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Comparison of Genders in the Effectiveness of Acupuncture Therapy in Tension-Type Headache

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ABSTRACT

Objective: Tension-type headache (TTH) with an average lifetime prevalence of 46% (12-78%) in adults is the most common primary headache type. Acupuncture treatment is one of the adjunctive therapies in tension type headache so we wanted to evaluate the response difference of acupuncture between genders. **Materials and Methods:** In this retrospective study, the medical records of TTH patients, aged between 18 and 60, who did not receive conventional medical treatment (patient refusing medical treatment or intolerance due to drug side effects) and completed pre-determined sessions of acupuncture therapy in the outpatient clinics between 2017 and 2019 were evaluated. The monthly attack frequency, attack severity (Visual Analogue Scale), and the duration of attacks before and after acupuncture treatment between genders were documented. **Results:** A total of 17 patients meeting the study criteria were included in the study. No statistically significant difference in the frequency, the duration, and the severity of monthly attacks before and after the treatment were found between the genders. The monthly attack frequency and Visual Analogue Scale (VAS) score were found to be significantly decreased in women themselves before and after treatment in themselves. There was no statistically significant difference in the frequency, duration and severity of monthly attacks before and after the treatment among the men. **Conclusion:** Acupuncture should be considered as an alternative treatment option, especially in women with chronic TTH who do not want to use drugs or who have tolerability problems due to side effects or combination with medical therapy.

Keywords: Tension-Type Headache, Acupuncture, Gender Differences.

Gerilim Tipi Baş Ağrısında Akupunktur Tedavisinin Etkinliğinde Cinsiyetlerin Karşılaştırılması

ÖZ

Amaç: Gerilim tipi baş ağrısı (TTH), erişkinlerde yaşam boyu ortalama %46 prevalans (%12-78) ile en sık görülen baş ağrısı tipidir. Akupunktur tedavisi, gerilim tipi baş ağrısında yardımcı tedavilerden biri olduğundan, bu çalışmada akupunkturun cinsiyetler arasındaki yanıt farkını değerlendirmek istedik. **Gereç ve Yöntem:** Bu retrospektif çalışmada, poliklinikte konvansiyonel tıbbi tedavi almayan (tıbbi tedaviyi reddeden veya ilaç yan etkileri nedeniyle intoleransı olan) ve önceden belirlenmiş akupunktur tedavisi seanslarını tamamlayan 18-60 yaş arası TTH hastalarının 2017-2019 yılları arasındaki tıbbi kayıtları incelenmiştir. Cinsiyetler arasında aylık atak sıklığı, atak şiddeti (Görsel Analog Skala) ve akupunktur tedavisi öncesi ve sonrası atak süreleri kaydedildi. **Bulgular:** Kriterlere uygun toplam 17 hasta çalışmaya alındı. Cinsiyetler arası aylık atak sıklığı, atakların süre ve şiddetinde tedavi öncesi ve sonrası istatistiksel olarak anlamlı farklılık bulunmadı. Kadınlarda aylık atak sıklığı ve VAS (Visual Analog Skala) skoru tedavi öncesi ve sonrası istatistiksel olarak anlamlı şekilde azalmış bulundu. Erkeklerde ise tedavi öncesi ve sonrası aylık atak sıklığı, atakların süre ve şiddetinde istatistiksel açıdan farklılık bulunmadı. **Sonuç:** Akupunkturun kronik TTH tedavisinde ilaç kullanmak istemeyen veya yan etkileri nedeniyle tolerabilite problemi yaşayan özellikle kadınlarda alternatif tedavi seçeneği olarak değerlendirilmesi gerekir.

Anahtar Kelimeler: Gerilim Tipi Baş Ağrısı, Akupunktur, Cinsiyet Farklılığı.

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INTRODUCTION

Tension-type headache (TTH) is the most common primary headache in adults, with an average lifetime prevalence of 46% (ranging between 12% and 78%) according to the results of five population-based studies (Stovner et al., 2007). TTH is classified into three subtypes regarding their frequency: rare episodic (<1 day/month), frequent episodic (1-14 days/month), and chronic (15 days/month for ≥ 3 months) (IHS, 2018). In episodic TTH, which has a female-to-male ratio of approximately 5 to 4, the female-to-male ratio increases when the headache becomes chronic. The TTH, which usually develops before the age of 30, reaches its highest prevalence between the ages of 40 and 49 before a decrease with advancing age in both genders (Schwartz, 1998). The pathophysiology of TTH is not clear. Long-term potentiation of nociceptive neurons and reduced activity of the antinociceptive system can lead to chronic TTH. Secondary segmental central sensitization, disturbance of the supraspinal modulation of stimuli, and myofascial derived prolonged, painful stimuli are thought to be important factors for conversion to chronic form (Fumal & Schoenen, 2008).

Nonsteroidal anti-inflammatory drugs are used for treatment during attacks, while prophylaxis using serotonin-noradrenaline reuptake inhibitors, tricyclic antidepressants, and serotonin reuptake inhibitors is maintained for the chronic subtype. In addition to the medical treatment, acupuncture, relaxation techniques, and stress-fighting methods are among the options used in complementary medicine for TTH (Kaniecki, 2012). As far as we know, the number of studies on acupuncture for TTH is extremely rare, while there are no studies comparing the effectiveness of acupuncture between genders in the literature.

In this study, we aimed to evaluate the clinical features of the chronic TTH patients who did not receive conventional medical treatment (patient refusing medical treatment or intolerance due to drug side effects) and had acupuncture to assess the relationship efficacy of acupuncture treatment between genders.

MATERIALS AND METHODS

Study type

In this retrospective study, the neurology and acupuncture outpatient medical records of patients who received acupuncture for THH between 2017-2019 were evaluated. The inclusion criteria consisted of patients with THH who did not receive conventional medical treatment due to medical (intolerance to side effects of medications) or personal (resistance to drug use) reasons and were treated using acupuncture. The patients who did not complete the pre-determined acupuncture sessions, who had systemic disease including psychiatric comorbid conditions, and history of antidepressant,

anxiolytic, and chronic analgesic use >65 - <18 years were excluded from the study.

The demographics of patients and the clinical characteristics regarding the THH attacks (monthly frequency, duration, and severity using VAS) before and after the acupuncture treatment were documented. The duration of the acupuncture effect was recorded to assess long-term results.

In our acupuncture outpatient clinics, the acupuncture treatment protocol for THH patients consisted of two separate methods, body and ear applications. In body applications, a total of 15 body needles were placed horizontally at specific points on the nasal, frontal, parietal, temporal, and occipital regions in the head region. In addition, a total of 8 oblique needles were placed, one on the lateral corner points of both arm-forearm junction lines (base of cubital fossa), one between the thumb and index fingers on the back of both hands and two on the medial sides of both ankles. After the patient was allowed to rest for 40 minutes, all body needles were collected. Then, the second stage of ear acupuncture was started. A total of 8 ear needles, 4 in each, were placed on specific points on both auricles to stay in ear points for 5-7 days. This protocol was applied once a week for a total of 8 weeks. The acupuncture treatment of patients as body and auricular acupuncture applications were continued for two months, while the ear needles were replaced with new ones every week. Then, the acupuncture sessions of all patients were suspended for a month before, booster treatments using body and auricular acupuncture applications once a week for 4 weeks were given to all patients.

Statistical analysis

The mean and standard deviations of age, pre-acupuncture headache frequency, duration and attack severity, and post-acupuncture headache frequency, duration, and attack severity values were calculated. Independent Samples t-test and Mann Whitney U test were used to compare the differences in gender regarding the mentioned parameters. Comparison of gender was made with Wilcoxon test. $p < 0.05$ was accepted to be statistically significant.

Ethical considerations

Balikesir University Faculty of Medicine Clinical Research Ethics Committee (Date: March 13, 2019; Decision no: 2019/51) was obtained and the study participants provided informed consent.

RESULTS

The medical records of 17 patients (10 females, 7 males), who met the study inclusion criteria were reviewed. The mean age of the patients was 52.71 ± 14.71 years in males and 44.5 ± 17.26 years in females ($p=0.3$). There was no significant difference between the genders in the frequency, duration and severity of monthly attacks before and after acupuncture (Table 1).

Table 1. Demographic data of patients before treatment.

	Male (n=7)		Female (n=10)		Between genders
	Before acup.	After acup.	Before acup.	After acup.	p (before acup./after acup.)
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Headache attacks per month	22.86±9.58	12.14±13.27	26.8±7.32	12.1±10.84	0.3 / 0.7
Headache attack duration (h)	27.43±15.04	14.71±18.15	21.6±5.06	16.9±12.76	0.5 / 0.4
VAS	6.71±2.06	3.57±2.88	6.7±1.49	4.9±2.18	0.8 / 0.3

SD: Standard deviation.

The frequency of attacks in women significantly reduced after the acupuncture (pre-treatment 26.8±7.32 attacks/month and post-treatment 12.1±10.84 attacks/month, p=0.02) (Figure 1).

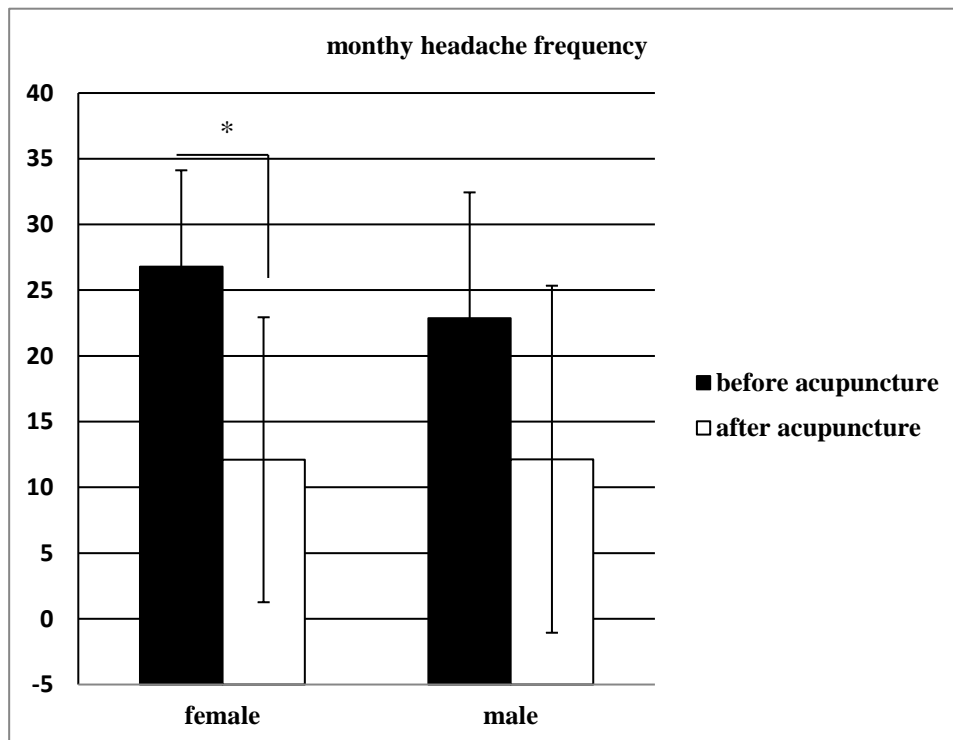


Figure 1. When comparing within genders, the decrease in monthly headache frequency in women after the treatment was found to be statistically significant, p=0.02.

The VAS score in women also statistically significantly decreased after the treatment (pre-treatment: 6.7 ± 1.49 and post-treatment: 4.9 ± 2.18 , $p=0.01$) (Figure 2).

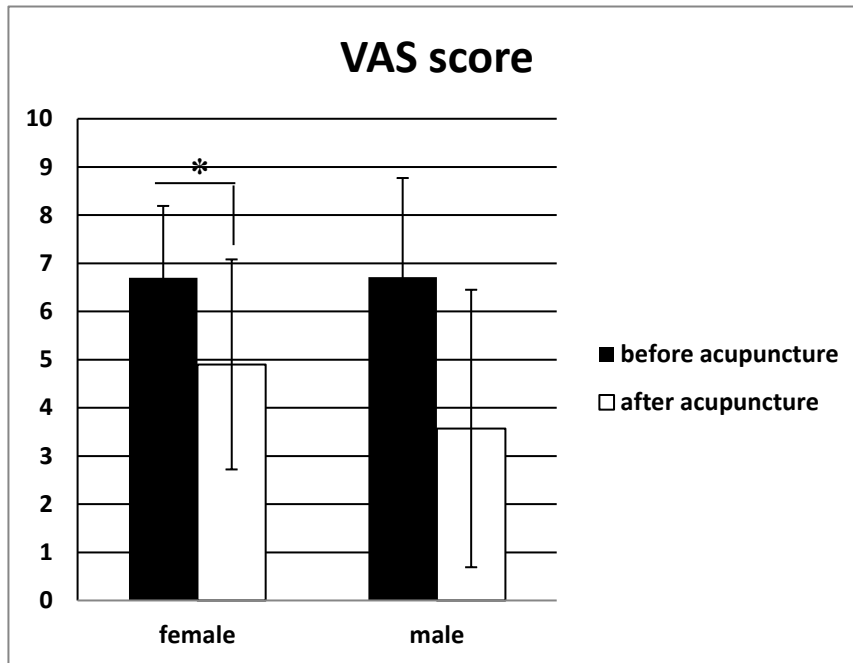


Figure 2. In the comparison of the VAS score before and after acupuncture between the genders, a significant decrease was found in the VAS score in women after the treatment. VAS (Visual Analogue Scale), $p=0.01$.

There were no statistically significant differences in the monthly attack frequency, duration, and severity among men before and after treatment (Table 2).

Table 2. Acupuncture long-term results.

Gender	Response
Female	no response
Female	no response
Female	no response
Female	1 month responsiveness
Female	2 month responsiveness
Female	stable for 9 months
Female	stable for 12 months
Female	stable for 12 months
Female	stable for 18 months
Female	stable for 18 months
Male	no response
Male	no response
Male	no response
Male	1 month responsiveness
Male	6 month responsiveness
Male	stable for 18 months
Male	stable for 18 months

While three out of ten female patients did not respond to acupuncture, well-being persisted for 1-2 months in two and > 6 months in five patients. No response to acupuncture was observed in three out of seven male patients, while one of the remaining continued to be well after a month, one for 6 months, and two for longer than 6 months. A state of well-being of more than 6 months was observed more frequently in women than in men.

DISCUSSION

The approach to TTH management includes a combination of lifestyle, physical and pharmacological measures. Although the scientific evidence is limited, non-pharmacological options should always be considered for treatment. Stress management techniques, passive physical manipulation, active cervical muscle stretching or exercise programs, and acupuncture therapy are among the most common options for non-pharmacological treatment. Acupuncture therapy in chronic TTH had been recommended in the National Institute for Health and Clinical Excellence clinical guidelines and the evaluation results of the Cochrane Library Systematic (National Clinical Guideline Centre, 2012; Linde et al., 2016).

In addition, acupuncture therapy has been recommended by the European Federation of Neurological Societies as a complementary treatment option for TTH (Bendtsen et al., 2010). Although the mechanism of acupuncture treatment is not fully understood, various theories suggest its serotonergic and anti-inflammatory effects on the control of the pain perception (Herman et al., 2005; Gaul et al., 2009).

Acupuncture appears to be an effective treatment for TTH. However, the methodological quality of the relevant studies is often low; thus, the reliability of results is limited. While several studies reported that acupuncture was superior to sham acupuncture in the treatment of TTH, no such significant difference was found by some others (Endres et al., 2007; Melchart et al., 2005). The effect of twenty sessions of acupuncture that lasted for an average of 20 weeks found in a recent randomized controlled study could be considered as strong evidence for a sustained effect after acupuncture treatment (Zhao et al., 2017). In a recent database study, systematic review or meta-analysis revealed that twenty-five of the studies conducted until 2019 (25/36, 69.4%) had low or very low evidence quality, four (4/36, 11.1%) had medium and seven (7/36, 19.4%) had high evidence quality. Descriptive analysis results showed that acupuncture treatment for TTH decreased the frequency and severity of the headaches (Huang et al., 2020).

Gender differences were observed in biopsychosocial factors associated with pain perception, brain structure development, function, and pain experience (Maurer et al., 2016; Ingalhalikar et al., 2014; Racine et al., 2012). In our study, no statistically significant

difference was observed in the monthly attack frequency, duration, and severity between the genders, while the monthly attack frequency and VAS score severity in women were found to be statistically significant after the treatment. The responsiveness of women to acupuncture was better than the men. Long-term results demonstrated that well-being state longer than 6 months was higher in women than men. The long-term effectiveness (longer than 6 months) of acupuncture therapy in seven of 17 patients also points to acupuncture as a complementary therapy option in patients receiving prophylactic treatment. Moreover, the combination of physiotherapy or psychotherapy methods and acupuncture treatment in patients who do not accept drug intake or cannot tolerate due to side effects might contribute to better results. Factors such as the perception of pain, serotonin levels, and the density of myofascial trigger points may also play a role in the acupuncture effectiveness, which seems to be more prominent in women. We suggest that acupuncture treatment should be prioritized, especially in female patients. In addition, booster sessions with eight-week sessions and four booster sessions after one month break in patients who responded to treatment might also contribute to responsiveness.

CONCLUSION

Acupuncture should be considered as an alternative treatment option, especially in women with chronic TTH patients who do not want to use drugs or who have tolerability problems due to side effects. In this patient group, in addition to acupuncture, yoga, pilates, psychotherapy, and relaxation exercises can be used to increase efficiency. Future studies conducted to include the above-mentioned combinations would possibly provide stronger support for our results and contribution to the growing body of literature.

Conflict of Interest

The author declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Author Contributions

Plan, design: BG, NT; **Material, methods and data collection:** BG, NT; **Data analysis and comments:** BG, NT; **Writing and corrections:** BG, NT.

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