OVERVIEW IN TREATMENT OF DEQUERVAIN DISEASE

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ABSTRACT

DeQuervain disease is tenosynovitis of extensor pollicis brevis and abductor pollicis longus muscles, passing through the 1st osteofibrous canal on the dorsal part of the wrist. The typical clinical complaint is painful area round radial styloid, that is increasing during strength activities of the hand and thumb. Among the popular treatment - local applications or operations for this tenosynovitis, the recent popularity of the Extracorporeal shockwave therapy becomes useful method for treatment of tendon pathology. The following study presents primary experience in application of Shockwave therapy in cases with DeQuervain disease. The success rate of 80% proves the method as a reliable and save method in treatment of this chronic tendopathy of the hand.

Key words: DeQuervain disease, tenosynovitis, Extracorporeal shockwave therapy

INTRODUCTION

The Swiss surgeon DeQuervain first described the tenosynovitis of extensor pollicis brevis (EPL) and abductor pollicis longus (APL), passing through the first osteofibrous canal of the wrist (Fig.1). Since then this complaint is popu-

Fig. 1. Anatomy of the 1st osteofibrous canal and the 1st bone ray

lar as DeQuervain's disease. Symptoms are typical for female (age - 30-60 years), provoked by lifting activity in which the thumb is abducted and flexed, while the hand is ulnarly deviated. Activities such as inflating a blood pressure cuff, picking up a new baby out of a crib or lifting a heavy frying pan off the stove may provoke pain along the radial aspect of the wrist (6,7). The following stress tests are positive and typical for the disease:

- a. Filkenstein symptom- bended thumb by the examiner and ulnar tilting of the wrist (8) (Fig. 2-A).

Fig. 2-A. Filkenstein test - thumb is bended by the examiner and wrist is tilted ulnarly

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- b. Eichhoff symptom - the patient thumb is enclosed in the palm, then the wrist is deviated ulnarward by the examiner and pain is provoked (8) (Fig. 2-B).

Fig. 2-B. Eichhoff test - thumb is enclosed in the palm, then the wrist is deviated ulnarward by the examiner, provoking pain

The main cause of this synovitis is accepted to be over use and fatigue of the hand (1). There are some anatomical variations of the first osteofibrous canal: the first extensor compartment is divided by a septum, creating two separate tendon sheaths. Most patients with symptomatic disease have more than one abductor pollicis longus slip. These

Fig. 3-A . The standard surgery approach is transverse skin incision

Fig. 3-B. Longitudinal cut of the synovial sheath and release of the tendons (tenolysis)

variations make chronic irritation on the canal and are predisposal factors for the disease (6).

The treatment consists of conservative and surgical methods. Conservative ones are: physiotherapy, orthosis, local ointments. Local applications of corticosteroids injections are popular too with their quick pain relief, but there are few complications after their application - skin atrophy, depigmentation or neuritis of some n.radialis superficial branches (Vartenberg neuritis) (7).

The surgical treatment consists of transverse skin incision (Fig. 3-A) and longitudinal incision of the first osteophyrous canal, followed by longitudinal cut of the synovial sheath, release of the tendons (Fig. 3-B), skin suture and early mobilization of the wrist. The above mentioned anatomical aberrations, when encountered should be corrected - each separate sheath must be opened, as each tendon slip to be tenolized. Otherwise the symptoms will relapse. There are few complications after the surgery - large, rough and painful scars, neuromas and anterior dislocation of the tendons in forced wrist flexion.

Since 1992 the modification of D. Viet (7) is popular in the practice for the surgical treatment of DeQuervain tenosynovitis. It consists of transverse skin incision, release of radial nerve and superficial vein, transverse incision of first osteophyrous canal in its median part, elevation of fascial flap to its radial side. Further it is fixed to the subcutaneous layer during the skin suture. This fascial flap limits the possible anterior dislocation of the tendons.

Extracorporeal shockwave therapy (ESWT) is a method with increasing popularity in treatment of several orthopedic deceases (2,3). It is established in treatment of delayed bone union or nonunion, shoulder bursitis (4,5), humeral epicondylitis (10), plantar fasciitis (9). There are few new fields of application, like Achilos tendopathy, trochanteritis and wound healing. Many recent studies proved the increased level of enzymes, that stimulate local tissue vascularity and thus explain its healing process (11).

The aim of this study is to present the application of ESWT in treatment of DeQuervain decease.

MATERIAL AND METHODS

During the period 2007- 2009 ESWT was done in a total of 10 patients (women) with clinically proved DeQuervain decease, longer than 3 months with fulfilled different treatment methods in former time - local and oral treatment with NSAD, physiotherapy, local application of corticosteroids. All patients declared unsatisfactory results. The ESWT was presented to them as noninvasive method with no side effects. They agreed to be included in treatment and to be followed up three months.

The treatment protocol is as follows:

- Device: Storz Medical Masterpuls200 (Fig.4);
- Five applications (8000 pulses each) with 5 to 7 days intervals (Fig.5);
- Applicator R20, frequency 15 Hz;
- Pressure 1,2 Bar;

Fig. 4. Storz Medical Masterpuls 200 device with use or R20 (3)

Fig. 5. Positioning of the patient's hand, while doing ESWT

significant decrease of the complains and patient satisfaction increases (Fig.7).

The good and excellent results (VAS <20mm) were assessed in 8 (80%) of our patients. The rest 2 patients presented persistent pain and were addressed to surgery.

Table 1. VAS data of pain in all 10 patients. Eight of them (80%) got full recovery (VAS ≤ 20). The other two (20%) did not get pain relief and were addressed to surgery

Pt.No	VAS - 1 st procedure	VAS - 2 nd procedure	VAS - 3 rd procedure	VAS - 4 th procedure	VAS - 5 th procedure	VAS - 3 rd month
1	55	52	42	31	21	11
2	79	32	18	24	28	10
3	49	56	51	32	20	5
4	79	67	89	55	45	40
5	56	32	45	11	10	0
6	65	54	32	11	5	0
7	67	44	56	45	23	15
8	44	56	44	34	10	0
9	76	65	44	34	23	12
10	56	55	65	46	55	50
mean	63	51	49	32	24	14

- Contact skin gel;
- Duration of the procedure 7-8 minutes;
- Local anesthesia - not needed.

Visual analog scale (VAS) for pain (Fig.6) was used for following and assessment of the results. It was measured before each procedure (5 times) and on the 3rd month.

The results after treatment of DeQuervain disease with ESWT are presented in Table 1.

Mean pain level according to VAS continues with high range until the third week (3rd procedure). It is followed by

There were no signs of relapse in the presented group during period of follow up.

DISCUSSION

ESWT acquires large popularity as a non-invasive and save method in treatment of several chronic orthopedic disturbances (shoulder periarthritis, epicondilitis, plantar fasciitis, achilos tendinitis) The success rate in their varies from 75% to 85% (2,3,4,9).

CONCLUSIONS

The presented study is the first one in literature regarding the application of ESWT in DeQuervain disease. The primary success rate (80%) is similar to the results of other applications of ESWT in orthopaedics. The absence of any risks and side effects of the method and positive patient attitude makes it preferable and applicable in the daily practice. Further activities will be to acquire bigger patient group, followed up in longer period of time.

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PAIN SCALE

Fig. 6. Visual Analog scale (VAS) for assessing pain level. Excellent and very good results $VAS \leq 20$, poor - $VAS > 20$.

Fig. 7. Mean pain level (10 patients) according to VAS keeps high until the third week (3rd procedure), followed by significant decrease of pain

There are no published studies in the orthopedic literature for the application of ESWT in treatment of DeQuervain disease.