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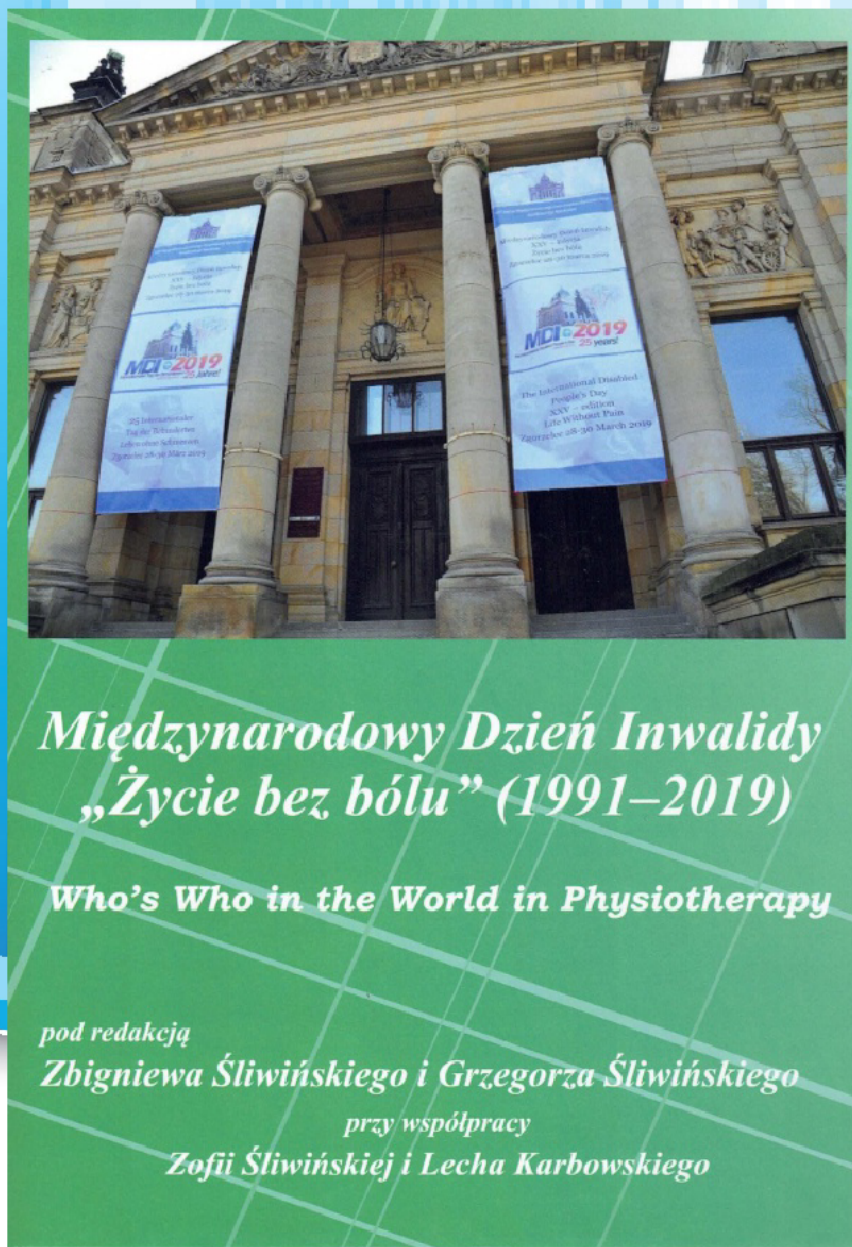
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Physiotherapeutic procedure in goose foot inflammation – case study

Postępowanie fizjoterapeutyczne w zapaleniu gęsiej stopki – studium przypadku

Radosław Kocent^{1(A,B,C,E,G)}, Marek Kiljański^{2(D)}, Joanna Kałuża-Pawłowska^{3(F)}

¹NZOZ Med-Vita Rehabilitacja i Masaż Radosław Kocent, Sompolno / NZOZ Med-Vita Rehabilitation and Massage Radosław Kocent, Sompolno, Poland

²Samodzielny Publiczny Zakład Opieki Zdrowotnej MEDiKSA, Ksawerów / Independent Public Health Care Institution MEDiKSA, Ksawerów, Poland

³ZOZ Pazare Sp. z o.o., Pabianice, Poland

Abstract

Objective. The article presents a comprehensive rehabilitation procedure in goose foot bursitis. At the beginning, the causes of inflammation and its symptoms were presented.

Material and methods. The study was conducted on a specific case. The article describes the patient's evaluation and physiotherapy recommendations for the treatment of the disease. In the field of kinesiotherapy, recommendations were made in the form of exercises stretching the shortened muscles that cause the goose foot, as well as strengthening the group of muscles activated to stabilize the knee. An important aspect of working with myofascial techniques is presented. Cryotherapy, laser therapy and sonotherapy procedures are described among the physiotherapy treatments in the rehabilitation of goose foot inflammation. The article also highlights the effectiveness of treatment thanks to the combination of physical therapy, kinesiotherapy, functional massage and re-education of gait and running. The subject of patient education to prevent the recurrence of injuries was also discussed.

Results. Therapy was administered for a period of four weeks. Positions during rest and sleep at home, exercise, walking in a newly learned, correct pattern and avoiding training errors were recommended. After the treatment was completed, pain was completely gone and the patient was fully active again.

Conclusions. Physical therapy, kinesiotherapy, massage and the patient's compliance with the therapist's recommendations result in the relief of ailments and a full return to various types of activity.

Key words:

goose foot inflammation, physiotherapy

Streszczenie

Cel pracy. Artykuł przedstawia kompleksowe postępowanie rehabilitacyjne w zapaleniu kaletki maziowej gęsiej stopki. Na wstępie przybliżono przyczyny zapalenia oraz jego objawy.

Materiał i metodyka. Badanie przeprowadzono na konkretnym przypadku. W tekście opisano ocenę pacjenta oraz zalecenia fizjoterapeutyczne w leczeniu schorzenia. Z dziedziny kinezyterapii przedłożono zalecenia w postaci ćwiczeń rozciągających mięśnie skrócone tworzące gęsią stopkę, jak również wzmacniających grupę mięśni działających jako aparat stabilizujący kolano. Przedłożony został ważny aspekt pracy technikami mięśniowo-powięziowymi. Z zabiegów fizykoterapeutycznych w rehabilitacji zapalenia gęsiej stopki opisane zostały zabiegi krioterapii, laseroterapii oraz sonoterapii. W artykule zwrócono również uwagę na efektywność leczenia dzięki połączeniu fizykoterapii, kinezyterapii, masażu funkcyjnego oraz reedukacji chodu i biegu. Poruszono również temat edukacji pacjenta w celach profilaktyki zapobiegania nawrotom urazu.

Wyniki. Terapię stosowano przez okres czterech tygodni. Do domu zlecono pozycje ułożeniowe podczas odpoczynku i snu, ćwiczenia, chód w nowo wyuczonym, prawidłowym wzorcu oraz unikanie błędów treningowych. Po zakończeniu leczenia ból całkowicie ustąpił, a pacjent wrócił do pełnej aktywności.

Wnioski. Fizykoterapia, kinezyterapia, masaż oraz rzetelne stosowanie się chorego do zaleceń terapeuty przynosi efekt ustąpienia dolegliwości i pełnego powrotu do różnego rodzaju aktywności.

Słowa kluczowe:

zapalenie gęsiej stopy, fizjoterapia

Introduction

Goose foot bursitis (*per anserine bursitis*) refers to a set of pain symptoms appearing approximately 5 cm below the medial side of the knee joint. This is the place where the final attachments of three muscles connect: sartorius muscle, gracilis muscle and semitendinosus muscle. These attachments connect to the tibia fascia, creating a connective-tissue tendon band, which resembles the membrane between goose fingers. Hence its name. The basic function of the muscles that make up the goose foot is bending at the knee joint, inward rotation of the thigh and dynamic stabilization of the knee to counteract knee valgus.

Causes

Under the influence of excessive friction, local inflammation of the periarticular structures (bursa, tendons of the ischiocrural muscles) may develop, and thus pain on the medial side - lower - inner side of the knee.

Inflammation in this area occurs due to the functional rotational instability of the knee joint. This is a functional dysfunction in which the knee is twisted excessively inward while squatting on one leg. The patient is often unaware of it because the knee twist is very slight and difficult to see. The cause often lies in the biomechanics of the femoral position - increased pelvic anterior tilt, internal rotation of the femur, excessive hindfoot pronation; these are the factors that predispose to an injury. It is manifested by knee valgus, excessive torso flexion in the hip joints (body tilting forward) while running, or collapse of the longitudinal arch of the foot. This syndrome is often associated with a combination of knee valgus and ligament instability. Usually, the cause of improper positioning of the bone structures during dynamic loading is reduced strength and endurance of the muscles of the pelvic girdle, the ischiocrural muscle group, the quadriceps muscle and the hip adductors. An important factor is also the ability to perform eccentric work (controlled muscle elongation) by the muscles of the ischiocrural muscle group. This type of work is crucial for maintaining correct control of the lower leg while stopping its extension in the front limb while running. A common cause of goose foot inflammation, especially in runners, may be training errors (including the lack of warm-up), overtraining or training despite the obvious dysfunction of the knee joint and limited ranges of motion, as well as improper technique when performing exercises and poorly selected running shoes.

Symptoms:

- pain located on the medial side of the knee joint, which is aggravated when climbing stairs, as well as sitting on and getting up from a chair; increasing with physical activity, eventually making the activity more difficult,
- tenderness and swelling in the area of the goose foot,
- shortening of the muscles of the ischiocrural muscle group, shortening of the muscles of the iliotibial band with slight knee valgus.

Rehabilitation goals:

- pain reduction,
- stretching the muscles of the goose foot and other shortened muscles affecting the knee joint,
- strengthening the adductor muscle group and the quadriceps as the basic muscle in the knee stabilizing apparatus,
- correction of biomechanical body settings during walking and running,
- patient education in terms of avoiding training errors.

Physiotherapeutic procedure

Rehabilitation consists in limiting training so as not to aggravate the ailments. Typically, physical therapy is used, such as cooling the painful area, ultrasound, or laser therapy for pain and inflammation. Positions can be recommended for home that reduce the tension in the structures that make up the goose foot, such as placing a pillow between your knees when sleeping.

Physiotherapeutic procedures should also include stretching the muscles of the goose foot and other shortened muscles affecting the knee joint, exercises to strengthen the adductor muscle group and the quadriceps muscle as the main apparatus stabilizing the knee joint. In particular, it is important to strengthen the vastus medialis. When selecting exercises, the biomechanical settings of the body must be corrected and the biomechanics of running must be improved.

Stabilization training, which involves learning to control the knee during flexion, usually reduces pain. In the case of athletes, the technique of the discipline should also be assessed. In middle-aged and elderly people, general health should be evaluated.

Objective

Evaluation of the effectiveness of using comprehensive physiotherapy in overload goose foot bursitis.

Material and methods**Case study**

A 44-year-old female patient, height 168 cm, weight 65 kg. Working in an office. Recently, she has been active as a participant in basic training within military conscription. She came for a physiotherapy appointment two months ago. The reason was pain located on the medial side of the knee joint. It intensified when walking up the stairs, as well as sitting on a chair and getting up or getting out of the car. The VAS scale was used to assess pain during physical activity. The patient assessed it at 7 and described it as making everyday functioning very difficult. The ultrasound examination revealed a visible fluid reaction in the area of the goose foot and a fluid reaction at the site of the conflict of the iliotibial band with the femoral condyle. X-ray without deviations.

In the physiotherapeutic examination it was observed that during training of future soldiers, training errors were made, such as the lack of warm-up, training despite the obvious dysfunction of the knee joint, and poorly selected footwear. It was also not without significance that exercises, in this case running, were characterized by frequent increases in the distance run, change of running routes or running along fields, trans-

versely undulating roads with significant load. In addition, the patient had tenderness and swelling in the area of the goose foot, shortening of the muscles of the ischiocrural group, shortening of the iliotibial band muscles along with slight valgus of the knee of the affected limb, visible when running.

Methods

The research methods used a physiotherapeutic examination sheet, VAS scale, dynamic assessment of walking and running on a treadmill, and analysis of the single-leg squat. The Ober tests, the Thomas test, and the fingers-to-floor test, also known as the Thomayer's test, were performed.

Therapy lasted four weeks. In the first phase, it mainly involved limiting physical exertion and education about the correct positioning during rest and sleep. Cryotherapy, laser therapy, sonotherapy and the use of NSAIDs have been recommended to reduce inflammation and pain. In the second phase, individual work with a therapist was introduced. This work included stretching the muscles of the ischiocrural group, gluteal muscles, iliopsoas muscle, broad fascia tensioner muscle, and strengthening the adductor muscles and the quadriceps muscles of the thigh. Manual techniques (functional massage and myofascial massage) were also used to reduce tension and improve tissue glide in the area of the goose foot. Stabilization training consisted in learning to control the knee while bending and running on a treadmill. Stretching and strengthening exercises as well as walking in a newly learned correct pattern were recommended to be performed at home (Table 1).

Table 1. Recommended stretching and strengthening exercises as well as gait in a newly learned correct pattern

- Kneeling down on one leg. Hands resting on the knee of the front leg. The movement involves moving the pelvis down and forward so that you can feel the stretching on the front of your thigh. Remember to keep your back straight and not let your knee slide beyond the foot of the front leg. Maintain the stretch position for 20–30 seconds at a time. Repeat 5–8 times.
- The supine position. One leg is on the floor, the other is against the wall (back of the thigh, lower leg and heel are against it). The movement consists in keeping the limb against the wall while maintaining a straight knee joint for 20–30 seconds. Repeat 5–8 times.
- Cross-legged position. The movement consists of twisting the torso alternately left and right. It is worth remembering the linearity of the torso. Perform the exercise slowly for 5–6 minutes.

The subject of training errors was discussed, so that they would not be repeated in the future, and the activities that could protect the patient from the recurrence of ailments (Table 2).

Table 2. Actions that can save the patient from recurring goose foot ailments, related to training hygiene

- systematic peri-training stretching of the muscles of the lower limbs,
- improving muscle strength,
- regular stabilization and proprioception exercises,
- exercising and learning to control muscles
- proper technique while running,
- suitable terrain and sports shoes.

Results

After comprehensive therapy lasting four weeks, a slight relaxation of the muscles of the ischiocrural group and the iliopsoas muscle was observed every day. This was confirmed by the fingers-to-floor test and the Thomas test. With the patient fully concentrated, knee stabilization improved, especially knee control while performing squats and in their gait. After the end of the treatment, the pain sensation was completely gone. One year after the incident, there is no recurrence of symptoms.

Table 3. Results of tests carried out before and after rehabilitation

	Rehabilitation Day 1	Rehabilitation Day 14
Fingers-to-floor test	positive (distance of fingers to the ground 35 cm)	positive (distance of fingers to the ground 10 cm)
Thomas test	positive (angle between the bent tested lower limb and the couch – 25 degrees)	positive (angle between the bent tested lower limb and the couch – 8 degrees)
Ober test	negative	negative
Squat	excessive inward knee rotation	correct squat
VAS	8	0

Discussion

Treatment for any overload injury can be divided into two stages. The first is to eliminate pain and inflammation of tissues, as a rule, acting in the field of physical therapy and pharmacotherapy. The second is to analyse the risk factors, eliminate them and return to full fitness.

In the case of goose foot inflammation, a particularly often neglected area is the pelvis, which, when destabilized, strongly affects the functioning of the knee. Functional instability of the knee joints (excessive inward rotation of the knee visible when squatting) is considered to be the direct cause of the problems with the goose foot. Knee valgus and ankle pronation also contribute to that. Working to control this movement during stabilization and proprioception exercises can significantly reduce the symptoms of goose foot inflammation. Exercises to balance the tone of the pelvic muscles responsible for the rotation of the femur, supported by training in appropriate movement patterns, can significantly reduce or eliminate goose foot ailments. It is also important not to repeat training errors, which are of great importance when it comes to preventing the recurrence of any overload injuries.

In foreign literature, the basis for the treatment of primary goose foot bursitis is rest, ice and short-term use of non-steroidal anti-inflammatory drugs (unless there are other contraindications based on the patient's medical history). In addition, in the case of obesity and reduced body efficiency, weight reduction exercises and exercises strengthening muscles (especially the quadriceps muscle groups) are used, resulting in a long-term relief of symptoms. In other foreign articles it is also mentioned that in patients with osteoarthritis it may be necessary to direct the treatment also at this disease entity. Steroid injections are reserved for symptoms resistant to treatment, but may be used initially for severe pain or for patients with symptoms of night pain. Additional treatments include therapeutic ultrasound, physical therapy, and transcutaneous electrical nerve stimulation (TENS). Complications of goose foot bursitis may occur. They are rare but usually result from the lack of treatment. They can include increased pain and inflammation, followed by weakness in the muscles and tendons around the knee joint.

Further review of literature shows that patients with goose foot inflammation recover spontaneously through activity modification, but from time to time pain that is resistant to treatment requires long-term therapy. It is then advisable to do an ultrasound to confirm the diagnosis. Initial treatment includes the use of non-steroidal anti-inflammatory drugs and ice to reduce inflammation and pain. Later, rehabilitation involves the use of exercises to strengthen the weakened muscles and stretching of the shortened muscles. Sometimes knee braces are used. When such treatment fails, glucocorticoid is injected locally with the risk of side effects such as, for example, glucocorticoid-induced osteoporosis.

Conclusions

Physical therapy, kinesiotherapy, soft tissue therapy and the patient's compliance with the therapist's recommendations

eliminate ailments and contribute to a full return to various types of activity. It rarely happens that therapy does not bring any results. Such a situation is associated with the need to look for an alternative treatment, e.g. local glucocorticoid administration.

Adres do korespondencji / Corresponding author

Radosław Kocent

e-mail: radekkocent@o2.pl

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