anaesthetic is not necessary. The biggest disadvantage is that we do not yet know which ACNES patients would benefit from this treatment; identifying these patients should be a goal of further research.

Conclusion

We suggest that the placement of a nerve block catheter could be an effective long-term treatment of patients who derive insufficient pain relief from injections, preventing the necessity of surgical intervention in selected cases. Beside its invasiveness, surgery carries a number of additional risks such as that of wound infection, herniation at the operation site, and persistent pain post-surgery. The development of a less invasive, safer alternative is thus highly desirable. More research needs to be done in order to answer questions regarding how effective this treatment is and which patients could be suitable.

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