Headache Medicine

Correlation between kinesiophobia, muscle strength and neck endurance in patients with migraine

Adrila de Cassia Cabral Norato[1] (iD), **Gabriella de Almeida Tolentino**[1] (iD), **Carina Ferreira Pinheiro-Araújo**[2] (iD),
Lidiane Lima Florencio[3] (iD), **Anamaria Siriani de Oliveira**[1] (iD), **Fabíola Dach**[1] (iD), **Débora Bevilaqua-Grossi**[1] (iD)

[1]Ribeirão Preto Medical School, University of São Paulo, Ribeirão Preto, Sao Paulo, Brazil
[2]Federal University of Alfenas, Alfenas, Minas Gerais, Brazil.
[3]Universidade Rey Juan Carlos, Madrid, Spain.

Introduction

Migraine is a highly disabling primary headache that can be accompanied by pain and musculoskeletal dysfunction in the cervical region. These individuals with cervical musculoskeletal dysfunction present a greater tendency toward fear and catastrophic thoughts and a greater risk of migraine chronification, developing behaviors such as hypervigilance in order to avoid further injury presenting the fear of movement which can be characterized as kinesiophobia. Kinesiophobia is defined as an "irrational and devastating fear of movement, arising from a belief in the fragility of injury or a fear of re-injury." In addition, kinesiophobia can also be characterized as a fear of symptoms of fatigue or exhaustion, physical or mental discomfort. Individuals with cervical musculoskeletal dysfunctions are more prone to fear and catastrophic thoughts, and have a higher risk of migraine chronification, as well as an overreaction to actual or potential threats, developing behaviors such as hypervigilance in order to avoid further injury. The Kinesiophobia is a prevalent condition in individuals with migraine and the association between the presence of migraine and kinesiophobia has recently been investigated. However, it is not yet known whether there is a correlation between muscle strength and cervical endurance with kinesiophobia.

Objective

To evaluate the correlation between muscle strength and neck muscle endurance with kinesiophobia in patients with migraine.

Methods

Were included 70 women aged between 18 and 55 years, with a mean age of 31 years (SD=9.35; CI=2.19), and a mean body mass index of 23.5 (SD=3.63; CI= 0.85), diagnosed according to the 3rd edition of the ICHD-3. Regarding the clinical characteristics of these patients, they presented headache onset at 14.5 years (SD=9.57; CI=2.24), a frequency of 12 days in the month (SD=9.74; CI=2.28), the intensity of 8/10 on the Numerical Pain Rating Scale (NPRS) (SD=1.60; CI=0.37). The Multi-Cervical Rehabilitation Unit (MCU) was used to assess cervical strength and endurance. The cervical strength was measuring using the media of 3 maximum voluntary isometric contractions for 3 seconds in flexion, extension, and lateral flexion movements. Cervical muscle strength was measured in seconds from 50% of the maximum voluntary isometric contraction of the cervical flexors and extensors and was assessed using MCU. Tampa Scale for Kinesiophobia (TSK) questionnaire was used to evaluate the Kinesiophobia. The TSK was culturally adapted to other populations, for other dysfunctions, and its construct validity was also performed for several conditions and has good reliability. This study was approved by the research ethics committee (process 12145/2016). For statistical analysis, Spearman's correlation coefficient (rho) was calculated, and the correlation was classified as weak (rho < 0.30), moderate (rho between 0.30 to 0.70), and strong (rho > 0.70) using p ≤ 0.05.

Results

The mean TSK score was 38 points (SD=8.94; CI=2.09). The mean strength for flexion was 6.22 N/Kg(SD=2.5; CI=0.5), extension 9.99 N/Kg (SD=3.6; CI=0.84), lateral flexion right 6.43 N/Kg (SD=2.4; CI=0.5) and left 6.86 N/Kg (SD=2.31; CI=0.54). The mean endurance cervical was 13s for flexion (SD=17.23; CI= 4.03) and 60s for extension (SD= 93.6; CI= 21.9). For cervical muscle endurance, a weak and negative significant correlation was found between TSK and cervical flexors muscle endurance (rho =-0.25; p=0.03). No significant correlations were found for muscle strength in flexion (rho=0,17; p= 0,14), extension (rho=- 0.01; p=0.87) and lateral flexion right (rho=-0.17; p=0.15) and left (rho=-0.12; p=0.29), and cervical extensor endurance (rho=-0.20; p=0.08).

Conclusion

The findings showed that a higher TSK score is related to a worse endurance of the cervical muscles. However, these correlations are weak and should be interpreted with caution.

Keywords: Migraine disorders, Headache, Neck pain, Kinesiophobia.