

Effectiveness of physical treatment at De Quervain's disease

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Abstract

Introduction: De Quervain's disease is a stenosing tenosynovitis of common tendon sheath of abductor policis longus and extensor policis brevis muscles. Due to the superficial positions it can easily lead to mechanical injuries of tendons and their sheaths. The disease more often affects women over 40 years old and people with certain professions who intensively use hand and fingers in their daily work. Pathological changes consist of sheath's fibrous layer thickening. The clinical condition develops gradually with the pain of varying intensity. It is localized above the radial styloid process and radiates from the back side of the thumb. The aim is to determine the efficacy of physical therapy at De Quervain's disease.

Methods: The study was conducted on 50 patients with De Quervain's disease who were reported to the CBR "Praxis" Sarajevo. With retrospective analysis the data was processed for the period from 01.01.2001. to 31.12.2011. year. Before the initiation of physical therapy assessment of functional status scored from 0 to 6 was performed. In the chronic phase physical therapy was performed, after which it underwent assessment of therapy success scores of 0-5. Criteria for inclusion in the study were patients with confirmed De Quervain's disease, patients of both sex and of all ages, and criterion for exclusion was non-compliance with treatment protocols.

Results: In the CBR "Praxis" with De Quervain's disease total of 50 patients were treated in that period, of which 34 women and 16 men. 38% of respondents received a score of 4, while 56% of patients at the end of treatment received a score of 5.

Conclusion: Physical therapy and kinesiotherapeutical procedures have greatly contributed to the elimination of symptoms and consequences of De Quervain's disease.

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Introduction

De Quervain's disease is a stenosing tenosynovitis of common tendon sheath of abductor policis longus and extensor policis brevis muscles. These two tendons, after separation from the back surface of the forearm, pass from the most lateral osteofibrous section of radii, crossing the outer surface of styloid process to be merged on the basis of the thumb (1). In doing so, they pass through a radiocarpal tunnel which only consists of bone and ligamentum anulare dorzale. In this osteofibrous channel tendons have a common synovial sheath.

Due to the superficial positions it can easily lead to mechanical injuries of tendons and their sheaths. The disease more often affects women over 40 years old and people with certain professions who intensively use hand and fingers in their daily work (pianists, typists, tailors ..). Pathological changes consist of sheath's fibrous layer thickening (2). Changes can be so intense that the wall of the sheath thickens two to three times more than normal. In extreme cases a true cartilaginous 3-4 cm long ring is creating, which narrows tendons (3). The clinical condition develops gradually with the pain of varying intensity. It is localized above the radial styloid process and its base, radiates from the back side of the thumb and radial side of forearm (4). Some patients complain of dropping things out of the hands. Radiographically, there is usually no changes, although it some-

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times can be spotted periosteal reaction. The disease is difficult to distinguish from styloiditis of radial procesus. After several months the disease can pass gradually, spontaneously, but there are cases known that lasted many years (5). The classic diagnostic test to confirm the disease is Finkelstein's test which is performed in the following manner: thumb in the palm bent and clasped with other fingers, and then bend the whole hand to the opposite side. In case of De Quervain's disease this maneuver causes severe pain in the tendons above and we say that the test is positive (6). Treatment begins with application of orthoses for the wrist and thumb. This prevents movements that cause symptoms, tendons rest, and thus a chance to heal is provided. Therapeutic effect is achieved with nonsteroidal antirheumatics and local infiltration of corticosteroids (5). As soon as the acute phase passes physical therapy is applied. Here benefits the application of ultrasound, light therapy, galvanization, diadynamic and interferential currents and iontophoresis (7). If recovery after conservative treatment fails, surgical treatment can be accessed (8). The aim is to determine the efficacy of physical therapy at De Quervain's disease and to determine the most common structure, occupation and age of the patients who suffer from enthesopathies of the upper extremities.

Research Methods

Patients

The study included all patients who reported to the ambulance CBR "Praxis" because of the pain in the area of styloid process and diagnosed De Quervain's disease in the period from 01.01.2001 to 31.12.2011 year. Based on a database of community clinic (CBR) "Praxis" in Sarajevo, in the period above due to pain caused by De Quervain's disease 50 patients of all ages and both gender were treated. To determine in which profession De Quervain's disease usually occurs, we included in the study the following professions: doctor, veterinarian, teacher, engineer, lawyer, economist, administrative worker, laborer, artisan, farmer, housewife, pupil, student, retired and others. Criteria for inclusion were diagnosed De Quervain's disease of any age and either sex. Crite-

ria for exclusion was failure to adhere to treatment protocols, as well as patients lost for follow up. Research was descriptive and analytical. For data collection we use the retrospective method. Establishing a diagnosis is conducted based on: patient history, clinical examination and radiographic findings.

The application of therapeutic procedures In the acute phase a following rehabilitation program was applied: inaction - the appeasement of pain, with immobilization for 7 days, cryotherapy - for reducing pain and swelling during -10 days in duration of 2-5 min. depending on the patient's subjective feelings, analgesic TENS - due to the reduction of the pain during 7-10 days in duration of 20 min., and the use of corticosteroids for local application with prolonged action. In the chronic phase ultrasound therapy, diadynamic currents, magnetic therapy, manual massage and kinesiotherapy were used.

Assessment of functional status of respondents Assessment of functional status of respondents was performed before and after treatment, and by the following methodology and the following grades:

- The rating "0" zero - unable to use hand
- The rating "1" - difficult to use the hand with the help of second-hand
- The rating "2" - difficult to use the hand with the help of hand tools
- The rating "3" - moves the hand without the help, but with severe pain
- The rating "4" - good functional status with min. sequelae
- The rating "5" - neat functional status
- The rating "6" - further medical treatment required (diagnostic or operative)

Evaluation of treatment The outcome of treatment is valorized with assessment of treatment success. The success of treatment is presented by evaluation of the results of the clinical condition after treatment, objectively valorized according to the following scheme:

- The rating «0» zero - unchanged condition (without treatment outcomes),
- The rating «2» - minimal improvement,
- The rating «3» - satisfactory functional improvement with sequels (sensory or motor),

- The rating «4» - good improvement and satisfactory functional restitution with minimal sequelae,
- The rating «5» - good restitution without outcomes of injury or illness
- The rating «6» - quit the treatment,
- The rating «7» - further medical treatment required (diagnostic or operative).

Statistical analysis

From the descriptive statistical methods, the most used is percentage representation.

TABLE 1. Age structure of respondents

Age structure of respondents									
Age	0-7	8-14	15-24	25-34	35-44	45-54	55-64	65-99	Total:
No. of patients	0	0	3	6	7	15	15	4	50

Results

The study was conducted in a medical institution, "PRAXIS", Center for Physical Medicine and Reha-

TABLE 2. Gender structure of respondents

Gender structure of respondents			
Gender	female	male	Total
Number of patients	34	16	50
Percent	68%	32%	100%

bilitation Sarajevo. Number of patients diagnosed with the De Quervain's disease is 50.

Discussion

According to information we received, and are found in Table 1, it can be rightly said that the greatest number of people who suffer from De Quervain's diseases is present in the active working population and the elderly. Most patients with this problem, in this study, 30 respondents were in the age from 45 to 64 years. Wolf JM, Sturdivant, RX, Owens BD, in his study "Incidence of de Quervain's tenosynovitis in a young, active population" have proven that the age over 40 years is a significant risk factor for the development of the De Quervain 's disease and that in female respondents this disease is significantly more frequent (9), which is consistent with our research. In Table No. 2 the gender structure of respondents is shown, where we can see that the number of female respondents is 34 or 68%, while the number of male respondents is 16, which is 23% of the total number of respondents who were involved in the study. Based on these data it can be clearly concluded that the problem of De Quervain's disease is far more pronounced in female respondents. Karen Walker-Bone and others, in their study "Prevalence and impact of musculoskeletal disorders of the upper limb in the general population", found that from the total sample of 6038 patients who had musculoskeletal problems in the upper extremities at De Quervain's disease accounted 0,5% of male respondents and 1.3% of female respondents (10), what is consistent with our study which also showed a significant difference in the prevalence of De Quervain's disease between the sexes.

TABLE 3. Structure of respondents by occupation

Occupation	No. of respondents	Percent	Total
1 Doctor	3	6%	50
2 Veterinarian	0	0%	100%
3 Teacher	2	4%	
4 Engineer	6	12%	
5 Lawyer	0	0%	
6 Economist	3	6%	
7 Laborer	5	10%	
8 Farmer	0	0%	
9 Administrative worker	12	12%	
10 Artisan	1	2%	
11 Housewife	4	8%	
12 Pupil	1	2%	
13 Student	2	4%	
14 Retired	9	18%	
15 Others	2	4%	
Total:	50	100%	

TABLE 4. Structure of professional activities

Structure of professional activities	Percent
1 Administrative worker	52%
2 Laborer occupations	18%
3 Housewife	8%
4 Retired	18%
5 Others	4%
Total:	100%

TABLE 5. Functional status of respondents

Assessment of functional status of respondents	No. of patients before treatment	No. of patients after treatment
0 - Unable to use hand	0	0
1 - Difficult to use the hand with the help of second-hand	0	0
2 - Difficult to use the hand with the help of hand tools	0	0
3 - Moves the hand without the help, but with severe pain	19	0
4 - Good functional status with min. sequelae	28	21
5 - Neat functional status	0	26
6 - Further medical treatment required (diagnostic or operative)	3	3
Total:	50	50

TABLE 6. Results of treatment

Assessment of treatment results	Number of respondents	Percent
0 - unchanged condition	0	0%
2 - minimal improvement	0	0%
3 - satisfactory improvement with outcomes of injury or illness	0	0%
4 - good improvement and satisfactory functional restitution	19	38%
5 - good functional restitution without sequelae	28	56%
6 - quit the treatment	0	0%
7 - further medical treatment required (diagnostic or operative)	3	6%
Total:	50	100%

From Table 3 and 4 it can be clearly seen in which profession has often occurred De Quervain's disease (52% for administrative workers and 18% for the laborer occupations). People with this problem are mostly dealing with job that requires repetitive movements of upper extremities. This problem also affects people who spend much time working on the computer which provokes pain due to constant repetition of stereotyped movements, and it is very common appearance for retired people. Shiro, T., Martin P., Lorraine C. in their study, "Prevalence and risk factors of tendinitis and related disorders of the distal upper extremity among U.S. workers: Comparison to carpal tunnel syndrome", found that from the 588 000 respondents 28% complained of various discomforts in hands which they called tenosynovitis, De Quervain, synovitis, etc., and the medical staff associated that problems with professional activities performed by respondents. It is stated in this study that these problems with hands are associated with movements of ulnar and radial deviation, flexion and extension of the hand, what corresponds with movements of the hands performing administrative and blue-collar occupations (11). Our study also showed that the De Quervain's disease usually affects administrative workers and laborers. Table 5 shows the functional status of respondents before and after treatment, which clearly shows a significant difference in favor of the functional condition of patients after therapy. Specifically, be-

fore therapy 19 respondents had grade 3 and 28 respondents had grade 4, after therapy 21 respondents had a 4, and 26 respondents had a grade of 5. After the therapy it can be concluded that the procedures of physical therapy gave good results what can be seen from the table below. Good improvement with satisfactory functional restitution has been shown in 38% of respondents, while 56% of respondents showed a good functional restitution without sequelae after treatment. A need for further medical treatment is indicated at 6% of respondents.

Conclusions

On the basis of this research we can conclude that the application of physical therapy is very effective for patients with De Quervain's disease. The most affected occupations are administrative workers because their work is directly associated with inadequate position and activities of the hands during work. Observing the gender structure of respondents, we can conclude that De Quervain's disease occurs more frequently in female population. Considering the age of the respondents, we come to the conclusion that De Quervain's disease most commonly affects people between 45-64 years old, and from this problem is most frequently affected the active working population.

Competing interests

None to declare

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