Clinical solutions

Microsurgical denervation of the spermatic cord for treatment of idiopathic chronic orchialgia

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A patient referred to our hospital, diagnosed with left idiopathic chronic orchialgia, was evaluated with a thorough medical and psychiatric history, physical examination, scrotal ultrasound and magnetic resonance imaging. Conservative management failed. The patient had temporary pain relief after undergoing outpatient cord block three times. Microsurgical denervation of the left spermatic cord was performed on March 2011. A pain questionnaire was used to determine efficacy before and after operation, and complete pain relief was noted at one week after operation. The follow up period was 12 months, at the end of which the pain score was still zero. No complications, including testicular atrophy and hydrocele, occurred. Microsurgical denervation of the spermatic cord can be a minimally invasive, safe and effective management option for treatment of idiopathic chronic orchialgia.

Chronic orchialgia is defined as intermittent or constant unilateral or bilateral testicular pain of more than 3 months which significantly interferes with the daily activities of the patient, prompting him to seek medical intervention.1 Causative factors for chronic orchialgia may include infection, torsion, tumour, inguinal hernia, hydrocele, spermatocele, varicocele, referral pain, trauma, and previous operations, e.g., vasectomy or inguinal hernia repair. Nearly 25% of patients with chronic orchialgia have no obvious cause for the pain, called idiopathic chronic orchialgia. The situation represents a management dilemma to all urologists and it remains a frustrating clinical problem. Nonsurgical treatment options include antibiotics, analgesics, anti-inflammatory agents, antidepressants, anticonvulsants, regional and local nerve blocks, transcutaneous electrical nerve stimulation (TENS), Pulsed radiofrequency, acupuncture, and psychotherapy. Surgical treatment options include microsurgical denervation of the spermatic cord (MDSC), vasovasostomy, epididymectomy and orchiectomy. MDSC has received increased attention due to its simplicity, safety, and excellent efficacy.2-4

CASE REPORT

A 47-year-old man presented with left chronic orchialgia of 80-month duration. He had consulted various urologists and undergone numerous attempted therapies in other hospitals. He reported a history of a lower back injury 4 years ago. He denied a history of hematuria, hematospermia, lower urinary tract symptoms, epididymitis, prostatitis, or testicular trauma. His physical examination was remarkable. Secondary sexual characteristics and genital examination were normal. The testes were descended bilaterally and normal in size and consistency. The epididymides were nontender and nondistended. Digital rectal examination was unremarkable for prostatic abnormalities. The patient underwent a Doppler ultrasonography of his testes and urinary tract, urinalysis, urine culture and spermogram in order to rule out primary or secondary causes of pain, including intratesticular infection, tumors or ureteral lithiasis. Magnetic resonance imaging (MRI) in the lumbosacral region was performed without any structural abnormalities noted. At our initial consultation, the patient was asked to complete a pain and psychological questionnaire, which included a pain, depression and anxiety score. The pain score (visual analog scale (VAS)) was in the form of an 11-point numerical rating score with 0 representing “no pain” and 10 “worst possible pain”. The patient’s preoperative pain score was 8 points. The depression score (self-rating depression scale (SDS)) and anxiety score (self-rating anxiety scale (SAS)) were 0.55 and 46 point, respectively. The spermatic cord block was performed three times in the patient with 6 ml 1% lidocaine and 1 cc methylprednisolone (40 mg). The patient had 3 to 40 days of complete pain relief after...
Microsurgical denervation of the spermatic cord has been previously described. The procedure was performed with the patient under spinal anesthesia, and a low inguinal incision carried down to the level of the external oblique fascia to reduce the likelihood of neuroma formation. The spermatic cord was then elevated and supported over the wound by a self-made Penrose drain (Figure 1). The 12× operating microscope was brought into the field, and all fascia and cremasteric fibers in the cord were divided by electrocautery. A 1% papaverine solution with 1% lidocaine was dripped onto the spermatic cord to aid in identifying the testicular artery or arteries. All identifiable arterial structures, including testicular, cremasteric and deferential arteries, in the cord were isolated and spared. The internal spermatic veins were doubly ligated and divided. The lymphatic vessel was identified and spared to allow drainage after surgery and reduce postoperative hydrocele formation. The vas deferens was divided to eradicate sympathetic innervation of this structure. At the end of the procedure, a testicular and/or deferential or cremasteric artery with 1 lymphatic vessel and 1 internal spermatic vein remained, while all other tissue was divided (Figure 2). The spermatic cord was carefully placed back into the bed with hemostasis obtained, and the wound was closed in layers. Intra-operative Doppler ultrasonography was not used to identify the testicular artery in this patient.

The surgical time was 130 minutes. We did not observe any intraoperative or postoperative complications. Pain relief was assessed by office visits and telephone interviews in 1st, 3rd, 6th and 12th months after surgery. Seven day after the procedure, the patient reported complete remission of the pain, the pain score was 0 points. The depression and anxiety score were 0.50 and 42 points respectively at one month after operation. Over a twelve month follow-up period, the pain score was still 0 point, and no complications occurred, such as hydrocele or testicular atrophy.

CLINICAL OVERVIEW

Idiopathic chronic orchialgia remains a difficult condition to manage since the cause of pain is not known. There is little published literature about the etiology and pathophysiology of idiopathic chronic orchialgia. Neurogenic inflammation and alpha-2 adrenergic receptors may play a key role in its etiology. It has been also reported that a significant number of patients who suffer from chronic orchialgia express signs of major depression and anxiety. Recent research presented found a markedly higher number of nerve fibers with evidence of Wallerian degeneration in the spermatic cord nerves in men which idiopathic chronic orchialgia versus those without chronic pain.

STRATEGIES

Diagnosis

The key to successful diagnosis remains a full history and careful physical examination. Pain is assessed with regard to site, laterality, intensity, duration, type, radiation, and aggravating and relieving factors. VAS and pain impact questionnaire (PIQ-6) are two important tools for assessing the pain. As most patients have signs of major depression and anxiety, psychosocial questions must also be considered. Further evaluation includes a urinalysis, urine, and semen culture if indicated. The most reliable imaging modality in the management of chronic orchialgia is ultrasonography of the scrotal and inguinal region. Patients with symptoms of voiding dysfunction need bladder ultrasonography to assess bladder emptying. Transrectal ultrasound may help to rule out underlying prostatic calculi and congenital cysts. Computed tomography and intravenous pyelogram will help to detect urolithiasis and other abdominal conditions. MRI plays a role in the diagnosis of radiculitis and malignancy of nonpalpable testicular lesions.

Therapy

Treatment options for idiopathic chronic orchialgia include non-surgical management, minimally invasive treatment options, and open surgical intervention. Non-surgical management methods include scrotal support, hot fomentations, antibiotics, nonsteroidal anti-inflammatory drugs, Alpha-adrenergic antagonists, antidepressants, anticonvulsants, allopurinol, TENS, and pulsed radiofrequency. Minimally invasive treatment options include spermatic cord block, pelvic plexus blockade under transrectal ultrasound, and laparoscopic denervation of spermatic cord. Open surgical intervention possesses MDSC, microsurgical testicular denervation, epididymectomy, and orchietomy.

The spermatic cord block is a critical diagnostic and
therapeutic tool, which is performed by injecting a mixture of 6ml of 1% lidocaine and 40mg methylprednisolone into the spermatic cord at the pubic tubercle level. If the spermatic cord block is effective, it will be a vital indication for MDSC. A careful study of the anatomy shows that innervation of the testicular organs is mediated by the scrotal and spermatic branches of the genitofemoral and ilioinguinal nerves, as well as by the sympathetic fibers that accompany the testicular artery. By removing the afferent nerve stimulus, MDSC can down-regulate the changes in the peripheral and central nervous systems, thus it can stop the chronic pain. MDSC technique with complete and durable resolution of the pain reported in the 71%-96% range. In this case, the patient with left chronic orchialgia refractory to conservative management was given a spermatic cord block three times. MDSC was offered to him, who experienced temporary pain relief following the cord blocks, and the operative result also demonstrated complete pain relief in 12 months’ follow-up period.

Epididymectomy has also been performed for chronic orchialgia with varying degrees of success. Complete success rates for epididymectomy are low. Orchiectomy would theoretically be effective in ablating the afferent nerve stimulus. However, numerous studies show varying success rates, with the risks of physiological and psychological damage. With the emerging use of MDSC, orchiectomy should really be considered the absolute last resort.

CLINICAL DIFFICULTIES

Idiopathic chronic orchialgia is frustrating for both the physician and patient since the cause of pain is not known. The management of idiopathic chronic orchialgia includes not only the goal of resolution of pain but also the mental state of the patient. Further research in the field is needed. A multidisciplinary team approach including pain specialists, psychologists and urologists may be beneficial before considering surgery.

AUTHOR’S PERSONAL OPINIONS

In summary, MDSC can be a minimally invasive, safe and effective management option for idiopathic chronic orchialgia refractory to medical management. The success rate is high for helping patients to get off longterm medications, complications are rare, and the testicle is preserved, benefiting the patient physiologically and psychologically. A randomized, placebo-controlled and long follow-up period study is needed to better assess the efficacy of this procedure for idiopathic chronic orchialgia.

REFERENCES


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