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Short Review

The Effect of Self-Myofascial Release Method on the Suboccipital Muscle Group in the Treatment of Cervicogenic Headache

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Abstract

The primary objective of this study is to investigate the short-term and long-term effects of the Self-Myofascial Release Method (SMFR) on the suboccipital muscle group in the improvement of cervicogenic headache. Additionally, the study aims to compare the therapeutic mechanism of Self-fascial Release and acupuncture in the treatment of cervicogenic headache. Through the diagnostic criteria of the Cervicogenic Headache International Study Group, the Mankowski Pain Assessment Scale (MPS), the Pittsburgh Sleep Quality Index (PSQI), and the Accompanying Symptoms Total Score, a randomized controlled study was conducted from June to August 2022 involving 30 participants exhibiting cervicogenic symptoms. The experimental group underwent a four-week online SMFR training, as described in "Anatomy Train", while the control group was given a four-week online acupuncture point FengChi (GB20) massage, which is recognized as an effective treatment for headaches concerning Traditional Chinese Medicine Acupuncture Therapeutics. The two controlled experiments were carried out at the same time. Participants from both groups completed assessments using the MPS, PSQI, and TSAS before treatment, during the treatment period, immediately after treatment, and four weeks post-treatment. The results indicate that SMFR demonstrates favorable outcomes as a treatment method for cervicogenic headaches.

Keywords: Cervicogenic Headache; Randomized controlled trial; Self-Myofascial Release Method; Therapeutic effect

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Background

Cervicogenic Headache (CGH) is a prevalent form of headache that performed with four key characteristics: neck movement or pressure on sensitive points within the neck, restricted neck mobility, audible sounds, and stiffness during movement, and recurrent unilateral or bilateral headache accompanied by shoulder or arm pain [1]. The pain typically originates in the neck region and extends to the top of the head and forehead, exhibiting characteristics of referred pain [2]. The estimated prevalence of CGH ranges from 0.4% to 4% [3]. Physical therapy is considered the initial treatment approach for CGH [4]. Additionally, Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), glucocorticoids such as Diprospan and triamcinolone acetonide, and pulsed radiofrequency are commonly employed therapeutic interventions for CGH.

Self-Myofascial Release Method

The Self-Myofascial Release Method is founded upon the concept of the myofascial meridian, as described by Rolf. The myofascial system encompasses both muscles and fascia, which are further categorized into superficial and deep layers. These components synergistically form an interconnected network that achieves biomechanical equilibrium, giving rise to the concept of "myofascial" [5].

Self-Myofascial Release (SMFR) has demonstrated beneficial effects on the human body, including improvements in arterial stiffness and augmentation of parasympathetic nervous system activity. Furthermore, Jong's study has revealed that anesthesia of the posterior soft tissues in the neck can lead to symptoms such as headaches, dizziness, and even ataxia [6]. This finding further supports the notion that the functioning of the suboccipital muscles plays a prominent role in the development of cervicogenic headaches.

Methods

Study Design

The present study is a randomized controlled trial conducted over a duration of four weeks, involving a total of 30 participants. Among them, 20 individuals were allocated to the intervention group, while the remaining 10 were assigned to the control group. The control group received acupoint massage targeting FengChi (GB20), whereas the intervention group underwent self-myofascial release (SMFR) techniques. To facilitate the SMFR intervention, participants were required to watch researcher-provided instructional videos on a self-curated YouTube channel daily. The study design employed parallel control between the two groups, as well as pre-and post-comparisons within each group.

Inclusion criteria for participant selection were as follows: (1) Meeting the diagnostic criteria established by the International Headache Society for cervicogenic headaches; (2) Previously diagnosed with cervicogenic headaches; (3) Age ranging from 18 to 64 years; (4) Possessing at least an elementary school education, with adequate reading comprehension skills; (5) Demonstrating normal mobility

and the ability to actively perform fascial release exercises; (6) Providing informed consent and signing the informed consent form.

Results

Following four weeks of online Self-Myofascial Release (SMFR) practice in the intervention group, significant improvements were observed in the Mankowski Pain Scale (MPS) scores. The highest MPS score decreased from 4.5±1.76 in the first week to 1.85±1.226 in the fourth week ($p<0.05$). Similarly, the lowest MPS score decreased from 2.45±1.63 in the first week to 0.90±0.788 in the fourth week ($p<0.05$).

In terms of the Pittsburgh Sleep Quality Index (PSQI), the intervention group exhibited superior outcomes compared to the control group. The PSQI scores of the intervention group decreased from 9.18±5.88 in the first week to 5.05±4.74 in the fourth week ($p<0.05$). Conversely, the PSQI scores of the control group decreased from 7.10±5.26 in the first week to 3.55±4.34 in the fourth week ($p>0.05$).

Regarding the Accompanying Symptoms Total Score (TSAS), the intervention group demonstrated significant reductions in scores from 8.65±4.88 in the first week to 3.85±3.03 in the fourth week ($p<0.05$). Conversely, the control group exhibited a decrease in scores from 5.30±3.56 in the first week to 3.18±4.09 in the fourth week ($p>0.05$).

Discussion

The myofascial peanut could deeply penetrate the suboccipital muscle group in the cervical region. Notably, the suboccipital muscle group possesses a rich abundance of muscle spindles, with approximately 36 muscle spindles per gram of tissue. These specialized sensory receptors are responsible for detecting muscle tension. The tension within the suboccipital muscle group crucially influences the coordination of eye movements, head and neck mobility, and the functioning of the lumbosacral musculature. This phenomenon aligns with the concept of coordinated muscular and fascial connections discussed in the context of Anatomy Trains.

Fengchi (GB20) and the suboccipital triangle region exhibit anatomical alignment. The superficial layer of this region comprises muscles such as the sternocleidomastoid and semispinalis capitis, while the deeper layer consists of the primary suboccipital muscle group, including the superior oblique, inferior oblique, rectus capitis posterior minor, and rectus capitis posterior major muscles. This area is traversed by important structures like the occipital artery, suboccipital nerve, greater occipital nerve, and vertebral artery. Consequently, strain in the suboccipital muscle group can adversely affect neighboring structures, leading to clinical symptoms such as vertigo, cervicogenic headaches, and visual abnormalities [7]. Thus, intervention and therapeutic approaches targeting the suboccipital muscle group play a significant role in treating cervicogenic headaches. In terms of a comparative analysis between point-specific and regional approaches, the objective of myofascial release techniques is to target the suboccipital triangle region, encompassing the FengChi (GB20) as one of its constituents. During myofascial release procedures, the applied force not only stimulates the suboccipital muscle group but also influences the surrounding area, including the FengChi (GB20), adjacent acupoints, and the surrounding muscular and fascial structures. Moreover, the massage technique employed is characterized by a gentle and subtle application of pressure.

Conclusion

The study revealed significant differences in self-reported pain scores before and after the application of the myofascial release technique. Additionally, there were significant differences in the effectiveness of acupoint treatment targeting FengChi (GB20) in pre- and post-scores of myofascial pain syndrome (MPS). However, only the myofascial release technique demonstrated significant differences in sleep quality scores and accompanying symptom scores. These findings suggest that the myofascial release technique is superior to a single acupoint treatment in terms of pain improvement, sleep quality, and accompanying symptoms.

The study concludes that self-training with the myofascial release technique, which involves massaging a larger area, is more effective than targeting a single acupoint for patients with cervicogenic headaches. Future research investigating the massaging of neck acupoints or the use of massage tools may benefit from exploring combinations of multiple points and areas to observe changes in effectiveness.

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