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Management of Medically Intractable Genitofemoral and Ilioingunal Neuralgia

Medikal Tedaviye Dirençli Genitofemoral ve İlioinguinal Nevralji Yönetimi

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ABSTRACT

AIM: To evaluate the effectiveness of invasive procedures in medically intractable genitofemoral and ilioingunal neuralgia.

MATERIAL and METHODS: This is a prospective study of 20 patients with genitofemoral and ilioinguinal neuralgias who were treated at our medical center between 2007 and 2011. Genitofemoral and ilioinguinal nerve blocks were performed in all cases after medical treatment had failed to alleviate the patients' pain. Neurectomy was performed for the patients whose pain did not improve. Patient histories, physical examinations and visual analogue scale scores before and after treatments were analyzed.

RESULTS: Fourteen (70%) of the patients were treated with nerve blocks and six (30%) of the patients whose pain did not improve with nerve block application underwent neurectomy which resulted in pain relief.

CONCLUSION: For patients with medically intractable genitofemoral and ilioinguinal neuralgias, nerve blocks and neurectomies can be applied safely for pain control.

KEYWORDS: Chronic pain, Neuralgia, Neurectomy, Neuropathic pain, Pain management

ÖZ

AMAÇ: Medikal tedaviye dirençli genitofemoral ve ilioinguinal nevraljilerde girişimsel uygulamaların etkinliğinin değerlendirilmesi.

YÖNTEM ve GEREÇLER: Bu prospektif çalışmada kliniğimizde 2007-2011 yılları arasında genitofemoral ve ilioinguinal nevralji nedeni ile tedavi edilen 20 hasta incelenmiştir. Çalışmada medikal tedaviye cevap vermeyen hastalarda genitofemoral ve ilioinguinal sinir blokları yapıldı. Sinir bloğuna rağmen ağrısı düzelmeyen hastalarda ise nörektomi uygulandı. Hastaların preop ve postop VAS sonuçları ve muayeneleri değerlendirildi.

BULGULAR: Hastalardan 14'ü (%70) sinir blokları ile sinir bloğu ile rahatlamayan 6 hasta (%30) ise nörektomi ile tedavi edildi.

SONUÇ: Medikal tedavi ile ağrı kontrolü sağlanamayan genitofemoral ve ilioinguinal nevraljili hastalarda sinir blokları ve nörektomiler güvenle uygulanabilecek etkili tedavi alternatifleridir.

ANAHTAR SÖZCÜKLER: Kronik ağrı, Nevralji, Nörektomi, Nöropatik ağrı, Ağrı yönetimi

INTRODUCTION

Ilioinguinal neuralgia is a type of neuropathic pain. Pain is localised typically in the lower abdomen, thigh and genital area. Eliciting the cremasteric reflex may be used to confirm a functional, noninvolved genitofemoral nerve. Similarly, genitofemoral neuralgia presents with pain in the inguinal region radiating to the superior medial thigh and genital area (11,13). Genitofemoral and ilioinguinal neuralgias can occur after inguinal herniorrhaphy, appendectomy, Caesarean section, trauma to lower quadrant of the abdomen or inguinal regions (6,9,10,14). The etiological differential diagnosis of ilioinguinal neuralgia includes nerve damage at the first lumbar root and hip disease. Pressure or direct injury on the ilioinguinal nerve at the time of bone graft harvesting from the anterior iliac crest should be included in etiology (13). Diagnosis and differential diagnosis in genitofemoral and ilioinguinal neuralgias are challenging and mandatory for the correct treatment. Differentiation of these two types of neuralgias can be difficult, as anatomic variability sometimes allows for communication between the two nerves (Figure 1). Local nerve blocks can help in diagnosis and can be performed to determine the precise nerve involved. In cases with ilioinguinal neuralgia, a nerve block is carried out at a point 2 or 3 cm medial and inferior to the anterior superior iliac spine, and cases with genitofemoral neuralgia, either a block is done on the inguinal ligament or a paravertebral block of L1 and L2 can also be performed. If ilioinguinal nerve entrapment, injury or a neuroma in the abdominal wall is responsible for

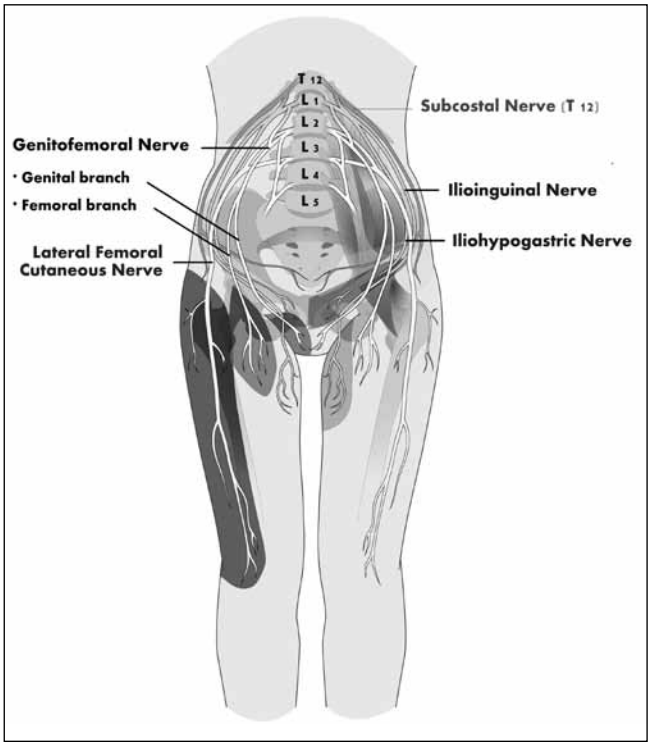

Figure 1: Course of the genitofemoral, ilioinguinal and other related nerves.

the pain, a local block of that nerve through the lower anterior abdominal wall should alleviate the symptoms. If the pain is not relieved, genitofemoral injury could be responsible for the pain (7,14). In this prospective study, we presented our experience for the management of the genitofemoral and ilioinguinal neuralgias.

MATERIAL and METHODS

Patient population Between 2007 and 2011, 20 patients with the diagnosis of genitofemoral or ilioingunal neuralgia were treated in our clinic with nerve blocks and surgical intervention. All of the cases were managed with pharmacologic treatment (gabapentin) prior to nerve blocks and surgery. Electromyography was applied to all patients to exclude possible other sources of pain including diabetic neuropathy. In this prospective study patient interviews and multidisciplinary clinical visits were evaluated to assess the cause of nerve injury. Patient histories, physical examinations, visual analogue scale (VAS) scores were documented before nerve block or surgery, and at the 1st, 2nd, 6th months and 12 months. This study includes twelve male and eight female patients with a mean age of 41.6 years (range, 19–68 years). Table I lists the clinical findings in the 20 cases (9 cases with pure genitofemoral neuralgia, 8 cases with pure ilioinguinal neuralgia, two cases with combined genitofemoral and ilioinguinal neuralgia, and one case with ilioinguinal and lateral cutaneous femoral neuralgia). The possible mechanisms of injury to the genitofemoral and ilioinguinal nerve included 4 (20%) iatrogenic, 4 (20%) metabolic (diabetes mellitus, obesity), 2 pregnancy (10%), 2 varicocele (10%), and 1 polytrauma (5%). In 7 patients, a causative reason could not be identified (35%). Of these iatrogenic injuries, one was after varicocele excision, two were after herniorraphy, and one was after abdominal surgery. Neurectomy in this group of patients is performed by microsurgical technique. The incision on classical genitofemoral neuralgia is done on the inguinal ligament. The incision in ilioinguinal neuralgia is a lower quadrant horizontal incision 2-3 cm superior to the inguinal ligament. If the patient has a positive Tinel's sign, the center of incision crosses the positive Tinel's point. In previously operated cases such as varicocele or inguinal hernia surgery, it takes time to dissect the affected nerve from fibrotic neighbouring tissues. Once the nerve is identified, it is dissected proximally as far as possible and it is transected on the most proximal site.

RESULTS

Genitofemoral and ilioinguinal nerve blocks (10 cc prilocaine + 80 mg prednol-L) were performed in all cases with medical treatment failure. In eight patients with one nerve block application, VAS score were 0 after 12 months. In four patients two, and in two patients three nerve block sessions were applied at one week time intervals and their VAS score were 2 after 12 months. Six of the patients whose pain had not improved with nerve block application underwent neurectomy surgery which resulted in pain relief. In 2 cases with hernia repair, corresponding nerves were under the inguinal mesh with neuroma formation blending into the mesh. In a case with previous varicocele surgery, the genitofemoral nerve had trauma and neuroma formation in close relation to the spermatic cord. In another case with previous abdominal surgery, the ilioinguinal nerve was trapped inside the fascial sutures. Twelve months after surgery their VAS scores were between 0 and 2. One case with abdominal hernia repair had pain recurrence 12 months after neuroma excision. After surgery, there was persistent numbness below the resected nerve. There was no surgical complication in this group. The mean follow-up time for this study was 11 months (range 6 to 18 months).

DISCUSSION

We report, to our knowledge, the highest documented number of patients with intractable ilioinguinal and genitofemoral neuralgia treated with neural block in the literature. All patients used gabapentin treatment before other treatment options but their symptoms had not improved. Twenty patients were treated with neural block using prilocaine and prednol-L mixture. Pain relief was seen in 8 patients after 1 block application. Four cases needed a second, and 2 cases needed a third neural block applications. Six cases who failed nerve blocks were candidates for surgery. In this study, neurectomies were performed on the affected nerves in block resistant cases which lasted with adequate early pain relief (postoperative 6 months).

Table I: Patients with Genitofemoral and Ilioinguinal Neuralgia

Patient number	Age (yr), sex	Duration of symptoms (mo)	Mechanism of injury	Diagnosis	VAS score during presentation	Treatment	VAS score after treatment			Follow-up period (mo)
							1st	3rd	6th	
1	47, M	28	Diabetes mellitus	Genitofemoral Ilioinguinal	9	Neurectomy	1	2	2	24
2	28, M	8	Varicocele excision	Genitofemoral	8	Neurectomy	3	2	1	21
3	26, F	14	Inguinal hernia repair	Genitofemoral Ilioinguinal	8	Neurectomy	2	1	1	23
4	62, F	2	Diabetes mellitus, truncal obesity	Ilioinguinal	9	Neurectomy	3	1	0	30
5	65, M	14	Inguinal hernia repair	Genitofemoral	8	Neurectomy	2	1	1	26
6	49, M	5	Truncal obesity	Ilioinguinal	8	Neurectomy	3	2	1	25
7	42, F	6	idiopathic	Genitofemoral	6	Neural block (single)	1	0	0	20
8	19, M	2	Varicocele	Genitofemoral	7	Neural block (single)	2	1	1	18
9	21, M	3	idiopathic	Genitofemoral	5	Neural block (single)	0	0	0	27
10	24, F	3	pregnancy	Genitofemoral	6	Neural block (single)	1	0	0	25
11	32, M	4	Varicocele	Genitofemoral	7	Neural block (single)	2	1	1	21
12	27, F	2	Pregnancy, labor	Genitofemoral	5	Neural block (single)	1	0	0	18
13	53, F	7	idiopathic	Ilioinguinal	7	Neural block (single)	2	1	1	21
14	48, M	8	Abdominal surgery	Ilioinguinal	4	Neural block (single)	1	0	0	28
15	68, M	4	idiopathic	Ilioinguinal	5	Neural block (2)	2	2	2	20
16	54, F	6	Truncal obesity	Ilioinguinal, lateral femoral cutaneous	6	Neural block (2)	3	2	1	24
17	45, M	4	polytrauma	Ilioinguinal	7	Neural block (2)	3	3	1	19
18	29, M	5	idiopathic	Genitofemoral	6	Neural block (2)	3	1	1	23
19	39, F	7	idiopathic	Ilioinguinal	7	Neural block (3)	4	2	1	27
20	54, M	3	idiopathic	Ilioinguinal	8	Neural block (3)	4	3	2	20

***F:** Female, **M:** Male, **yr:** year, **mo:** month.*

Pharmacological Treatment

Treatment options include pharmacologic treatment, interventional techniques (selective nerve blocks), minimally invasive procedures (pulsed radio frequency or peripheral neurostimulation), and surgical intervention in genitofemoral and ilioinguinal neuralgia (3,8,11). A number of drugs, tricyclic antidepressants, the selective serotonin/norepinephrine reuptake inhibitors (SNRIs) duloxetine and venlafaxine, and opioids are used in the treatment of neuropathic pain (5). Another effective drug for neuropathic pain is gabapentin. Gabapentin reduction of the symptoms of neuropathic pain is mediated by the inhibition of glutamate release in the spinal cord dorsal horn (2). In our study, all patients used gabapentin treatment before other treatment options but their symptoms did not improve. Benito-León et al. (1) reported two cases with genitofemoral and ilioinguinal neuralgia treated with gabapentin. One patient had complete pain relief and one patient's pain improved. Rauchwerger et al. (11) reported three case of ilioinguinal neuralgia. They treated one patient with pregabalin and a polyanalgesic cream containing dimethylsulfoxide, ketamine, gabapentin, lidocaine, bupivacaine, amytriptyline, cyclobenzaprine; another patient treated with acetaminophen, gabapentin, nortriptyline, and xylocaine patch. The third patient was under ibuprofen, gabapentin, oxycodone/acetaminophen, opioid, oxcarbazepine, oiznidine, and topiramate treatment. The symptoms of these patients did not improve with these medications.

Invasive Procedures

Peripheral neurostimulation is another treatment option for the treatment of these types of neuralgias. Rauchwerger et al. (11) reported that they applied peripheral nerve stimulation to the patients that are refractory to pharmacologic intervention and had good results in controlling the pain. Rozen et al. (12) reported the results of pulsed radiofrequency in five cases who suffered from chronic inguinal pain. They applied pulsed radiofrequency after initial positive response to T12, L1 and L2 nerve blocks. All patients reported 75% to 100% pain relief lasting from six to nine months.

Peripheral nerve field stimulation treatment in a patient with ilioinguinal neuralgia had persistent pain following local injections, pulsed radiofrequency thermocoagulation of the right ilioinguinal nerve, nerve blocks, and neurolysis. A 4-day trial of pulsed radiofrequency thermocoagulation stimulation was performed with excellent results (8). After one year of follow-up period she has very little pain. Fanelli et al. (4) reported the results of cryoanalgesic ablation treatment in ten patients with ilioinguinal (4 patients), genitofemoral (1 patient) or combined (5 patients) neuralgia. They applied 12 ablation procedures. Their mean follow-up period was 8.2 months. Neurectomy and neural block are interventional

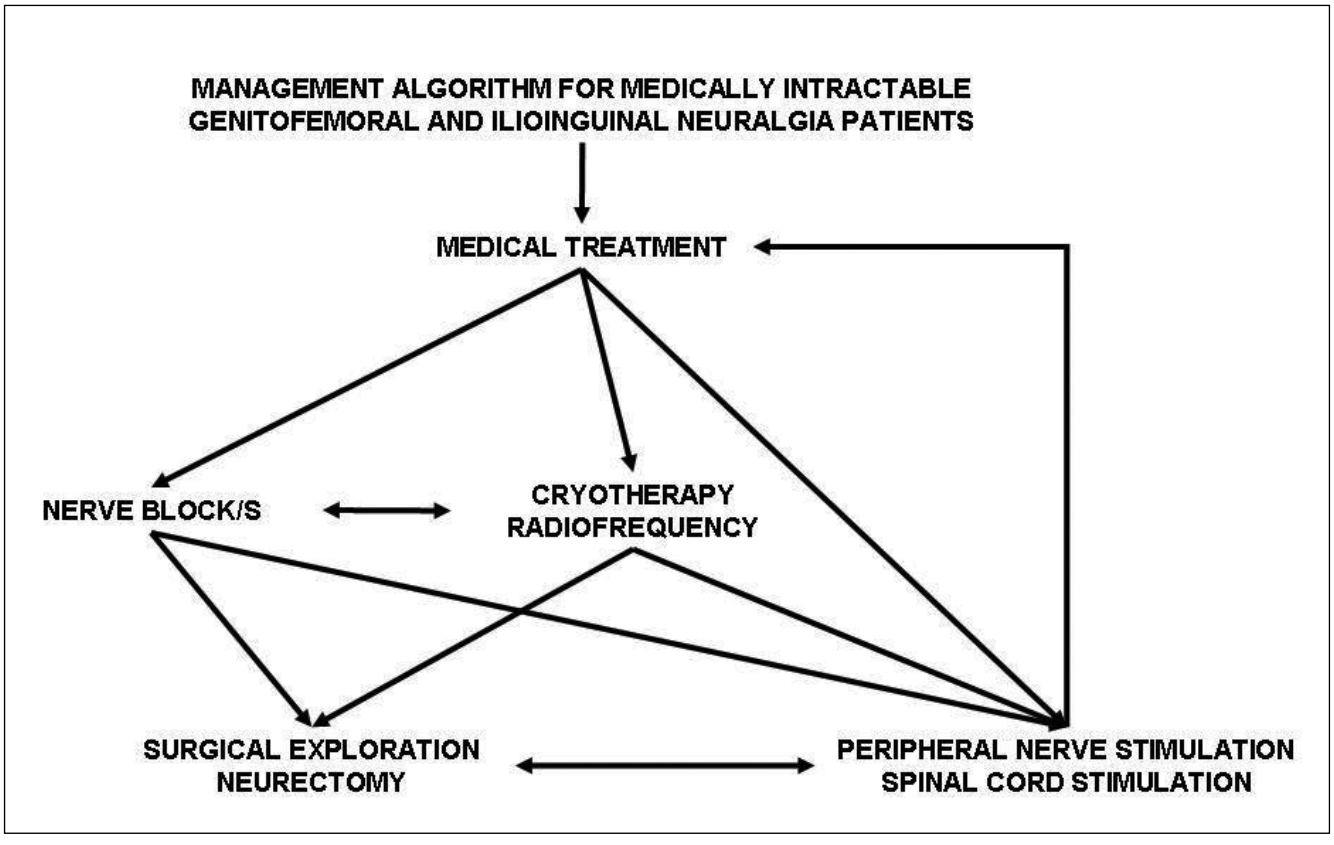

Figure 2: Algorithm for treatment of genitofemoral and ilioinguinal neuralgia.

treatment modalities in genitofemoral and ilioinguinal neuralgias. Starling et al. (14) reported their results in 19 ilioingunal and 17 genitofemoral neuralgia patients. Seventeen of the ilioinguinal neuralgia patients operated on had complete and permanent relief of their symptoms. Genitofemoral neurectomy resulted in considerable or complete pain relief in 12 patients. Persistent numbness in the nerve distribution and loss of cremasteric reflex were the only side effects, and they caused little morbidity. Murovic et al. (7) performed genitofemoral neurectomy in 10 patients of genitofemoral neuralgia. This procedure resulted in considerable pain relief in all patients. Zacest et al. reported pain recurrence in 68% of ilioinguinal neurectomy cases with median 34.78 months follow-up (15). Side effects of neurectomy include hypoesthesia of the scrotum or labia major and/or skin over the femoral triangle and loss of the cremasteric reflex. The hypalgesia may resolve, although the absence of the cremasteric reflex may persist. There is also risk of new onset, more severe neuropathic pain after neurectomy. Authors stated that by performing the nerve excision through an extraperitoneal rather than intraperitoneal approach, operative complications can be minimized. In our study, six cases underwent neurectomy surgery because of the failure of neural block. Pain relief was seen in all patients. Side effects were similar with other studies.

CONCLUSION

In conclusion, in this limited number of patients with medically intractable genitofemoral and ilioinguinal neuralgias, nerve blocks and neurectomies provided favorable early postoperative pain control. However, longer follow-up and larger numbers of patients are needed to evaluate pain recurrence. We also propose a treatment algorithm to cope with medically intractable cases (Figure 2).

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