A randomized pilot study of acupuncture treatment for primary dysmenorrhea

Gurkan Kiran a,*, Yakup Gumusalan b, Hasan C. Ekerbicer c, Hakan Kiran a, Ayhan Coskun a, Deniz C. Arikan a

a Kahramanmaras Sutcu Imam University School of Medicine, Department of Obstetrics and Gynecology, Kahramanmaras, Turkey
b Kahramanmaras Sutcu Imam University School of Medicine, Department of Anatomy, Kahramanmaras, Turkey
c Kahramanmaras Sutcu Imam University School of Medicine, Department of Public Health, Kahramanmaras, Turkey

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A B S T R A C T

Objective: To compare the therapeutic effect of acupuncture and non-steroidal anti-inflammatory drug (NSAID) therapy in primary dysmenorrhea patients.

Study design: Thirty-five young women with a diagnosis of primary dysmenorrhea were recruited for the study. Their dysmenorrhea severity was rated by visual analog scale (VAS) immediately prior to entry into the study. They were randomly divided into two groups; and the following month they were given NSAID (group 1, n = 24) or acupuncture treatment (group 2, n = 11). Pain was rated again using VAS during menstruation in both groups.

Results: After one month's treatment, pain scores were significantly lower in both groups (p < 0.05). Mean pain scores decreased by 52.2% and 69.5% in the NSAID and acupuncture groups, respectively.

Conclusion: Acupuncture was as effective as NSAID therapy for patients with primary dysmenorrhea. Since this was a pilot study with a small sample size and short follow-up period, larger studies are needed to clarify the effect of acupuncture in the treatment of primary dysmenorrhea.

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1. Introduction

Dysmenorrhea is one of the most common gynecologic complaints, especially in young women. It refers to lower abdominal pain or other discomforts including a downbearing sensation together with low back pain or other uncomfortable feeling before, after or during menstruation, which affects severely the quality of life [1]. Dysmenorrhea is divided into two main categories: primary and secondary. While many cases are primary and associated with a normal ovulatory cycle and with no pelvic pathology, secondary dysmenorrhea, which refers to painful menstruation resulting from conditions such as endometriosis and fibroids, may be seen in about 10% of adolescents [2].

There are three main approaches to the management of primary dysmenorrhea: pharmacological, non-pharmacological and surgical. Non-steroidal anti-inflammatory drugs (NSAIDs) and oral contraceptives are the most common medications used to relieve menstrual pain [3]. Non-pharmacological pain-relieving therapies include acupuncture, massage therapy and transcutaneous electrical nerve stimulation [4].

Acupuncture is often used as a complementary therapy to treat broad range of health conditions including acute pain syndromes [5–7]. There are various acupuncture techniques including body acupuncture, auricular acupuncture, acupoint injection, moxibustion, cupping therapy, etc. [1,5,8]. Since the practice of acupuncture in different situations gave equivocal results, the US National Institutes of Health (NIH) organized and supported a worldwide Consensus Development Panel on Acupuncture in 1997. The final statement of this meeting concluded that promising results emerged showing the efficacy of acupuncture in nausea, vomiting and postoperative dental pain, and that acupuncture may be useful as an adjunct treatment or an acceptable alternative or may be included in a comprehensive management program in addiction, headache, menstrual cramps, etc. [9].

After that, many scientific papers in the last decades provided strong evidence for the therapeutic efficacy of acupuncture in various clinical cases. Results of randomized controlled trials demonstrated that acupuncture was especially beneficial in the management of pain, nausea, asthma, dysmenorrhea and musculoskeletal disorders such as stroke [10,11]. There are contradictory results as well [12]. The aim of this preliminary study was to compare the therapeutic effect of acupuncture and NSAID therapy in primary dysmenorrhea patients.
2. Materials and methods

The study was approved by Institutional Review Board (IRB) of Kahramanmaras Sutcu Imam University School of Medicine. Women were recruited for the study from the School of Nursing between 2002 and 2005. The participants eligible for the trial were aged 15–40 years with primary dysmenorrhea. Our criterion for making a diagnosis of primary dysmenorrhea was based on self-reported severe, painful cramps just before or during menstruation. Patients referred to the outpatient clinic of obstetrics and gynecology with persistent pain were invited to take part in the study. Women were excluded if they had irregular menstrual cycles or secondary dysmenorrhea. We collected baseline data on participant demographics including age, height and weight, and on menstrual cycle characteristics such as age at menarche and length of menstrual cycle.

A total of 50 women were included in the study and rated their dysmenorrhea severity by visual analog scale (VAS) in their previous period prior to entry into the study. They were randomly divided into two groups according to the order of their joining the study. When oral consent was requested, however, after giving sufficient information on the application style of acupuncture, some women in the acupuncture group did not agree to receiving acupuncture treatment due to fear of needles and being ashamed to expose their abdomen. They were therefore excluded from the study, thus reducing the number of subjects in the acupuncture group, and finally only 35 women were included in the study.

In the next month, they were given NSAID (group 1, n = 24) or acupuncture treatment (group 2, n = 11). Women in group 1 were given naproxen sodium 550 mg (Aproll fort, Bilim ilac, Turkey) twice a day beginning two consecutive days before expected menstruation and during the first two days of menstruation. In group 2, the acupuncture treatment was given three times on the 5th and 2nd days prior to the expected menstruation date and on the third day of menstruation. Stainless steel disposable dry acupuncture needles 0.30 × 40 mm and 0.25 × 25 mm were used and inserted to the bilateral points HT7, PC6, LI4, LI10, SP6, LR3, ST36, GB26, SP15 as well as extra point Zigong (one cun lateral to ST28) and midline point Ren4. The needles were kept on the body for 15 min, stimulated manually three times and then taken out. Pain was rated again using the VAS at the end of each day during menstruation in both groups.

Data were expressed as mean ± standard deviation (SD) and as median and range. After testing for normality, comparisons were made using the Wilcoxon Signed Rank Test and Mann–Whitney Test. All statistical analyses were performed using SPSS 15.0 for Windows (SPSS Inc.).

3. Results

Baseline demographics and menstrual cycle characteristics across the two groups were similar and the participants had a mean age of 21 years in both groups (Table 1). Mean overall pain scores were 23.0 (SD 11.9, range 3–49) in the NSAID group and 24.6 (SD 10.6, range 10–39) in the acupuncture group prior to the therapeutic intervention. Significantly lower scores were found in both groups during the study month (Fig. 1). Even though the decrease in main pain scores was higher in the acupuncture group (by 69.5% vs. 52.2%), the decrease tended to be more significant in the NSAID group (p = 0.000) compared to the acupuncture group (p = 0.003). We think that this may be because of the larger range and greater standard deviation in the NSAID group (Table 2).

4. Comments

Dysmenorrhea is a cumbersome situation for some women starting with the menarche. Some regard it as the expression of being a lady, while others accept it as the destiny of women. Whatever their view, it affects almost two-thirds of women severely by causing withdrawal from daily life, lowering the quality of life and resulting in economic loss [11].

Management of primary dysmenorrhea mainly depends on NSAID usage. In some patients, however, the medical treatment causes side effects and the pain-killer effect of medications may fade away with repetitive use. It is not always possible to keep the level of menstruation pain at an acceptable level even with various medical agents. Therefore many women and physicians look for alternative ways of relieving pain in such conditions. Medical acupuncture, massage therapy and protective measures such as keeping the feet and belly warm are among those methods.

When an acupuncture needle is inserted into the acupoint and stimulated manually by twisting the needle up and down, a feeling expressed as soreness, numbness, heaviness or distension is obtained, and this is essential for the manifestation of acupuncture analgesia. During manual acupuncture, all types of afferent fibers (Abeta, Adelta and C) are activated [13]. There are other studies trying to delineate the mechanisms of action of acupuncture in humans as well as in rats. Cui et al. investigated the effects of electroacupuncture to relieve visceral pain associated with the rat irritable bowel syndrome model and concluded that visceral pain can effectively be treated by electroacupuncture [14]. Zhao reported that diverse signal molecules contribute to mediating acupuncture analgesia, such as...
as opioid peptides, glutamate, 5-hydroxytryptamine, and cholecystokinin octapeptide. Among these, the opioid peptides and their receptors in the arcuate nucleus-periaqueductal grey matter-nucleus raphe magnus-spinal dorsal horn pathway play a pivotal role. The individual differences in acupuncture analgesia, on the other hand, are suggested to be associated with inherited genetic factors and some receptors [13].

Reviewing the literature on acupuncture research, Lin and Chen stated that the serotonergic descending inhibitory pathway is suggested to be an important mechanism of acupuncture analgesia, collaborating with endogenous opioids. Functional imaging modalities demonstrating the responses of the cerebral cortex of the living human body to acupuncture stimulation enable us to analyze the interaction. Since the results of many studies are still controversial and it is not easy to elucidate the complex mechanisms, there are still many puzzles to be solved regarding the mechanism of acupuncture analgesia [15].

Although the mechanisms of action are not clear, it was found in a randomized prospective study that acupuncture therapy was associated with the improvement of dysmenorrhea symptoms compared to placebo acupuncture group (90.9% vs. 36.4% of the participants, respectively) [16]. In another study, researchers compared the effect of routine acupuncture with a modified acupuncture technique in a total of 60 women with primary dysmenorrhea. The modified technique was associated with better results (total effectiveness rate of 93.3% vs. 73.3%) and the difference between the groups was statistically significant [17]. In a placebo-controlled study, Habek and colleagues found that acupuncture was associated with the decrease in medication compared to placebo acupuncture group in patients suffering from primary dysmenorrhea [18].

In our study women with persistent menstrual pain were recruited. Pain relieving results in both the acupuncture and NSAID groups were similar to each other, but were more significant in the medication group. Since this was a preliminary study, both the patients and some physicians were suspicious about the expected effects of acupuncture and therefore only three sessions of acupuncture treatment were applied during one menstrual cycle.

Iorno and colleagues investigated the role of acupuncture in dysmenorrhea resistant to medical treatment. Fifteen consecutive nulliparous women were given eight weekly acupuncture sessions over 2 months and 87% of the patients showed marked reduction of pain and NSAID consumption [19]. In a large randomized study, patients with dysmenorrhea who received acupuncture treatment, 15 sessions for a total duration of 3 months, showed lower average pain scores compared to a control group. The authors found that improvements seen after completion of 3-month therapy continued for at least another 3 months [20]. Another study compared the effects of acupuncture to control group in women with primary dysmenorrhea. Although the authors found improvement in intensity and duration of pain at 6 months, this effect was not sustained at the end of the 12-month follow-up period [3].

Ren and Ma conducted a study in which they divided 80 women with primary dysmenorrhea into two groups, 40 in each group. The patients were treated with acupuncture plus moxibustion or oral administration of ibuprofen for three periods. Total effectiveness rate was significantly higher in the former group compared to the latter (85% vs. 70%, respectively) [1]. Xiang and colleagues investigated the effect of ear acupuncture in a group of women with secondary dysmenorrhea caused by endometriosis. They compared the acupuncture with herbal therapy for three successive menstrual cycles. Pain scores were lower than before treatment, while there was no significant difference between pre- and post-treatment scores in the herbal group [21].

Acupuncture treatment aims to re-establish the balance between the Yin and Yang components of the life energy in human body. Thus it induces the inner natural sources of the body to sustain health and is respectful to human well-being. Acupuncture treatment should, however, be applied three times or more in every menstrual cycle for a few months to get significant results. Since the cost of acupuncture sessions is not covered by health insurance systems in many countries including Turkey for now, many patients avoid acupuncture and prefer to take pain-killer pills more and more.

In the present study we found that acupuncture treatment was as effective as NSAID therapy for patients with primary dysmenorrhea. Since this was a pilot study with a small sample size and short follow-up period, larger studies are needed to clarify the effect of acupuncture in the treatment of primary dysmenorrhea.

Condemnation

In this pilot study, acupuncture was as effective as non-steroidal anti-inflammatory drug therapy for patients with primary dysmenorrhea.

References