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Case Report Open Access

Complex Regional Pain Syndrome is a Manifestation of the Worsened Myofascial Pain Syndrome: Case Review

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Abstract

Complex regional pain syndrome is a severe chronic pain condition. Its diagnosis to date is controversial. Effects of various treatment methods also remain controversial with unpredictable outcomes. The author experienced a case of complex regional pain syndrome type 2 which was cured by sympathetic blockade and myofascial trigger point injection. Afterwards, the author focused on myofascial trigger points for the management of CRPS and the results were successful in almost all the cases. Through the review of complex regional pain syndrome cases those were successfully treated, the author tried to figure out pathologic mechanism, methods of treatment, and diagnostic criteria of complex regional pain syndrome.

Keywords: Complex regional pain syndrome; Myofascial pain syndrome; Sympathetic nerve block; Trigger point injection

Introduction

Complex regional pain syndrome (CRPS) is a severe chronic pain condition which reveals sensory, motor, autonomic, and dystrophic signs and symptoms. Suggested diagnostic criteria are still controversial. For the treatment of CRPS, bisphosphonates, topical agents, antiepileptic drugs, tricyclic antidepressants, and opioids have been used. Additionally, interventional therapies, such as nerve blockade, sympathetic nerve block, spinal cord and peripheral nerve stimulation, implantable spinal medication pumps, and chemical and surgical sympathectomy, have been attempted; however, their effects remain controversial with unpredictable outcomes [1]. Recently issued practice guidelines for chronic pain management also recommended methods of CRPS care, such as sympathetic nerve block, spinal cord stimulation, and drugs [2]. On January 1997, the author experienced a case of CRPS type 2, which was cured by sympathetic blockade and myofascial trigger point injection in a 23-year-old female [3]. According to the results, the author further focused on myofascial trigger points for the management of pain, especially in patients with CRPS, and since have experienced several CRPS cases which were successfully managed by sympathetic blockade and trigger point management. After Institutional Review Board approval (ED10119), the author reviewed a few cases to assess the effectiveness of the myofascial trigger point management with sympathetic nerve block for the treatment of CRPS. Furthermore the author tried to figure out pathologic mechanism and diagnostic criteria of the CRPS.

Method and Results

A retrospective outpatient chart review of 3 patients with complex regional pain syndrome on the upper and lower extremities was done. The causes of the each patient were jogging, calcaneal bone fracture, and distal radial bone fracture. The diagnoses of the patients met the criteria of the International Association for the Study of Pain (1994) [4]. In addition, all the patients revealed multiple myofascial trigger points on the involved extremities. And the patients were cured by trigger point management with sympathetic nerve block.

Case Reports

Case 1

A 25 years old male soldier came to our pain clinic by clutch walking complaining right lower leg and foot pain for three years. The pain began after jogging. Initially the pain was on the sole area of right heel spreading all over the right foot and lower leg. The patient visited orthopedic surgery department and took some medicine with no improvement. On the first visit he complained continuous burning pain of visual analogue scale (VAS) 8/10, sensitive to coldness, and ankle joint stiffness. Physical exam showed tactile allodynia and hyperalgesia all over the right foot, along with reddened skin color change. Also there revealed trigger points on the gastrocnemius, quadratus plantae, soleus, tibialis anterior, and tibialis posterior muscles in the right lower extremity.

Trigger point injection (TPI) or dry needling and sympathetic nerve block were performed every 1 or 2 weeks. For the TPI, 0.25% lidocaine [5] was administered by multiple needling with continuous pressure on the plunger of the syringe, which resulted in a very small amount of lidocaine (0.1-0.2 ml) being administered at each injection site [6]. Dry needling [7] were performed with the needle used for acupuncture with the same motion as TPI. For the sympathetic nerve blocks, a lumbar epidural block was performed. The lumbar epidural block was performed with triamcinolone 10 mg in 10 ml of 0.4% lidocaine, using an epidural needle (22G × 80 mm, Hakko Co., Ltd, Japan). During 2.5 months, treatments were done 6 times and the pain was gone (VAS 0/10).

Case 2

A 27 years old male came to pain clinic on wheelchair complaining right foot and leg pain, sensitive to cold, and ankle joint stiffness for 3.5 months which began after right calcaneal bone fracture. The pain nature was continuous burning with VAS score 10/10. On physical exam, tactile allodynia, hyperalgesia, edema, and dark skin discoloration were seen on his right foot and lower leg. Multiple trigger points were seen in the muscles of the right lower extremity; abductor hallucis, extensor digitorum longus, extensor digitorum brevis, flexor digitorum longus, gastrocnemius, interossei, quadratus plantae, soleus, and tibialis anterior. The patient was given TPI and dry needling with lumbar epidural block weekly. He also was given oral amitriptyline 10 mg daily for 3 weeks. Seven weeks after the beginning of treatment the patient felt much less pain (VAS score 0-1/10) and went back to the orthopedic clinic because of incomplete healing of the calcaneal bone.

Case 3

An 82 years old female came to pain clinic with right hand and forearm pain for 2 months after distal radial bone fracture. The pain was continuous burning with VAS score 8/10 sensitive to cold and with wrist stiffness. On physical exam, tactile allodynia, hyperalgesia, edema, dark skin discoloration were seen. Also multiple trigger points were seen in the muscles of the right upper extremity; scalenes, supraspinatus, infraspinatus, biceps, brachialis, brachioradialis, extensor carpi radialis longus and brevis, supinator, finger extensor muscles, flexor muscles of hand and fingers, adductor and opponens pollicis, interosseous muscles of the hand etc. For the treatment, TPI and mostly dry needling with right stellate ganglion block (SGB) with 8 ml lidocaine(1%) two times per week or cervical epidural sympathetic block were done weekly. SGB was done 4 times and cervical epidural sympathetic block was done 2 times, after 4 weeks there was no more pain (VAS 0).

Discussion

In the present cases, including the previous one [3] the author found that the most important single one factor is myofascial pain syndrome (MPS) in the pathology and management of CRPS.

The diagnoses of the patients met the criteria of the International Association for the Study of Pain [4]. The initial insults were jogging or bone fracture, and on physical examination edema, skin discoloration, tactile allodynia, and hyperalgesia were seen along with continuous burning pain. The sensory changes were typically with a glove- or stocking-like distribution [8].

For the treatment of CRPS, various types of treatment strategies have been suggested [1,2] however, at present, none have achieved a satisfactory effect for the management of CRPS.

Recently, Zyluk [9] reported that continuous epidural anesthesia with bupivacaine for 7 days is a moderately effective treatment for chronic CRPS type 1 of the lower limbs, and recommended particularly when improvement with long-lasting therapy fails and the patient is unable to walk on the involved extremity. The moderate effect of continuous epidural block is the same as in case that the author first came across in 1997, although, if the Zyluk [9] had also used TPI, the results might have been better.

The three patients had gotten 6 or 7 times trigger point's management with sympathetic nerve block. For oral medication the author usually used nothing but in some cases who complain sleep disturbance or severe pain, just gave them small amount of amitriptyline or acetaminophen. With the treatment, the pain disappeared but the second case showed 0-1/10 degree pain because of incomplete healing of calcaneal bone fracture so he went back to his original orthopedic clinic.

Myofascial pain syndrome(MPS) is the sensory, motor, and autonomic symptoms caused by myofascial trigger points and myofascial trigger point(clinical definition of a central trigger point) is a hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band. The spot is painful on compression and can give rise to characteristic referred pain, referred tenderness, motor dysfunction, and autonomic phenomena. Also myofascial trigger point is a cluster of electrically active loci each of which is associated with a contraction knot and a dysfunctional motor endplate in skeletal muscle [10]. The referral of the pain pattern of the trigger points was classified as peripheral (away from the center of the body), central (in the direction of the center of the body), and local (only in the immediate vicinity and surrounding the trigger point) and among them the peripheral pattern is the most common [11]. Perpetuating factors for the myofascial trigger point are mechanical stress of the muscles (poor posture, abuse of muscles, immobility, repetitive movement), nutritional inadequacies, metabolic and endocrine inadequacies, psychological factors, chronic infection and infestation, nerve impingement (radiculopathies etc.) [12]. Mense [13] showed the referral muscle pain following noxious stimulation to the sensitive loci in a myofascial trigger point region is due to central sensitization in the spinal cord. Hong [14] presumed that myofascial trigger point is the complication or manifestation of reflex sympathetic dystrophy (RSD) and also suggested clinically RSD may develop in extremely severe cases of MPS. He also explained if the MPS is very active (very painful) the "MPS circuit" can send messages (either electrically or biochemically) to activate autonomic system causing swelling (edema), and skin temperature changes.

The author thinks that perpetuating factors may cause MPS. If the factors are not eliminated or become worse the MPS also become more severe (increasing number or severity) that cause central sensitization resulting in spontaneous pain, referred pain, changes in autonomic response. In clinical case, we can see severe spontaneous pain, hyperalgesia, allodynia, edema, skin temperature change, skin color change, and dystrophy. The pathologic mechanism of CRPS is a syndrome caused by the multiplication and/or worsened myofascial trigger point that result in central sensitization, revealing continuous burning pain, allodynia, hyperalgesia in the peripheral referred area (usually hand or foot). In the referral area, change in autonomic response such as skin temperature change, skin color change, sweat change, and dystrophy (hair, nail, soft tissue) can be seen.

For the diagnosis of CRPS, the diagnosis of MPS should be made first. The diagnostic criteria of the myofascial trigger point are spot tenderness, pain recognition, palpable band, referred pain, and twitch response [15]. On top of activated myofascial trigger point, we can expect centrally sensitized responses such as severe continuous burning pain, allodynia, and hyperalgesia typically with a glove- or stocking-like distribution [8], because peripheral referral pattern is the most common [11]. We can expect to see changes in autonomic response such as change in skin temperature, change in skin color, dystrophic change in hair, nail, soft tissue, osteoporosis, etc. The diagnosis of CRPS can be made by the diagnosis of MPS with the sign of central sensitization such as continuous burning pain, allodynia, and

hyperalgesia in the involved wide area (hand, foot) along with the signs of change in autonomic response.

Conclusion

In conclusion, currently, trigger point management with sympathetic nerve blockade may be the most effective method for the management of CRPS. Especially trigger point management is the treatment of choice. Pathologically, CRPS is the manifestation of the symptoms of MPS through the central sensitization. The diagnosis can be made by detecting the MPS and the manifested results of the centrally sensitized MPS: severe continuous burning pain, allodynia, hyperalgesia, detection of MPS with the referral pain to the involved area, detection of changes in autonomic response in the wide region of involved body part such as hand and foot.

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