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CORRESPONDENCE

Magnetic Resonance Imaging-Guided Perineural Therapy as a Treatment Option in Young Adults with Pudendal Nerve Entrapment Syndrome

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Introduction

Pudendal neuralgia is a rare chronic neuropathic pain syndrome in the perineal region. It can be unilateral or bilateral and is described as superficial pain, burning sensation or paraesthesia in the anatomical territory of the pudendal nerve which is typically worsened by sitting and barely affects nocturnal sleeping. The incidence is estimated to be 1/100,000 but the etiology and pathogenesis remain incompletely understood with hypotheses ranging from mechanical nerve injury caused by entrapment (pelvic floor muscle spasm, pressure from surrounding ligaments or scar tissue after trauma, surgery or childbirth) to viral infections or immunological processes [1].

Case Report

A 24-year-old male student presented with chronic pain in the left perineal region which had started 2 years ago after several months of excessive preparation for exams with a mainly sedentary lifestyle. Failed prior interventions included therapy for prostatitis, operation of a herniated vertebral disc L4/5 and oral medication (pregabalin). Currently on a subjective analogue pain scale [Self-Assessment Pain Scale (SAPS), 0: no pain, 10: maximal pain] 8–9/10 points were reached. The pain was considerably aggravated by sitting and virility and mood were substantially impaired due to the pain. The general clinical and neurological examination showed no abnormalities and cerebrospinal fluid and blood investigations were unremarkable. Magnetic resonance imaging (MRI) scans of the pelvis and especially of the pudendal nerve proved to be normal (Fig. 1). After other causes of pain had been excluded according to the Nantes criteria a pudendal nerve entrapment syndrome (PNES) was assumed. To confirm the diagnosis the neurologists requested a pudendal nerve block. Due to the patients low age it was decided to use MRI rather than the standard computed tomography (CT) guidance for this intervention.

After informed consent was obtained the patient was placed in a prone position in a 1.5 T Philips Achieva MR scanner and fat capsules were fixed on the skin as landmarks.

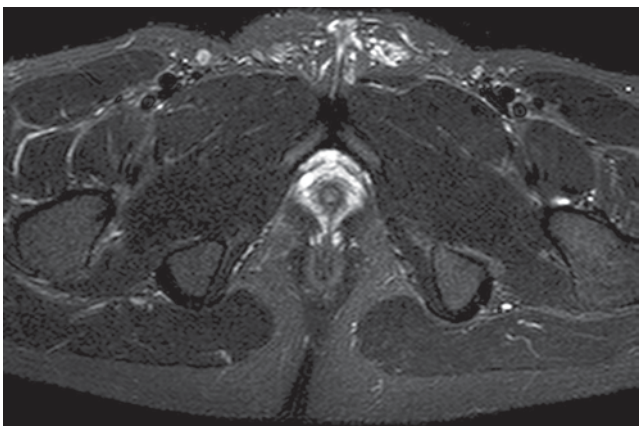

Fig. 1 Diagnostic transversal short tau inversion recovery long image of Alcock's canal using a 1.5 T Philips Achieva, SENSE-XL-Torso coil with echo time (TE) 60 ms, repetition time (TR) 4134 ms, inversion time (TI) 150 ms, flip angle (FA) 90 and slice thickness 3.5 mm, showing no abnormalities

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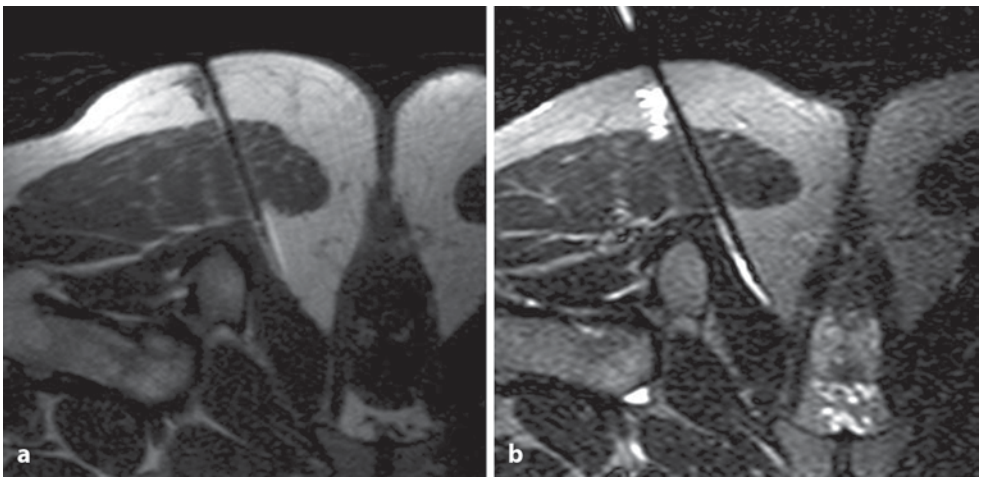

Fig. 2 Control of needle position before saline solution injection in T1-weighted image (**a**) and after saline solution injection in the left Alcock's canal in transversal short tau inversion recovery long image (suboptimal fat suppression; **b**)

Using a SENSE-Flex-M coil imaging commenced with transversal T1-weighted images, echo time (TE) 8 ms, repetition time (TR) 307 ms and slice thickness 3 mm, Fig. 2a), for anatomical orientation. After local anesthesia a 20-gauge MRI Chiba needle (100 mm, Somatex Medical, Teltow, Germany) was advanced transgluteal oblique aiming at a needle position almost parallel to the obturator fascia and a needle tip placement within the pudendal canal/obturator fascia. The exact needle position was confirmed by injection of 1 ml saline solution and the distribution was controlled in a transversal STIR long sequence (TE 80 ms, TR 5000 ms, TI 120 ms, FA 90°, slice thickness 3 mm, Fig. 2b). Subsequently 1.5 ml of a mixture of 0.25 ml triamcinolon 40 and 1.25 ml bupivacain 0.5 % was injected and as a final control a transversal T1-weighted sequence was acquired.

After the first MR-guided perineural therapy the patient was completely without pain for 6 days. Afterwards the pain slightly recurred (up to 4/10 SAPS) hence the perineural therapy was repeated at 2 week intervals. After the fifth injection virility became unimpaired and after the sixth injection a complete stable absence of pain was achieved over a follow-up period of 2 months. The patient developed no procedural complications. He was extremely relieved and his mood improved.

Discussion

Pudendal nerve entrapment syndrome is a rare and disputed disease as currently no commonly accepted diagnostic test is available. Within the diagnostic process imaging is used to exclude other causes of perineal pain as well as pelvic abnormalities repeatedly observed in patients with PNES such as an asymmetry or atrophy of the piriformis or obturator internus muscle or an elongated ischial spine [2, 3]. Apart from this, imaging including MRI is predominantly regarded as inadequate to confirm the diagnosis due to a lack of diagnostic imaging criteria [1, 2]. So far only one author has described more specific but disputed MRI features, such as dilation and increased T2 signal intensity of the pudendal nerve in its course within the pudendal canal or vessel dilation on the medial aspect of the obturator internus muscle in cases of underlying muscle spasm [3]. Hence the diagnosis is based on the clinical Nantes criteria and a positive diagnostic pudendal nerve block resulting in considerable pain relief [4]. The nerve block should be performed under image guidance to improve effectiveness and safety. A CT-guidance was described in several reports [5, 6, 7, 8] but to the best of the authors' knowledge only one author has described a MRI-guided perineural pudendal therapy [3, 9]. Assuming a causative nerve entrapment this is predominantly believed to be either between the sacrotuberous and sacrospinous ligament at the level of the ischial spine or within Alcock's (pudendal) canal which is formed by a duplication of the obturator fascia [2, 3]. Both sites can be used as targets for the nerve block which is not only diagnostic but also therapeutic.

In accordance with the incomplete understanding of the disease several treatment options are recommended, such as oral medication (pregabalin, amitriptyline, muscle relaxants), physical therapy, repeated image-guided pudendal nerve blocks, in case of muscle spasms injections of botulinum toxin A and especially in case of failed prior non-surgical intervention decompression surgery [1, 3, 10].

Particularly because PNES can affect young people and the target region lies close to the gonads MRI rather than CT guidance should be considered when planning a pudendal nerve block to avoid unnecessary radiation exposure. The intervention can be conducted using a standard closed or open MRI scanner and a MRI compatible needle without any further special equipment is required and is a safe and quick procedure.

Conclusions

This article describes experiences with a successful MR-guided perineural therapy in a patient with pudendal nerve entrapment syndrome.

Conflict of Interest The authors declare that there is no actual or potential conflict to this article.

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