Effectiveness of Diacutaneous Fibrolysis of Carpal Tunnel Syndrome in a Diabetic Patient: a case report (I3A)

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Abstract

Diabetic patients have a double risk factor for presenting Carpal Tunnel Syndrome (CTS). The aim of this study is to report the effectiveness of a Diacutaneous Fibrolysis programme in a diabetic patient suffering from CTS at short and medium-term.

Introduction

Carpal Tunnel Syndrome (CTS) is the most common peripheral neuropathy in the upper quadrant. The prevalence for CTS ranges from 3.8% to 4.9% with a lifetime risk of 10%, which increases to a staggering 84% in patients with diabetes. Diabetes is linked to a double risk of developing CTS due to the increased intraneural pressure in the carpal tunnel or vascular deficiencies [1, 2].

Conservative treatment is recommended for mild and moderate cases, while a surgical approach is recommended for patients with severe CTS. However, even if patients with diabetic neuropathy may improve function and symptoms after CTS surgical release, they present more complications and worse results than CTS patients without this condition [3].

Although exercise and manual therapy are beneficial for patients with diabetic peripheral neuropathy, there is insufficient research on CTS in patients with systemic pathology [4].

The present study aims to analyse the effectiveness of physiotherapy treatment with Diacutaneous Fybrolisis in a diabetic patient suffering from CTS.

Materials And Methods

Study Design

This case report details the treatment and follow-up (post-treatment and 3 months) of a 59-year-old, driver, right-handed man, with diabetic type 1, suffering from severe bilateral CTS for more than 2 years. The patient is included in the surgery waiting list from Hospital Universitario Miguel Servet (Zaragoza). He had no history of surgical or trauma on the upper limb, contraindication for surgical or physiotherapy treatment and not treated by CTS for at least 6 months. A Research Ethics Committee approved the applied procedure (CEICA nº05/2021).

Outcomes

Data were collected for several effects modifying outcome.

Dependent outcomes collected were intensity of symptoms as pain, symptoms at night and paresthesias with VAS scale; Function with Boston Carpal Tunnel Questionnaire (BCTQ), DASH questionnaire, hand grip and pinch strength; Touch sensation with Semmes-Weinstein monofilaments; Mechanosensitivity of median nerve with ULNT-1 Test and remote sequence; Pshycological and quality of life aspect with MOS sleep scale and TAMPA scale ok Kinesiophobia; and improvements perception with GROC scale.

Intervention

The patient received, in the right-hand, one 45-min session once a week for three consecutive weeks at University of Zaragoza. The session was divided into 25-min of manual therapy combined with Diacutaneous Fibrolysis and 20-min of self-exercise instruction. Self-exercises were encouraged to be performed every day at least three times a day after the first session. Techniques used depended on patient clinical findings.

Results

After 3 weeks of treatment, all dependent outcomes improved except for symptoms scale of BCTQ, snoring subscale (MOS sleep scale), quantity of sleep (MOS sleep scale) and 1-4 finger strength.

Those improvements were maintained at 3 months follow-up, even in some variables with greater improvement. Differences were not observed for grip strength and kinesiophobia (Tampa scale).

Table 1. Pre-, post-treatment and 3 months follow-up in dependents outcomes.

	Baseline	Post-treatment	3 months
VAS (mm)			
Pain	46	**17***	**14***†
Night Symptoms	3	**1**	**0**†
Paresthesia	85	**7***	**11***†
BCTQ			
SSS (11-55)	32	32	**21***‡†
FSS (5-40)	21	**12***	**7***‡†
DASHe (0-100)	35,8	**10,8***	**5,8***‡†
MOSS (%)			
SLPD	16,3	**6,7***	**0***‡†
SLPSNR	40,0	40,0	**20,0***‡†
SLPSOB	60,0	**0***	**0***‡†
SLPA	50,0	**70,0***	**80,0***‡†
SLPS	26,7	**20,0***	26,7
SLPI	23,7	**20,0***	**13,3***‡†
SLPII	31,7	**23,3***	**17,1***‡†
SLPQRAW	1	0	**1***‡†
TAMPAs (11-44)	21	**16***	**16***‡†
Strenght (kg)			
Grip	30,6	**38,7***	**33,3**†
1-2 F	8,1	**8,3**	8
1-3 F	4,5	**4,7**	4,5
1-4 F	3,1	3	4
1-5 F	1,8	**1,9**	**2,7**†
NDT (º)			
ULNT-1 (elbow)	90	**122,3***	**100,1***‡†
Remote (wrist)	0	**20**^	**14**^†
Sensitivity SWM (1F to 5F)	4'08/3'84/3'84/3'84/3'61	3'84/3'84/3'84/3'84/3'61/3,22	3'61/3'61/3'61/3'61/3,22†
GROC	-	Minimally improved*	Much improved*‡†

VAS: Visual Analogue scale; SSS: Symptoms Severity scale; FSS: Function Severity Scale; SLPD: sleep disturbance; SLPSNR: snoring; SLPSOB: Awaken short of breath or with headache; SLPA: Sleep Adequacy; SLPS: Somnolence; SLPI: Sleep Problems Index I; SLPII: Sleep Problems Index II; SLPQRAW: Quantity of sleep; F: Fingers; NDT: Neurodynamic Test; SWM: Semmes-Weinstein monofilament.

*Minimal detectable change bettween Baseline/Post-treatment; †Maintains improvement; ‡ Minimal detectable change bettween Baseline/3months; ^No MDC values exist.

Discusion

Effectiveness of Diacutaneous Fibrolysis combined with self-exercise at short and medium term was reported.

Only one study found that a combination of manual therapy techniques was effective for pain and function at short-term [5], as our case.

The exclusion of diabetic patient in CTS studies and the paucity of studies looking at the effectiveness of manual therapy on patients with diabetes and CTS makes it impossible to compare results.

Further studies should include patient to obtain a true representation of the study sample.

Conclusion

We observed that a programme of Diacutaneous Fibrolysis treatment improved function, pain and quality of life in a diabetic type 1 men suffering from CTS.

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