Anterior Cutaneous Nerve Entrapment Syndrome (ACNES)

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CHAPTER 12

Valorisation
INTRODUCTION

Chronic abdominal pain (CAP) is defined as intermittent or constant abdominal pain that has been present for at least two months\(^1\). CAP may be due to an abdominal wall related origin. Several studies have demonstrated that up to 30\% of patients with CAP of an unknown source in fact suffer from an abnormality in the abdominal wall\(^2-^4\). Anterior Cutaneous Nerve Entrapment Syndrome (ACNES) is caused by entrapment of end branches of intercostal nerves that are residing in the abdominal wall. Exact numbers on incidence of ACNES patients are unknown. However, the incidence in patients evaluated for acute abdominal pain in an emergency department of a large teaching hospital was estimated at approximately 2\%\(^5\). Considering the fact that a substantial number of physicians are not aware of the ACNES syndrome yet, actual numbers of patients suffering are likely higher.

Several aspects of this pain syndrome were unveiled during the last two decades but a tremendous lot of work still needs to be done. An important goal is to increase awareness among physicians, and not only regarding entrapment syndromes that are situated at ventral portions of the trunk. The present thesis also highlighted variants of ACNES causing a chronic type of flank or back pain. These entities were hitherto not recognized. Since experiencing a persistent undiagnosed pain is most frustrating, one can imagine the vast consequences of spreading this knowledge. The same accounts for exploring new treatment forms (such as Pulsed Radiofrequency, PRF) in order to cure a larger portion of patients in a minimally invasive manner. It is to be hoped that other research groups will also pursue these important aspects of ACNES and initiate validation studies.

SOCIAL RELEVANCE

Chronic pain has been a mystery for centuries. Descartes once tried to explore the pathophysiology of chronic pain in his “Treatise of Man” and compared mankind with a machine with intricate and fine-tuned systems within systems\(^6\). He also described a hollow pathway controlling sensory and motor perception as well as a pain pathway. Since then, pain remained a complex entity in the field of medicine, and more and more research has accumulated over the years. However, several features such as determinants, pathogenesis, prevention, treatment and prognosis of pain are still largely unknown. In the present thesis we encountered two remarkable features of pain. Chapter 8 suggested that, in some presentations of neuropathic pain, a segmental relation between a visceral abnormality and the abdominal wall may possibly explain somatosensory abnormalities. The pathway of visceral afferent nerve fibers converging with cutaneous pain afferents at the level of the dorsal root ganglion and spinal cord possibly explains why neuropathic pain symptoms may manifest itself once visceral disease occurs\(^7-^9\). It is advised to always exclude a visceral cause of a neuropathic abdominal, flank or back pain using imaging.
Furthermore, chapter 9 illustrates that ACNES may present itself in a bilateral fashion. It was hypothesized that a one-sided peripheral nerve lesion can lead to a similar distribution of pain on the contralateral side of the body in a ‘mirrored fashion’. This concept which is known as mirror image sensory dysfunction (MISD) is a complex pain mechanism that is also present in several other pain syndromes including complex regional pain syndrome\textsuperscript{10}. While these two mechanisms may just play a small role of the pathogenesis of pain in general, recognizing and understanding these concepts is a valuable asset as diagnosis and treatment may be improved.

From a socio-economic point of view it must be appreciated that pain with neuropathic characteristics is generally severe and associated with a poor overall health status\textsuperscript{11}. Moreover, difficulty in diagnosing ACNES could lead to excessive blood testing and imaging studies causing a psychological, physical and economic burden to patients\textsuperscript{12}. While ACNES is one of the many pain conditions that received much attention in the last two decades, chapter 2 provides an overview of specific characteristics based on a cohort of 1116 patients, and thereby provides diagnostic criteria. It is hoped that these criteria reduce the medical costs of these chronic pain patients since physicians may possibly recognize the syndrome earlier, or even at ‘at first sight’.

**SOCIETAL IMPACT**

Over the years, research on ACNES was not only published in scientific journals but was also presented on several national and international meetings of different specialties. Furthermore, our institution launched a website containing valuable information for both the patient and the doctor (www.buikpijn.nl). Moreover, the first Dutch ACNES patient society was recently (2018) founded. During the modern-day era it is extremely important to educate (young) patients who are more and more focused on online sources of information rather than on the doctor himself. In addition, if current treatment modalities fail, people will find solidarity in peers also suffering from chronic pain.

Patients with ACNES usually present after a long doctor’s delay as was shown in the present thesis. To reduce delays, and diminish the emotional burden of patients suffering from chronic pain, as well as making information available for the public, an initiative of creating a nation-wide ACNES network was started in 2018. It consists of hospital specialists from 32 Dutch hospitals who joined forces to conceive a platform. Potential patients can thus be referred to a proper regional hospital that is skilled in the management of ACNES.
An ongoing debate within pain medicine is clinical relevance of outcome measures\textsuperscript{13,14}. Most studies focus on pain relief using a range of different pain scales. However, patients respond differently to therapies, and the question is what 50\% pain reduction means when in some patients 100\% pain remission is achieved. As observed in several studies in the present thesis, some patients tend to be overall satisfied with their treatment outcome although pain has not completely disappeared, and in some cases not even reached the 50\% pain reduction level. Therefore, pain relief is not always reflecting patient satisfaction. This apparent contradiction is due to the fact that satisfaction is a multi-factorial measure of outcome. Not only does it depend on pain relief but it is also subject to patient expectations and experienced burden of complaints (quality of life). In our randomized controlled trial (chapter 5), we used pain scores as well as satisfaction as outcome measures. We recommend to standardly include patient satisfaction as an important outcome parameter in the evaluation of any new treatment form.

The present thesis highlighted new information regarding diagnosing and treating ACNES-like entities causing chronic flank or back pain. A similar treatment protocol as used in ACNES, e.g. local infiltrations using lidocaine, followed by surgical neurectomy whenever symptoms were persistent, was proposed in LACNES and POCNES. Local injections using lidocaine were long-term effective in more than half of the LACNES patients. Furthermore, a surgical neurectomy in POCNES achieved a 64\% success rate. An interesting study of the present thesis focussed on the use of PRF as a minimally invasive treatment option. PRF is an example of such a new treatment that is increasingly used for a variety of conditions but sometimes with rather limited scientific evidence\textsuperscript{15,16}. Our RCT showed that 4 of 10 patients achieved success after 8 weeks, and that in 13 of 32 patients a surgical intervention was aborted. These findings demonstrate the potential of PRF as a viable treatment option in ACNES, reducing the need for surgery and thereby limiting direct and indirect costs of the overall treatment. Patients are satisfied with PRF treatment and even esthetically it is beneficial since no scar is created. Therefore, PRF is considered a reliable and safe first choice treatment option in ACNES patients who fail conservative treatment measures. It is advised to incorporate PRF as an potential viable step in a future optimal, tailor made treatment algorithm in ACNES.
REFERENCES
