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Original article

The role of self-efficiency toward pain following surgical treatment of carpal tunnel syndrome

Rôle de l'auto-efficacité face à la douleur dans le traitement chirurgical du syndrome du canal carpien

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Abstract

Some very poor results after carpal tunnel syndrome (CTS) surgery are difficult to explain. The main hypothesis of this study was that a relationship exists between self-efficiency toward pain and the difference between pre-operative and post-operative pain. The secondary hypothesis was that a relationship exists between self-efficiency toward pain and the pre-operative and post-operative QuickDASH score.

The records of 64 patients operated for purely subjective CTS were reviewed. The evaluation consisted in determining self-efficacy beliefs from two PSEQ2 questions (1: I can still accomplish most of my goals in life, despite the pain; 2: I can live a normal lifestyle, despite the pain), pain levels and the QuickDASH score.

There was an inversely proportional relationship between the pre-operative PSEQ2 and pain on one hand, and post-operative pain and the pre-operative QuickDASH score on the other hand. We found no correlation between the pre-operative PSEQ2 and post-operative QuickDASH score.

Self-efficiency beliefs as measured by PSEQ2 help to predict pain levels after surgical CTS treatment in the absence of sensory and/or motor deficits and/or associated morbidity.

Keywords: Self-efficiency; Pain; Carpal tunnel; Quick DASH; PSEQ2

Résumé

Certains mauvais résultats après chirurgie du syndrome du canal carpien (SCC) restent inexpliqués. L'hypothèse principale était qu'il existe une corrélation entre l'auto-efficacité face à la douleur et la différence entre la douleur avant et après intervention, et, hypothèse secondaire, entre l'auto-efficacité face à la douleur et la différence entre le score quick DASH avant et après intervention.

Les dossiers de 64 patients opérés d'un SCC idiopathique subjectif pur ont été revus. L'évaluation consistait à mesurer le PSEQ2 à partir de 2 questions (1: je peux encore atteindre la plupart de mes objectifs dans la vie, malgré la douleur; 2: je peux mener une vie normale, malgré la douleur), la douleur et le score quick DASH.

Il existait une relation inversement proportionnelle entre le PSEQ2 préopératoire et la douleur préopératoire d'une part, la douleur postopératoire et le score quick DASH préopératoire d'autre part. On ne trouvait pas de corrélation entre le PSEQ2 préopératoire et le score quick DASH postopératoire.

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Au total, l'auto-efficacité mesurée par le PSEQ2 permet de prédire l'intensité de la douleur après traitement chirurgical du SCC en l'absence de signes déficitaires sensitifs et/ou moteurs et/ou de morbidité associée.

Mots clés : Auto-efficacité ; Douleur ; Canal carpien ; Quick DASH ; PSEQ2

1. Introduction

Surgical treatment of carpal tunnel syndrome (CTS) leads to good outcomes in the majority of cases [1]. Most poor outcomes are either related to a technical error or to associated morbidity [2]. But some cases of poor outcome remain unexplained [3]. Some authors have shown that self-efficacy toward pain could explain the unexpected good or poor outcomes in patients suffering from volar plate sprains of the proximal interphalangeal joints [4].

The main hypothesis of this study was that a relationship exists between self-efficacy toward pain and the difference between pre-operative and post-operative pain after surgical CTS treatment. The secondary hypothesis was that a relationship exists between self-efficacy toward pain and the difference between the pre-operative and post-operative QuickDASH before and after surgical CTS treatment.

2. Patients and methods

All records of patients operated in our surgical unit between April 1st 2015 and September 3rd 2015 for idiopathic subjective CTS were reviewed retrospectively. We excluded patients under 18 years of age, patients with sensory and/or motor deficits in the median nerve's territory, patients with associated morbidity (diabetic neuropathy, rheumatoid arthritis (RA), amyloidosis) and patients who were operated for another pathology at the same time. The study included 64 patients (45 women, 19 men) aged 56 years on average (range 35–88 years).

The surgical technique was the same for every patient. After local anesthesia using 1% xylocaine and inflation of a tourniquet, a 15-mm incision was made in the axis of the fourth finger. The flexor retinaculum and volar carpal ligament were dissected using scissors and then cut. Immediate post-operative mobilization was recommended.

The outcomes were assessed using a questionnaire that the patients filled out during the pre-operative and post-operative consultations (6 weeks afterwards). This questionnaire measured the PSEQ2, pain, and QuickDASH score. The PSEQ2 was calculated using two items (1: I can still accomplish most of my goals in life, despite the pain; 2: I can live a normal lifestyle, despite the pain) rated from 0 (not confident at all) to 6 (completely confident) [5]. The pain was measured using a numeric scale ranging from 0 (no pain) to 10 (worst imaginable pain). The QuickDASH was rated from 0 (normal use of the upper limb) to 100 (unusable upper limb) [6].

The statistical evaluation compared the mean values of the following matched quantitative variables: pre-operative PSEQ2 and pain, pre-operative PSEQ2 and post-operative pain, pre-operative PSEQ2 and QuickDASH score, pre-operative PSEQ2 and post-operative QuickDASH score.

Bayesian analysis methods were used in this study; they combine prior information with information obtained from observed data to form knowledge about the parameter of interest (average, difference of averages, odds ratio, linear regression coefficient). This allows calculation of the probability for the parameter of interest to exceed a threshold value, and therefore observe a positive or negative difference, or calculate the probability for that difference to exceed a certain value. This result is more informative than a binary result with $P < 0.05$ or $P > 0.05$. If the interval of the parameter did not include 0, the difference was considered significant.

3. Results

The results of the analysis are presented in Table 1.

The pre-operative PSEQ2 was 3.65/6 on average and the pre-operative pain was 4.48/10 on average. There was an inversely proportional, statistically significant relationship between the two variables, with $T = -5.55$ (-0.72, -0.38). The pre-operative PSEQ2 was 3.65/6 on average and the post-operative pain was 4.5/10 on average. There was an inversely proportional, statistically significant relationship between the two variables, with $T = -2.37$ (-0.5, -0.05).

The pre-operative PSEQ2 was 3.65/6 on average and the QuickDASH score was 50/100 on average. There was a statistically significant negative correlation between the two variables, with $T = -5.56$ (-0.72, -0.39). The pre-operative PSEQ2 was 3.65/6 on average and the post-operative QuickDASH score was 45.83/100 on average. There was no statistically significant correlation between the two variables, with $T = -1.3$ (-0.39, 0.09).

4. Discussion

The feeling of personal efficacy or self-efficiency is a key concept in Bandura's sociocognitive theory [7], and is defined as an individual's belief in his capacity to organize and perform required tasks in order to obtain the desired results and adapt to the requirements of his environment [8]. Self-efficiency in general can be measured by the Ralf Schwarzer scale, a 10-item questionnaire ranging from 0 (minimum self-efficiency) to 30 (maximum self-efficiency) [9]. Several studies have shown that the concept of self-efficiency can be applied to evaluating health-related behaviors, especially chronic pain [8,10–13]. Self-efficiency toward pain is measured by the ''Pain Self Efficiency Questionnaire'' scale (PSEQ) using 10 items [14]; it was simplified into two questions by the PSEQ2 [5].

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