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PERIARTHRITIS HUMEROSCAPULARIS– CASE STUDY

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Abstract: *The shoulder girdle is a characteristic system of interconnected shoulder bones, which enables maximum mobility of the upper limb. Due to its high mobility, this segment is exposed during its life to the influence of numerous etiological factors that damage its individual structures. Periarthritis humeroscapularis (PHS) is a lesion of the peri-articular structures of the shoulder. The basic clinical sign of shoulder pain may be accompanied by stiffness and weakness in the shoulder. The treatment of a painful shoulder aims to relieve the patient from pain, muscle spasm, achieve proper mobility and muscle strength of the shoulder girdle as soon as possible. In physiotherapy, there are a number of procedures that can be used to repair this extra-articular disease. The aim of the paper is to present individual physiotherapy procedures and procedures in the process of ambulatory treatment of periarthritis humeroscpularis. The paper presents the case of a patient diagnosed with tendinis humeri calcificata. When determining the functional status, the range of motion in the shoulder was measured, a manual muscle test and the VSP distance of both hands were measured, and pain was assessed. During the twenty-day outpatient treatment, kinesitherapy and several physical procedures were applied (cryotherapy, electrophoresis, laser, diadynamic currents, magnet, sonophoresis). After the outpatient treatment was completed, the monitored parameters showed an improvement, which confirmed that the application of kinesitherapy and physical procedures give exceptional results.*

Key words: *pain, periarthritis humeroscapularis, kinesitherapy, physical procedures*

Introduction

One of the most common causes of pain in the shoulder joint is periarthritis of the shoulder [1,2]. Periarthritis humeroscapularis (PHS) is a lesion of the peri-articular structures of the shoulder, in which the main clinical sign is pain in the shoulder, which can be accompanied by stiffness and weakness in the shoulder. It is also known as "sore shoulder". It appears equally in both sexes, usually after the age of 40. It affects one or the other shoulder (very rarely both at the same time) and in right-handed people more often on the right side due to stronger functional use of the right hand [3]. It belongs to the group of localized extra-articular rheumatic diseases, which are characterized by inflammatory or degenerative changes in the connective tissue, which is part of the organs of movement (muscles, tendons, ligaments, bursae, fascia, aponeuroses, subcutaneous connective or fatty tissue). The main clinical sign is pain in the shoulder and its limited mobility. The pain in the shoulder is extremely strong **,**

so that the patient is unable to move his arm without pain. Although not life-threatening, it affects the performance of tasks essential to daily life, such as dressing, personal hygiene, nutrition and work, and often leads to significant use of health care resources [4,5,6] The patient usually spares the affected arm , which remains close to the body. If such a condition lasts longer or is not treated, permanent limitation may occur in movement in the shoulder joint. Etiologically, it is considered to be the result of microtrauma or major shoulder injury, cold, draft, sudden movements when lifting loads, etc. The etiology of PHS is not clear, but it is often a concomitant phenomenon of degenerative, inflammatory and metabolic rheumatic diseases. Pain in the shoulder can occur for various reasons, some of which are the result of changes in local extra-articular structures (tendon, capsule, bursa, nerve plexus), and some are the result of diseases of distant organs (breast, gall bladder, pancreas, stomach, lungs, heart, malignant process). Depending on the cause of periarthritis humeroscapularis, different clinical forms can be distinguished: tendinitis, tenosynovitis, tendinitis calcarea, capsulitis, bursitis [7].

Tenosynovitis . Tendon disease (tendinitis) rarely occurs in isolation, but is usually associated with disease of their sheaths (tenosynovitis). It is often found in rheumatic diseases (rheumatoid arthritis) and infections, but it can also be the result of trauma. During abduction, *the supraspinatus* tendon can be pinched between the acromion and the head of the humerus, causing its trauma. As a result, degenerative changes occur in the tendon of the muscle, at a distance of about 1 cm from the greater trochanter laterally. There is pain, which can appear suddenly or gradually, pain on palpation and limitation of movement in the shoulder. Characteristic of this lesion is that the strongest pain is when the arm is abducted from 70-120 degrees, and this is the so-called " painful arch", and it occurs when the tendon *of the supraspinatus muscle* touches the acromioclavicular ligament. After that, when raising the arm further up, there is no pain or it is significantly less. Pain occurs as a result of friction of the damaged tendon through the narrow subacromial space [7]. Tenosynovitis of the tendon of the long head of the biceps causes pain on the front of the shoulder that increases with passive extension of the shoulder and elbow [8].

Tendinitis calcárea. Calcification can occur in the tendons of the shoulder girdle muscles - tendinitis calcarea. Deposition of calcium in tendons can occur for various reasons: trauma, diabetes mellitus, hypervitaminosis D or some unknown cause. Most often, calcification occurs in *the supraspinatus tendon* , but it can also occur in *the subscapularis* and *teres minor*. It can occur only on one shoulder, or both. Calcification does not have to be accompanied by pain, and pain can occur suddenly, after some trauma, which leads to irritation of the surrounding tissue. Then the pain can be very strong, and the shoulder is stiff, in the adduction position, which requires immediate intervention. The radiograph shows calcification [7]. It usually affects people between the ages of 30 and 50 [9]. Calcific tendinitis is more common in women than in men [10]. Although the most common location is the shoulder, accumulation of deposits can also be observed in many areas such as the gluteus maximus, paravertebral, hip, and foot [11].

Enthesopathy Enthesopathy occurs at joints exposed to frequent traumas that lead to degenerative and secondary inflammatory changes. There is ossification of the attachment and the creation of changes similar to osteophytes. The attachments on the humeral head of *the supraspinatus* and *subscapularis tendons* in the front and *the infraspinatus* and *teres minor tendons in the back* are most often damaged. Damage can cause moderate pain and limited abduction and internal rotation [8].

Capsulitis. Capsulitis can occur suddenly or gradually, as part of an inflammatory rheumatic disease, degenerative rheumatism, after myocardial infarction or cerebrovascular insult, after breast surgery, etc. In the clinical picture, apart from pain, there is a characteristic position of the arm in the shoulder, in the adduction position and limitation of shoulder movement in all directions. Because of the pain, there is a spasm in the structures around the shoulder, and the joint has minimal movements. Synovial fluid also stagnates, and as a result, adhesions occur on the joint capsule, which reduces and shrinks. Adhesions also occur in other structures, in tendons and muscles, which all together threaten joint mobility. The pain spreads to the pectoral muscles, *m.deltoideus* and *m.infraspinatus* . If the disease is not treated, the picture of "frozen shoulder" develops [7]. The clinical picture develops in three stages. In the first phase, there is pain (present even at rest) and a feeling of stiffness in the shoulder, and it lasts from 2-9 months. In the second phase, the basic clinical feature is a blocked and painless shoulder, which lasts 4-12 months. The third phase is the stage of healing in which the pain gradually calms down and movements are restored, but in 10% of patients, limited movements in the shoulder remain. Treatment is long-term and sometimes requires surgical intervention [8].

Bursitis. There are several bursae in the shoulder area, but due to its position, the most significant and largest is the subacromial bursa. They have the same structure as the synovial sheath, so the same processes occur as in inflammatory rheumatism. Calcium salts, which can be found deposited in the tendon near the bursa, can lead to its inflammation, due to the irritation they can create. Bursitis is characterized by pain, which occurs suddenly and is very strong. This is considered to be one of the most painful conditions in rheumatology. In acute bursitis, there is a very painful swelling of the bursa with red and warm skin in that area. A disturbance in the general condition can also occur - elevated temperature, sweating. It does not allow any movement in the shoulder, and the arm is in an adduction position, which, if not treated immediately, results in a contracture in that position [7].

Treatment can be conservative or operative. Treatment for each patient should be determined individually, taking into account the patient's age, expectations and goals, degree of damage and difficulties caused by the condition. In professional athletes, there are many other factors that the doctor must take into account. The success of recovery is closely related to the early start of rehabilitation, and early diagnosis is the key to the overall success of conservative treatment. Most protocols divide conservative rehabilitation into three main phases: pain control, restoring range of motion, increasing muscle strength.

Material and methods

The case of a 47-year-old female patient, a cashier by profession, is presented. She came to the examination because of severe pain in her right shoulder. A year ago, pain developed in her right shoulder, which was present only during activities and was associated with the accident that immediately preceded it. The complaints subsided using medicinal therapy (Melox F tbl and Deep relief gel externally). Then there was a sharp pain in the right shoulder that came on suddenly. She complains of unbearable pain, lack of sleep and that every movement increases the pain, and the medicines she used do not help. She suffers from diabetes mellitus type 2.

The patient described the pain in her right shoulder as strong and sharp, which started suddenly and did not stop. She can feel a sore point on her shoulder that spreads down her arm. The pain is present both at rest and at night, and the arm is motionless. The inspection revealed that the right arm was glued to the torso, with the forearm flexed and unable to move. There are no changes on the skin. When palpating the shoulder structures, the greatest pain is present on the *supraspinatus tendon*. All movements in the shoulder are all reduced and accompanied by pain. On the Liker pain scale, she describes it as 4-5. On the X-ray, a calcification of 5 mm in size is visible in the area of the supraspinatus tendon of the right shoulder. Laboratory findings are within reference limits. A diagnosis of calcific inflammation of the shoulder tendon (Tendinis humeri calcificata) was made.

When determining the functional status of the patient, the range of motion was measured, the manual muscle test (MMT) and the VPS distance of both hands were measured. The measurement of the range of motion was done with a protractor with arms of active movement only, where a reduced range of motion of the right shoulder was determined compared to the left, which had normal mobility. On the first measurement, internal and external rotation, horizontal abduction and adduction movements could not be performed because the patient could not raise her arm to 90° to perform the measurement. Also, the assessment of MMT was difficult due to the painful phase at the first measurement.

The results of the therapy were monitored by determining the functional status of the patients, where the range of motion was measured, the manual muscle test (MMT) and the VPS distance of both hands were measured. Measurement of range of motion was done with a protractor with arms of active motion and was done at the beginning, in the middle and at the end of the therapy. VPS-distance (vertebra prominens - styloid distance), was measured on the healthy and diseased side and was measured with a centimeter tape. All measurements were made by the same physiotherapist. The intensity of the patient's pain is monitored according to the Likert scale, which is a numerical scale graded from 1 to 5.

During the first 10 days of rehabilitation, physical procedures were used: cryotherapy - right shoulder, 10', laser - 100 Hz, 3J one point, a total of 10 points on the right shoulder pain site, electrophoresis - dexason on the anode, on the right shoulder pain site, 10', magnetotherapy – 18Hz 20mT, magnetic pads on the right shoulder, 30'. The kinesitherapy program is focused on arm positioning to prevent adductor contracture,

pendular exercises for the right shoulder, actively supported exercises to the limit of pain, as well as patient education in order to carry them out at home. During the next 10 days of therapy, diadynamic currents were used - modulation CP 4, LP 4, right shoulder, sonophoresis - Deep relief gel, 0.8 W/cm² , 5 ', place of pain in the right shoulder, magnetotherapy -18Hz 20mT, magnetic pads on the right shoulder, 30'. Kinesitherapy - exercises to increase the range of motion of the right shoulder, active exercises with gradual improvement of the muscle strength of the right arm.

The therapy was aimed at reducing and eliminating pain, increasing the range of motion and muscle strength in the shoulder girdle and arm in order for the patient to return to the activities of daily life.

Results and Discussion

Table no. 1

Shoulder movement	1st day right shoulder	10th day right shoulder	Day 20, right shoulder	Left shoulder
Flexion	70º	90º	170º	180º
Extension	0º	20º	50º	60º
Abduction	30º	70º	120º	180º
Adduction	10º	20º	30º	40º
External rotation	0º	30º	70º	90º
Internal rotation	0º	20º	60º	90º
Horizontal abduction	0º	20º	40º	40º
Horizontal adduction	0º	90º	130º	130º
VPS distance	57 cm	43 cm	34 cm	24 cm

At the first measurement, after 10 days, the monitored parameters showed a slight improvement. At the final measurement, a significant increase in shoulder range of motion and VPS distance is visible. Table no. 1 shows the range of motion and VPS spacing in individual phases of treatment.

The manual muscle test (MMT) on the first measurement of the right shoulder gave the following grades: flexion 3-, abduction 2+, while testing other movements was not feasible due to pain. After 20 days of therapy, the right shoulder had the following grades: flexion 4+, extension 4, abduction 3, adduction 4, external and internal rotation 3, horizontal abduction and adduction grade 3. The left arm had a grade 5 on all measurements.

By measuring the VPS distance, it was found that the distance in the right hand is 57 cm, and in the left hand it is 24 cm. After 20 days of therapy, the difference in VPS distance between the right and left hands was 10 cm.

After 20 days of outpatient rehabilitation, the patient had significantly less pain, which appeared only during movement and at the extreme amplitudes of movement in the shoulder. On the Liker pain scale, pain is described as 1-2. Also the mobility of the right hand has improved significantly as well as muscle strength.

Conclusion

The application of kinesitherapy and physical procedures, through outpatient treatment, have proven to be very successful in the treatment of humeroscapularis periarthritis. Timely diagnosis, application of early rehabilitation enables a positive end result of conservative treatment of PHS.

Literature

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PERIARTHRITIS HUMEROSCAPULARIS –PRIKAZ SLUČAJA

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Sažetak: *Rameni pojas predstavlja karakterističan sistem međusobno povezanih kostiju ramena, koji omogućavaju maksimalnu pokretljivost gornjeg ekstremiteta. Zbog velike pokretljivosti ovaj segment je tokom života izložen uticaju brojnih etioloških faktora koji oštećuju njegove pojedine strukture. Periartritis humeroscapularis (PHS) predstavlja leziju okolozglobnih struktura ramena. Osnovnom kliničkom znaku, bolu u ramenu mogu da se pridruže ukočenost i slabost u ramenu. Liječenje bolnog ramena ima za cilj što ranije oslobađanje pacijenta od bola, mišićnog spazma, postizanje uredne pokretljivosti i mišićne snage ramenog pojasa. U fizioterapiji postoji veći broj procedura kojima se može sanirati ovo vanzglobno oboljenje. Cilj rada je prikazati individualne fizioterapijske postupke i procedure u procesu ambulantnog liječenja periarthritis humeroscpularis-a. U radu je prikazan slučaj pacijentice sa dijagnozom tendinis humeri calcificata. Prilikom određivanja funkcionalnog statusa rađeno je mjerenje obima pokreta u ramenu, manuelni mišićni test i mjerenje VSP razmaka obe ruke te procjena bola. Tokom ambulantnog liječenja, u trajanju od dvadeset dana, primjenjena je kineziterapija i više fizikalnih procedura (krioterapija, elektroforeza, laser, dijadinamske struje, magnet, sonoforeza). Nakon završenog ambulantnog liječenja praćeni parametri pokazali su poboljšanje, čime je potvrđeno da primjena kineziterapije i fizikalnih procedura daje izuzetne rezultate.*

Ključne riječi : *bol, periartritis humeroscapularis, kineziterapija, fizikalne procedure*