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THE POSSIBILITY OF PHYSIOTHERAPY TREATMENT AFTER INJURY OF ANTERIOR CRUCIATE LIGAMENT

Katarzyna Korabiusz[1], Anna Fabian-Danielewska[1,2], mgr Agata Wawryków[1]

[1]Doctoral Studies, Pomeranian Medical University in Szczecin, Żołnierska 54, 71-210 Szczecin

[2]NZOZ Przychodnia Medycyny Rodzinnej W.Fabian S.J., ul. Bł. Kadłubka 10-11, 71-521 Szczecin

Katarzyna Korabiusz: http://orcid.org/0000-0003-4512-7550; email: korabiuszk@gmail.com; cell phone: 668305955
Anna Fabian- Danielewska: http://orcid.org/0000-0003-1290-4608
Agata Wawryków: http://orcid.org/0000-0003-0517-5857

Abstract

Introduction: Damage of ACL represents approximately 50% of all internal damages of knee joint after its injury. According to statistics, 1 person out of 1000 residents suffers from ACL injury. Approximately 3 thousand reconstructions of ACL are performed yearly therefore it is very important to work out an optimal post-operative rehabilitation. Through this, it is possible to reduce pain indispositions and restore a good joint stabilization and improved quality of life.

Goal of dissertation: Goal of this dissertation is a review of literature about available physiotherapy methods used after injury of anterior cruciate ligament.

Conclusion: There are many physiotherapy methods used after injury of ACL. Methods proposed in literature increase range of movement in knee joint, reduce pain and

restore a good joint stabilization The most often used methods are: transdermal nerves stimulation TENS, criotherapy, magnetic field, ultrasounds, LASER, electrostimulation, interferention, kinesitherapy and kinesiotaping, Rehabilitation significantly reduces pain indispositions and has a positive influence on quality of life of patients after ACL injuring.

Keywords: Physiotherapy, ACL, anterior cruciate ligament, injury.

Introduction

Damage to the anterior cruciate ligament is about 50% of all injuries inside the knee joint. As a result of damage to the ACL disorder undergoes knee joint stability, accelerated wear of the joint and increases the risk of early development of degenerative changes [1-3].

For the rupture of anterior cruciate ligament injury is caused by the direct contact or non-contact intermediate [4].The most common injury is a sports injury, and mechanical damage caused by a traffic accident. Trauma most often formed during a single operation of force to the weakest part of the ligament [5-7]. This typically occurs in a situation wherethe lower limb bent at the knee joint operating torsional forces. This causes rotation of internal or external, in which the tibia is moved relative to the femur [8].

Types mechanism of injury

There are four types of injury:

- trauma with full force, obliquely
- trauma deformed
- erectile injury
- the so-called. "Boot induced anterior drawer" [9-11].

Erectile injury occurs when the knee joint is the twisted for the outside, and is damaged anterior cruciate ligament, medial collateral ligament and the meniscus is formed so "triad". During trauma deformity knee joint is rotated inward, the most common injury is attributed to the basketball players and the players hand. Conflict anterior cruciate ligament from the anterior surface of the medial femoral condyle takes place at extensor injury, the Scientific Basis of the tibia bone. A common injury is also called the ACL. Boot induced anterior drawer, which occurs when the fall of the skier attempts to maintain a vertical posture, and wherein the quadriceps muscle is highly tensioned. Skier usually falls back, in addition to hitting the rear part of the shoe in the tibia.

It should be stressed that 60% of the anterior cruciate ligament injuries (especially in women) is a non-conflicting injury [15].

We can distinguish between full rupture the anterior cruciate ligament and a partial rupture of the anterior cruciate ligament, although it is mostly break full or close to full. Injuries are classified as "twisting" and divide them into three steps:

1. Light injury- ligament has been stretched, it was the same little damage, but that does not adversely affect the stabilization of the knee joint

2. Loose ligemant- partial damage to the ligaments: ligament is stretched, flaccid, loose. This causes instability, there are tendencies to block the painful knee.

3. This kind of complete electrical sprain is considered a complete break. Instability of the knee joint, ligament and separated into two parts [12-15].

The clinical symptoms of damage to the anterior cruciate ligament is a whole range of ailments, m.in .:

- No passive stability of the knee,
- Subjective instability of the knee (the so-called „resort knee ")
- Functional instability (giving way),
- The disorder of the knee joint proprioception,
- Excessive stretching of structures of the joint capsule.
- Crackling, "clique" in the knee joint,
- Limiting the range of motion (range of motion- ROM)
- Lack of proper muscle tone,
- The pain and swelling, and sharp picture injury - effusions [15,16].

Functional tests used in the damaged ACL:

- Lachmana test- comparatively in both legs, knee flexion is set to about 30 degrees. The therapist with one hand stabilizes the patient's thigh, the other rests on the back of the leg and lower leg moves forward relative to the thigh.

- Anterior drawer test- test sitting, the investigator stabilizes the foot in the intermediate position, the knee joint at an angle of 90 degrees. During the test, the lower leg is moved forward relative to the thigh.

- Pivot- Shift Assay Test and twisting knee subluxation. The test in the lying position of the rear therapist stabilizes the lateral condyle. Therapist then rotates the inner and visit. In this position performs flexion and extension of the knee joint. With a damaged ACL tibia podwicha forward.

- Evaluation of potency and muscle mass - eg. by Lovett scale and measurement circuits, testing should be subjected to both lower extremities.

- Other subjective symptoms of instability of the knee joint, eg. a sense of resorting knee [17-22].

Risk group

For the risk group are considered to be aged 16 to 35 years, active physically, but also subject to specific conditions anatomicznymi- muscle weakness of the knee and hip extensor muscle imbalance in terms of the flexor muscles, and earlier weaknesses substantially osobniczymi ligamentous structures, impaired proprioception of the knee, previous injuries. Also increase the risk of hormonal changes in women, low ceiling and narrow down intercondylar femur, patella dislocation, bruises,compensation due to disturbed stereotype artrokinematyki pond, states overload and increased flexibility of the knee joint.

To external causes we can include a lack of adequate preparation to undertake physical exertion and lack of preparation for the sport or recreation and shoes- substrate interactions, weather, environmental conditions [9-11, 20-24].

Scales used for objective assessment of pain

Systematic research will lead to appropriate therapy. To this end, efforts should be made to reliable, systematic research.These studies can be carried out, among others, by properly fitting the rock, although it should be emphasized that there is no one scale that would enable an objective assessment of functional changes occurring in the knee.Opportunity detail the testing and selection of treatment provide standardized assessment scales with keys [25-28].

In Poland, the most commonly used scales are subjective IKDC evaluation form 2000 and modified Lysholm scale. In the form IKCD 2000 estimate 7 "objective" characteristics of the tested knee effusion in the knee, the assessment ranges of motion syndrome, skipping, evaluation of mechanical instability of the knee, the assessment of changes using X-ray, pathological changes in the location from where you downloaded was transplants and test " The bounce "on one foot [25-26].

Eight-step scale of Lysholm questionnaire is used in disorders of the knee, up to a gain of 100 points, the higher the amount of ill will score, the better the condition of his knee. Rated is a sense of joint stability, pain, locking of the knee joint effusion, moving up the stairs, limping, orthopedic use and the ability to perform the squat [25-28].

According to the complaints from the knee can also be used evaluation system knee Cincinnati (Cincinnati Knee Rating System), AAOS (American Academy of Orthopedic Surgeons Sports Knee Rating Scale), SANE (Single Assessment Numeric Evaluation), Activities of Daily Living Scale of the Knee Outcome Survey The quality of life outcome measure for chronic ACL deficiency and KOOS (Knee Injury and Osteoarthritis Outcome Score) [25-28].

Cincinnati Knee Rating SystemIt contains 11 points to evaluate the function of the patient's knee joint). AAOS is part of a broad assessment MODEMS- (Musculoskeletal Outcomes Data Evaluation and Management System). Typically, it is used in athletes after a knee injury, it is composed of five parts containing 23 questions. Single Assessment Numeric Evaluation is directed to the people in adolescence, is in the range from 0 to 100 points. Activities of Daily Living Scale of the Knee Outcome Survey refers to subjective symptoms after damage to the anterior cruciate ligament (contains 17 questions). The quality of life outcome measure for chronic ACL deficiency is a visual analog scale, contains 31 questions regarding subjective symptoms, obstacles to doing sports and the difficulty in activities of daily living and vocational training.

Proceedings physiotherapy after damaging the anterior cruciate ligament

Methods of rehabilitation after anterior cruciate ligament injury include analgesic and anti-inflammatory treatments in physical medicine. The most common include:

- transcutaneous electrical nerve stimulation TENS- accelerates regeneration, has analgesic, nutritional, and congestive;

- a magnetic field- applied frequency of 1-5 Hz in the acute stage, 5- 20 Hz can subacute and 20 to 50 Hz in the state of chronic inflammation. The value of magnetic induction ranging from 5 Gauss in the acute stage to 100 Gauss in the chronic state. Alternating magnetic field has a broad spectrum Properties- analgesic, anti-inflammatory, anti-oedematous and accelerate tissue regeneration;

- kinesiotaping analgesic, and antiedematous stabilizujący-slicing method is dynamic, which - suitably zaaplikowana- has analgesic, functional, decongestants (improves blood circulation and lymph tissue reduces stasis);

- cryotherapy - to reduce pain, increase range of motion, can be used both in the acute and chronic. For treatment to be effective, it must be repeated 2 to 3 times a day, and the intervals between treatments should be 3 hours;

- ice cube massage- It has been proved that the best results are achieved using alternate cryotherapy wraps and cold- type of pack;

- ultrasounds- They have strong analgesic, anti-inflammatory, anti-edema and to reduce muscle tension. They operate on the principle of the reverse piezoelectric effect, are used in these waves at a frequency above 20,000 Hz. During the procedure, there is a phenomenon of micro-massage and to thermal changes by stimulating the cells to move and generate heat;

- russian electrical stimulation to nourish and stimulate the weakened muscles, accelerates regeneration;

- laserotherapy- slows the degenerative processes and necrotic tissue, an analgesic, anti-oedematous and vasodilating increases synthesis of collagen fibers, accelerate cellular metabolism, cell regeneration and improves trophics tissues and stimulate the healing of laser light beam is used, which works closely defined area.

Interferention- stimulate blood circulation, reduce swelling, analgesic effect [29-36].

It should also be possible to implement early treatments in physiotherapy:

- quadriceps exercises, mobilization of the patella,
- lifting, abduction,
- mobilization of scars,
- pressing his knees,
- pumping rate, in relief,
- lifting the lower limb,
- lower limb abduction.
- exercises in closed kinematic chains,
- balance exercises,
- strengthening the muscles,
- exercises in the pool, bike,
- climbing up on her toes,
- subsequently stretching the biceps, quadriceps muscle stretching, stretching of the calf muscle [29-36].

Summary

There are many physiotherapy methods used after injury of ACL. Methods proposed in literature increase range of movement in knee joint, reduce pain and restore a good joint

stabilization The most often used methods are: transdermal nerves stimulation TENS, criotherapy, magnetic field, ultrasounds, LASER, electrostimulation, interferention, kinesitherapy and kinesiotaping, Rehabilitation significantly reduces pain indispositions and has a positive influence on quality of life of patients after ACL injuring.

The proposed method physiotherapy analgesic, normalize muscle tone, strengthens muscles and ligaments strengthen, improve proprioception, improve blood circulation and lymph improve recovery. All physiotherapy treatments to be chosen on an individual basis depending on the degree of damage, the period of the disease, and the individual characteristics. Properly conducted rehabilitation has a positive effect on all aspects of everyday life people with damaged anterior cruciate ligament.

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