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Case Report

Cognitive Functional Therapy (CFT) for chronic non-specific neck pain

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ABSTRACT

This case report presents the effect of Cognitive Functional Therapy (CFT) in a patient with chronic non-specific neck pain. The patient believed that pain signified tissue damage, and demonstrated pain catastrophizing, hypervigilance, stress sensitivity, and movement impairment of the neck, during extension and rotation. The CFT intervention integrated a cognitive approach with manual therapy and active exercises to encourage the patient to trust her neck again. One month after the first appointment, the patient had recovered confidence, and the pain and disability had disappeared almost entirely.

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1. Background and purpose

Cognitive Functional Therapy (CFT) is a multidimensional biopsychosocial approach developed for the management of patients with low back pain (LBP) (Meziat Filho, 2015; Meziat Filho et al., 2016; O'Keefe et al., 2015a; Rabey et al., 2015). The clinical reasoning framework that underpins it, guides the therapist in a process that considers the contribution of patho-anatomical factors where present, neurophysiological mechanisms, cognitive and psychosocial, lifestyle and physical factors, such as maladaptive movement behaviors, body schema distortions and muscle deconditioning (Vibe Fersum et al., 2013).

CFT is substantially different from Cognitive Behavior Therapy (CBT) mainly regarding the integration of the cognitive factors with the physical factors. While CBT is in essence a psychological treatment that aims to improve the way that an individual manages and copes with their pain, CFT also includes the direct challenging of the maladaptive behaviors in a cognitively integrated, functionally specific and graduated manner (Cherkin et al., 2016; O'Keefe et al., 2015b).

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Although both LBP and neck pain (NP) patients present similar cognitive and psychosocial aspects influencing their functional behavior, to the best of our knowledge there is no study applying CFT to chronic neck pain (NP) (Dimitriadis et al., 2015; Sarig Bahat et al., 2014). Therefore, the aim of this case report is to present the effect of CFT applied to a patient with chronic non-specific NP.

2. Case descriptions

A 42-year-old female reported 18 years of chronic non-specific neck pain. When in her twenties she worked as a secretary and used to feel pains and aches in her neck while sitting and working on the computer. The first MRI scan, performed nine years before the beginning of the treatment, yielded her a temporary disability pension, because of the presence of a herniated disc at C5-C6. After the birth of her second child, which was seven years before the beginning of the treatment, the symptoms got worse and she also started to suffer from headaches. Although she did not enjoy physical exercise, she used to go to the gym, even with constant pain. Her pain decreased after exercising in the gym, mainly after the massage performed by her instructor. She used to be treated with acupuncture, but the improvement lasted only two days. Sometimes non-opioid analgesics helped. The patient expressed

her negative beliefs about her neck condition and her expectation regarding the results of a second MRI scan, already performed, as follows:

“Now it must be totally worn and torn, and must be worse because I feel more pain” (Supplementary Video S1).

Video S1: <https://www.youtube.com/watch?v=ATwakrFThg8>

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jbmt.2017.03.010>.

The patient reported a localized spot of pain and a burning sensation on the neck and was asked if she knew what the cause of that pain was. She said that she did not know, but feared it was cancer (Supplementary Video S2). She also mentioned a high level of stress and disappointment regarding her relationship with her daughter as provocative factors (Supplementary Videos S3 and S4). When asked about the most provocative activity, she reported that lying down was worse than standing. A supine position and pressure on the painful spot increased the symptoms. Although she said that she slept for more than seven hours, sometimes she went to bed with pain, and when waking up the pain was still there, along with a headache. She reported a lack of patience with adhering to a physical therapy treatment and stated:

Video 2: <https://www.youtube.com/watch?v=NdNcgUeGV38>

Video 3: <https://www.youtube.com/watch?v=UqI9Z606JZc>

“I would have surgery and end this misery. I was about to make an appointment with a neurosurgeon.” (Supplementary Video S5).

Video 4: <https://www.youtube.com/watch?v=bklw7oeoli8>

Video 5: <https://www.youtube.com/watch?v=gCs8JqG0x-g>

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jbmt.2017.03.010>.

She was asked if she was in the habit of palpating the painful spot, and she said:

“Yes, I do! For a long time! I do this to identify where the pain is.” (Supplementary Video S6).

Video 6: <https://www.youtube.com/watch?v=ukpMoZbw9R8>

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jbmt.2017.03.010>.

3. Examination

During the physical examination, her pain in the cervicothoracic and interscapular regions (Fig. 1) was 8/10 (Numerical Pain Scale) and her disability was 22% on the Neck Disability Index (Cook et al., 2006). The most affected dimension was the headache (3 points). The ability to read and also her leisure hours were impaired (2 points). With regard to the Örebro Musculoskeletal Pain Screening Questionnaire – Short Form (OMPSQ–SF) (Fagundes et al., 2015) she was at high risk of long-term pain-related disability (84 points). The second MRI scan result, brought in the second appointment, showed a disc protrusion at the C5–C6 level (Fig. 2).

Palpation of the cervicothoracic region was very painful. There were no neurological deficits, and all the upper limb neurodynamic

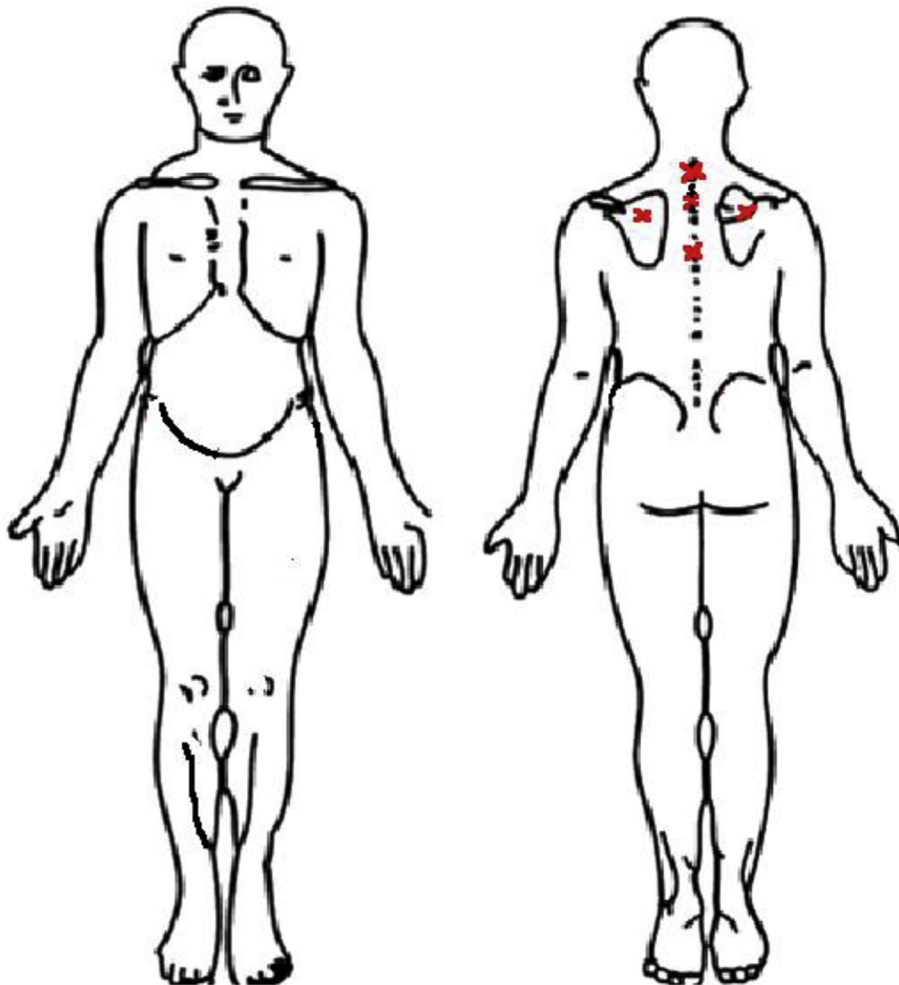


Fig. 1. Symptoms drawn on the body chart by the patient.

tests were negative. Her range of motion was diminished. Rotation and extension were both actively painful and restricted. The lack of extension could be seen in the typical cervical spine and the expression of suffering on the face (Fig. 3 and Supplementary Video S7). **Video 7:** <https://www.youtube.com/watch?v=iq65C0Plq64>

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jbmt.2017.03.010>.

4. Intervention

Management of this patient was based on the maladaptive



Fig. 2. Second Magnetic Resonance image.

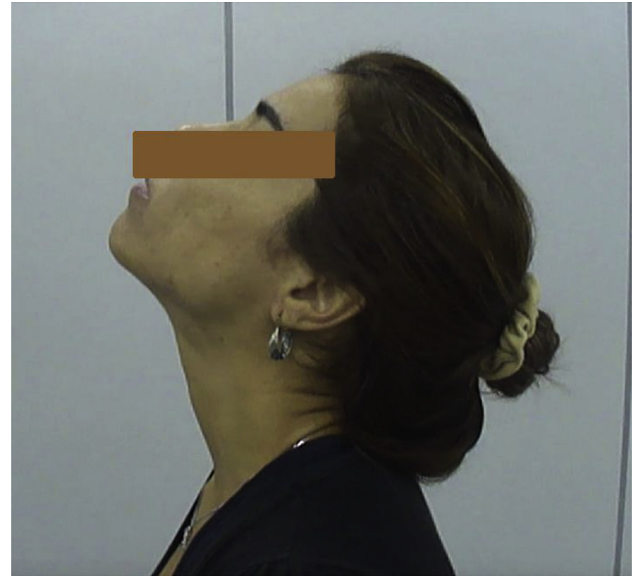


Fig. 3. Neck extension in the first appointment.

cognitive, functional and movement behavior, in an integrated manner. The primary objective of the cognitive intervention was to change the patient's belief that the structural damage shown on the MRI caused her pain (Supplementary Videos S8 and S9). Such thinking was probably leading to pain catastrophizing and hypervigilance. Reflective questioning was used to engage the patient in thinking through her ideas and being able to determine the validity of her beliefs about the problem (Moran, 1998). The facts that there is a very high prevalence of disc protrusion in the cervical spine in asymptomatic people, and that the presence of pain is not a sign of tissue damage, were mentioned (Kato et al., 2012; Kim et al., 2013; Nakashima et al., 2015). In addition, the positive therapeutic alliance was enhanced with eye contact while listening to the patient, demonstration of emotions through facial expression to facilitate nonverbal communication, and adopting a posture of attention, mutual respect and receptivity (Fagundes et al., 2017).

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jbmt.2017.03.010>.

Video 8: <https://www.youtube.com/watch?v=S9Czs077HFk>

Video 9: https://www.youtube.com/watch?v=6Ax37wdpq_0



Fig. 4. Neck extension in the second appointment.

Management of the pain hypervigilance was another important aspect of the cognitive and behavioural intervention. The habit of palpating the painful area, on the neck and on the high thoracic spine, was challenged with the explanation that this habit could feed and maintain the painful area with a low-sensitivity threshold (Supplementary Video S6 and S10).

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jbmt.2017.03.010>.

Because the patient presented a restriction of the range of motion in extension and rotation, the strategy of treatment for the maladaptive functional behavior at the first appointment was to expose the patient to extension and rotation movements in a more confident and relaxed way. Before the exercise, a thoracic thrust manipulation was accomplished with the aim of decreasing muscle activity in the neck and also facilitating the active exercise (Cross et al., 2011; Masaracchio et al., 2013). The extension exercise, with a focus on the typical cervical spine segments as described by O'Leary et al. (2009), was performed with a four-point kneeling position. As long as the patient started to recover the extension, the rotation exercise was performed, with the patient seated, using sustained natural apophyseal glide (SNAG) (Lopez-Lopez et al., 2015), without the end range overpressure. The following at home exercises were prescribed: (1) scapular mobilization, as described by Wilk et al. (2002); and (2) Rocking backward to increase thoracic flexion, as described by Sahrman (2002).

This study follows the principles of the Declaration of Helsinki. The patient has given written consent for the participation in this study and for the inclusion of the photos and videos.

Video 10: https://www.youtube.com/watch?v=KL6YZR_E7UU

5. Outcomes

One appointment and a return after one month were enough to have an impact on the course of the patient's chronic neck pain. In the assessment of the second appointment, one month after the first one, the patient was able to extend and rotate her neck free of pain and reported that she was almost asymptomatic and had stopped the habit of palpating her spine. The patient said:

"I've stop worrying about my neck"; "I've been much better for a month";

"All those movements I couldn't do, have improved" (Supplementary Video S11).

Video 11: <https://www.youtube.com/watch?v=DK6iaNRgYAo>

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jbmt.2017.03.010>.

The pain was 0–1/10, the disability (NDI) was 6 and the OMPSQ-SF score was 3. There was no more constant pain and no more movement impairments. The neck extension movement was recovered and all the cervical movements were free of pain (Fig. 4, Supplementary Video S12 and S13).

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.jbmt.2017.03.010>.

Video 12: <https://www.youtube.com/watch?v=vV0OUJpe9d8>

Video 13: <https://www.youtube.com/watch?v=DBxDT0yJhIM>

6. Discussion

Although CFT was developed and tested for chronic non-specific LBP (Vibe Fersum et al., 2013), the concepts may be adapted to chronic non-specific neck pain (CNSNP). This case report highlights the importance of a multidimensional biopsychosocial approach for assessing and treating chronic CNSNP. The patient presented the belief that her cervical spine was worn and torn. This is also common in LBP patients (Meziat Filho, 2015; Meziat Filho et al., 2016). A large number of patients with chronic LBP hold biomedical beliefs about the cause of the problem, attributing pain to the structural/

anatomical vulnerability of their spine (Baird and Haslam, 2013; Bunzli et al., 2015). This belief is associated with the advice given by health-care practitioners and the results of radiological spinal imaging (Lin et al., 2013). Those assumptions are interchangeable among low back and neck pain patients. There is evidence that, as well as in the lumbar spine, the prevalence of a herniated disc in the cervical spine is high (Lee et al., 2013; Nakashima et al., 2015). Kim et al. (2013) found a close relationship between the cervical and lumbar degenerative changes, including herniated discs, in asymptomatic people. Since the prevalence of pain in the neck is almost the same as in the lower back, it is not surprising that patients with chronic non-specific back or neck pain share the same beliefs.

The patient also reported that the stress regarding her relationship with her daughter was a trigger for the neck pain. This factor may act to reinforce maladaptive movement, increasing sensitization and disability levels. There is evidence that the dysregulation of the hypothalamic-pituitary-adrenal axis alters central pain processing and immune and neuroendocrine function, promoting central sensitization (Paananen et al., 2015). Although the intervention did not aim to affect the patient's relationship with her daughter, reflective questioning could have helped the patient to realize that the primary pain trigger was not mechanical.

Functional maladaptive behavior was observed when she tried to extend the cervical spine. There was impaired movement in extension as well as in rotation. More interesting is the fact that the patient didn't practise any exercise for improving extension or rotation at home. The specific exercise for this impairment was only performed at the first appointment after a thoracic thrust manipulation. However, her movement was completely recovered one month later. As the exercises carried out at home by the patient were not specifically for extension impairment, this leads to the hypothesis that the pain relief and the improvement in the functional behavior were not dependent on the home neck extension exercises. It is advocated that the recovery was mediated by the change in negative belief and the mitigation of the pain hypervigilance. A decrease in pain sensitization was observed at the second appointment. Not only was the extension movement completely recovered, but also the rotation and side-bending were no longer provocative.

This case report described the benefits of CFT adapted for a patient with non-specific NP. This therapy protocol resulted in reduced pain and the remediation of functional disability. The cognitive intervention for changing the patient's negative beliefs in relation to the biomedical model was integrated with manual therapy and exercise. This was essential for enabling her to regain confidence in her body and return to her normal life.

Disclosure of interest

The authors report no conflicts of interest.

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