

Chronic pelvic pain arising from dysfunctional stabilizing muscles of the hip joint and pelvis

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Chronic pelvic pain in women is a very annoying condition that is responsible for substantial suffering and medical expense. But dealing with this pain can be tough, because there are numerous possible causes for the pelvic pain such as urologic, gynecologic, gastrointestinal, neurologic, or musculoskeletal problems. Of these, musculoskeletal problem may be a primary cause of chronic pelvic pain in patients with a preceding trauma to the low back, pelvis, or lower extremities. Here, we report the case of a 54-year-old female patient with severe chronic pelvic pain after a transcutaneous electrical nerve stimulation (TENS) accident that was successfully managed with image-guided trigger point injections on several pelvic stabilizing muscles. (Korean J Pain 2016; 29: 274-6)

Key Words: Chronic pelvic pain; Gluteus minimus; Iliopsoas; Obturator externus; Pectineus; Piriformis; TPI.

Chronic pelvic pain can be defined as a non-cyclic pain localized to the pelvis including the lumbosacral back, buttock, lower abdomen, groin, perineal, and hip areas, lasting longer than 6 months [1]. Among various etiologies, musculoskeletal dysfunction may be a primary cause of symptoms in patients with a preceding trauma to the low back, pelvis, or lower extremities [2].

The piriformis, obturator internus, and iliopsoas are well known as sources of chronic pelvic pain of musculoskeletal origin. In addition, the pectineus [3], obturator externus [4], or gluteus minimus [5] may also be a potential source of chronic pelvic pain, because these structures supporting the hip joint and pelvis are in close anatomic

proximity working as a functional unit.

We report a case of a woman who had severe chronic pelvic pain after a TENS accident, and was resistant to many treatments. Her pain was successfully treated with injections on several muscles of the pelvic girdle. Having knowledge of this condition can provide improvement in the diagnosis and treatment of chronic pelvic pain.

CASE REPORT

A 54-year-old female patient visited our pain clinic and reported a 6 month history of severe left inguinal, buttock and posterior thigh pain; the pain started from the

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inguinal area and spread to the other regions gradually. The pain had begun with the accident which abruptly raised the frequency and amplitude of TENS, which had been being applied to her left knee, by another patient in the next bed. She described the pain as intermittent and intense, with a feeling like it was being pulled with a jerk, and that it was aggravated by hip joint motions. Her numerical rating scale (NRS) score for pain (0 means no pain, 10 means the worst pain imaginable) was 8–9. And she had previously had a paroxysmal tremor of the left leg when the pain was the most intense. She had undergone right anterior cruciate ligament reconstruction 1 month prior to the TENS accident. And the TENS was applied to treat the allodynia and hyperalgesia after knee surgery. Her right knee pain disappeared by itself during the treatment for the left-side pelvic pain.

There was no abnormal focal neurologic sign. And she underwent a series of investigations, including blood tests and imaging studies, which included the lumbar spine, pelvis and hip joint MRI, none of which identified the cause of her pain. We tried to perform electromyography (EMG) and nerve conduction studies (NCS), but failed to complete these examinations due to severe pain attacks provoked by insertion of the EMG needle. Severe tenderness was noticed in the gluteus minimus on palpation. Because the range of motion (ROM) test and palpation provoked severe pain, it was hard to examine other muscles of the pelvic girdle at her first visit. On the initial impression of myofascial pain from the gluteus minimus, we injected 10 ml of 0.1% ropivacaine into the muscle under ultrasound guidance.

At her second visit, we identified that there was a 30% improvement of buttock pain and about a 10% improvement in inguinal pain. On physical examination, there was severe pain and tenderness around the pubic tubercle and lesser trochanter, especially when she actively flexed her hip joint with knee extension in the supine position. On manual muscle testing, motor weakness defined by an MRC grade of 4 was noted during the left hip flexion and adduction. To rule out a neuropathy of a peripheral nerve such as the lumbar plexus or obturator nerve, we tried again to perform EMG/NCS while administering fentanyl via the intravenous route. But there was no definitive electrodiagnostic abnormality of the lumbar plexus or obturator nerve. We assumed that her pain might result from the iliopsoas or adductor muscles although we could not identify a trigger

point or taut band probably due to a hypertonic muscle with severe pain. We performed a fascia iliaca compartment block under ultrasound guidance and the inguinal pain was relieved immediately. However, her pain relapsed 1 week later without further improvement on repeated blocks. Therefore, we injected 10 ml of 0.1% ropivacaine on the distal belly of the iliopsoas around the lesser trochanter under fluoroscopic guidance. On the next follow up visit, we identified an improvement of inguinal pain of more than 50%, thus allowing palpation of the muscles supporting the hip joint and pelvis. Severe tenderness and a jump sign was provoked when palpating the pubic tubercle and superior and inferior pubic rami. Therefore, we performed pectineus and obturator externus muscle injections around the pubic tubercle and rami using 5 ml of 0.1% ropivacaine under fluoroscopic guidance, respectively.

At the next visit, the patient did not complain about the inguinal pain, but presented severe buttock and posterior thigh pain with an intermittent tremor on her left leg. On physical examination, severe tenderness of the piriformis was noted and a paroxysmal left leg tremor developed during passive internal rotation of the hip in prone position. We performed a piriformis muscle injection using 10 ml of 0.1% ropivacaine under ultrasound guidance. After the injection we saw an immediate resolution of the tremor. When the patient returned to our pain clinic one week after the last treatment, the pain in the groin, buttock, and posterior thigh was much relieved as reflected in the NRS score of 1–2. At 1 the month follow up visit, the patient continued to be free of pain with mild discomfort on hip flexion.

DISCUSSION

The musculoskeletal system, although its role in the genesis and perpetuation of chronic pelvic pain is being increasingly described in the literature [6–8], is often overlooked as a source of this disabling condition. It is reported that about 22% of musculoskeletal diagnoses are associated with chronic pelvic pain [9]. An easily identifiable clue for a musculoskeletal diagnosis may be a stress or trauma that preceded or exacerbated the pelvic pain. Potential sources involved in the generation of chronic pelvic pain include muscles of the abdominal region, pelvic floor and girdle, low back, and lower extremities. In this case, the iliopsoas, pectineus, obturator externus, gluteus

minimus, and piriformis were identified as a source of chronic pelvic pain and were successfully treated with injections under image guidance.

The iliopsoas, pectineus, obturator externus, gluteus minimus, and piriformis muscles are in close anatomic proximity, and work as a functional unit stabilizing the hip [10–12]. It possibly indicates that if the iliopsoas, for example, is injured it may lead to dysfunction of the pectineus, obturator externus, gluteus minimus, and/or piriformis by compensating overwork and consequent hip destabilization. This means that muscles contributing to joint stabilization may affect or be affected by joint destabilization.

We assumed that the accidental high-intensity and high-frequency TENS might have directly caused twitching and cramped up the quadriceps femoris muscles which, especially the rectus femoris, may have made other hip flexors fatigued through compensating effort for weakened and painful hip flexion during the gait cycle. Thus the affected hip flexors such as the iliopsoas and pectineus probably contributed, at least in part, to the myofascial pain in the groin of the patient. As described earlier, the iliopsoas and pectineus act as hip stabilizers as well as the piriformis, obturator externus, and gluteus minimus. Consequently, we can speculate that shortening of anterior hip muscles such as iliopsoas and pectineus may account for the hip destabilization, which may in turn result in a fatigue of the muscles that maintain the stability of the other side of the hip joint such as the gluteus minimus, obturator externus, and piriformis. As a result, we thought that the affected obturator externus formed trigger points developing anterior inguinal pain by pulling the attachment site at the inferior pubic ramus, and that the affected gluteus minimus also formed trigger points developing buttock pain by pulling the attachment site at the posterior ilium. Furthermore, it is also suspected that the affected piriformis, including the trigger points, became shortened and developed buttock and posterior thigh pain via compressing the sciatic nerve against the ischium, called piriformis syndrome [13].

Chronic pelvic pain is hard to deal with. That is because there are many muscles to examine if they are affected, as well as complex anatomical relationships between those muscles. Nevertheless, it is essential for physicians to recognize that there may not be a single source of dysfunction and to consider several muscles supporting the

hip joint and pelvis such as the iliopsoas, pectineus, obturator externus, gluteus minimus, and piriformis as a potential source of chronic pelvic pain. We suggest that treating these muscles can be a useful diagnostic and therapeutic tool for a patient with refractory chronic pelvic pain.

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