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CASE SERIES

Fluoroscopy-guided triple hip block for patients with hip osteoarthritis: A new approach

Kalça osteoartritli hastalarda floroskopi eşliğinde üçlü kalça bloğu: Yeni bir yaklaşım

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Summary

Hip osteoarthritis (OA) is found in approximately 10% of the population and often causes disability and social limitations in elderly patients. Intra-articular injections are among the most frequently applied interventional treatments for the hip joint. Femoral and obturator sensorial nerve blocks have also been reported to be effective for both diagnostic and therapeutic purposes. A single needle insertion was performed for the blockage of the hip joint and sensory branches. For the sensory branch of the femoral nerve, the needle is advanced at nearly a 45-degree angle toward below the anterior inferior iliac spine near the anterolateral edge of the hip joint. For the sensory branch of the obturator nerve, the needle is advanced at nearly an angle of 45 degrees toward the area below the junction of the pubis and ischium. Finally, for joint injection, the same needle was advanced toward the midline of the anterior femoral head–neck junction at a steeper angle, and blocks were applied. Three patients with hip osteoarthritis were injected with this method and well-being was achieved in a 3-month follow-up. We think that blockage of the hip joint and peripheral sensory branches with a single needle insertion is a fast and effective method. However, prospective controlled studies are needed to determine the efficacy and safety of the method.

Keywords: Fluoroscopy; hip osteoarthritis; injection; triple block.

Özet

Kalça osteoartriti (OA) sıklığı toplumda yaklaşık %10 olup, genellikle yaşlı hastalarda özürlülüğe ve sosyal kısıtlılığa neden olmaktadır. Eklem içi enjeksiyonlar, kalça eklemi için en sık uygulanan girişimsel tedaviler arasındadır. Ayrıca, femoral ve obturator sinirin duyusal dallarının blokları, hem tanı hem de tedavi amaçlı etkili olduğu bildirilmiştir. Kalça eklemi ve duyusal dallar için tek iğne girişi ile işlem planlandı. Femoral sinirin duyusal dalı için iğne, anterior inferior iliak spine'nın altına doğru, kalça ekleminin anterolateral kenarına yakın, yaklaşık 45 derecelik bir açıyla ilerletildi ve kemik teması sağlandı. Sonrasında, obturator sinirin duyusal dalı için iğne, pubis ve iskium bileşkesinin altındaki alana doğru yaklaşık 45 derecelik bir açıyla ilerletildi, kemik teması sağlandı ve blok uygulandı. Son olarak, iğne femur baş-boyun bileşkesinin orta noktasına doğru daha dik bir açıyla ilerletildi ve kontrast madde sonrası eklem içi enjeksiyon yapıldı. Kalça osteoartritli 3 hastaya bu yöntem ile işlem yapıldı ve 3 aylık takipte iyilik sağlandı. Kalça eklemi ve periferik duyu dallarının tek iğne girişi ile bloke edilmesinin hızlı ve etkili bir yöntem olduğunu düşünüyoruz. Ancak, yöntemin etkinliğini ve güvenliğini belirlemek için prospektif kontrollü çalışmalara ihtiyaç vardır.

Anahtar sözcükler: Enjeksiyon; floroskopi; kalça osteoartriti; üçlü blok.

Introduction

Hip osteoarthritis (OA) is found in approximately 10% of the population and often causes disability and social limitations in elderly patients.[1] Conservative, interventional, and surgical treatments are included in the treatment of hip OA. In patients who do not respond to conservative treatment or do not accept surgery, sensory nerve blockade of the hip joint capsule or intra-articular hip injections could be done.

Intra-articular injections are among the most frequently applied interventional treatments for the hip joint. Steroid injections have been shown to provide relief for up to 3 months in hip osteoarthritis.[1] In some patients, in addition to joint injections, it is necessary to block the nerves that receive the joint sensation for long-term pain relief. Although the sensory innervation of the hip joint is complex,[2] it has been reported that blocks for the sensorial branches of the femoral and obturator nerves are also effective

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in the short term. Femoral and obturator sensorial nerve blocks have been reported to be effective for both diagnostic and therapeutic purposes.[3] Despite this, there are few studies in the literature about the sensorial block of the obturator and femoral nerve, and the procedure is performed with more than one needle and entry site for the block.[3,4] Our aim with this technique is to perform intra-articular steroid injection and blockage of the sensorial branches of the femoral and obturator nerves by using a single needle insertion in the same session.

Case Reports

Case 1

A 60-year-old, 70 kg female patient has been complaining of right hip pain for 5 years. She had previously received physiotherapy and medical treatments, but the pain continued. The patient's X-ray showed grade 3 OA according to the Kellgren-Lawrence classification, and she wasn't willing to have surgery. After obtaining consent from the patient, a triple hip block was applied to the right hip joint under the guidance of fluoroscopy. While the patient's pre-procedural NRS score was 8, the post-procedure NRS score was found to be zero at the 1st hour and 3rd week, and it was 3 at the 3rd month. No complications were detected during the procedure.

Case 2

This patient was a 68-year-old female who weighed 80 kg and had a history of right hip pain for 4 years, diagnosed with right hip OA. She reported difficulty in walking, pain in weight-bearing, and loss of function. The patient's X-ray showed grade 4 OA. Her pain was not relieved by medical treatment and physical therapy. A triple block was applied to the right hip for pain. While the NRS score was 10 before the procedure, it dropped to 1 at the 1st hour after the procedure. The 3rd week and 3rd month NRS scores were found to be 3. No complications were detected during the procedure.

Case 3

A 62-year-old male patient, weighing 87 kg, has had left hip pain for more than 5 years. The patient's X-ray revealed grade 3 OA. His history included an intra-articular hyaluronic acid injection, but there was no response to medical and injection therapy. A triple hip block was applied. While the NRS score was 9 before the procedure, the NRS scores at 1 hour and 3 months post-procedure were 0 and 2, respectively. No complications were detected during the procedure.

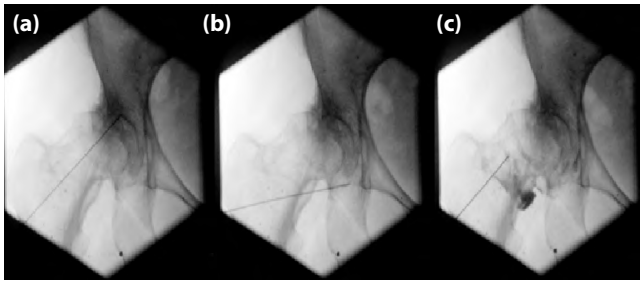

Figure 1. Fluoroscopic images showing the needle located near the anterolateral margin of the hip joint **(a)**, near the anteromedial aspect of the extraarticular portion of the hip joint **(b)** for sensory branches of the left obturator and femoral nerves, and hip intra-articular injection **(c)**.

Methods

The patient was placed in a supine position. After establishing sterile conditions, fluoroscopic views in the anterior-posterior plane were obtained, and the needle entry point was adjusted to be from the midpoint of the inter-trochanteric line. The skin area at the needle entry point was anesthetized with 5 cc of 2% prilocaine prior to advancing the tip of a 22-gauge, 15-cm peripheral block needle. For the sensory branch of the femoral nerve, the needle was advanced at nearly a 45-degree angle toward below the anterior inferior iliac spine near the anterolateral edge of the hip joint. For the sensory branch of the obturator nerve, the needle was withdrawn back and advanced at nearly an angle of 45 degrees toward the area below the junction of the pubis and ischium, which resembles a teardrop, and bone contact was achieved (Fig. 1). The sensory nerve stimulation test was performed at 50 Hz, and the needle was positioned for determining the maximum stimulation point according to the patient's description (numbness and tingling sensation with about 0.5–0.7 mA).[3] Once bone contacts were established and the appropriate site confirmed by fluoroscopy and nerve stimulation, 1 cc of 0.5% bupivacaine and 1 cc saline were injected into each point for the block. Finally, for the joint injection, the needle was advanced toward the midline of the anterior femoral head-neck junction at a steeper angle, and after penetration of the joint capsule, 1 cc of contrast material was administered. Once intra-articular spread was confirmed, a mixture of 6 mg betamethasone, 2 cc 0.5% bupivacaine, and 1 cc saline was injected, and the procedure was completed.

Discussion

Joint injections and peripheral nerve blocks have been reported to be effective for hip osteoarthritis.[1,3] We report a method that successfully blocked both the hip joint injection and the articular sensorial branches of the obturator and femoral nerves using a single needle insertion in a case with hip OA.

The hip joint capsule is innervated by the articular sensorial branches of the obturator, femoral, sciatic, and superior gluteal nerves.[2] Inguinal and medial thigh pain usually originates from the articular sensorial branches of the obturator nerve, while lateral thigh pain originates from the articular branches of the femoral nerve. The nerve responsible for pain in the hip joint can be identified by diagnostic nerve block.[4] In particular, femoral and obturator sensorial nerve blocks have been shown to provide temporary relief in hip pain. It has been defined that the procedures could be made by entering from different points for each blockage.[3] Heywang-Köbrunner et al.[5] showed that a CT-guided single obturator sensorial nerve blockade has been shown to provide 3-11 months of relief in hip pain. Hartmann et al.[6] found that a femoral sensorial nerve blockade was more effective than intravenous fentanyl in hip fractures. According to Tinnirello et al.,[7] a more than 50% reduction in pain after blockade of the femoral and obturator sensorial nerves was considered a predictive value for radiofrequency ablation. Fluoroscopy-guided intra-articular steroid injections are another interventional treatment option that may reduce hip joint pain in the short term.[1] In a recent study, it was found that intra-articular local anesthetic injections were more effective than femoral nerve block in patients who underwent hip arthroscopy.[8] To the best of our knowledge, there is no combination of these two processes in the literature. With this technique, both the intra-articular blockade and peripheral sensory branches are blocked with a single needle insertion. It is thought that the procedure can be performed in a shorter time without the need for the patient to be punctured three times with a single needle insertion. In addition, we think that shortening the procedure time and performing the procedure with a single needle will reduce the risk of infection. This method also provides the opportunity to apply pulse radiofrequency effectively both to the capsular branches and to the joint in patients who benefit for a short time.[7,9]

However, we believe that this technique has a few limitations. First, as the path of the needle in the tissue becomes longer, it may increase the risk of peripheral nerve and vascular injury. However, we did not encounter any complications in patients who underwent the triple hip block. Second, the blockade of both the joint and sensory branches during the same procedure may cause a bias for future radiofrequency ablations. Finally, we believe that inexperienced practitioners may have difficulty achieving bone contact when the correct angle of entry is not provided.

As a result, we believe that blockage of the joint and peripheral sensory branches with a single needle insertion is a fast and effective method. However, prospective controlled studies are needed to determine the efficacy and safety of the method.

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