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The effect of moxibustion on alleviating menstrual pain in a population of young nursing students: A prospective randomized cross-over pilot study

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ABSTRACT

Objective: To investigate the effect of moxibustion on alleviating menstrual pain and relieving the symptoms of dysmenorrhea in a cohort of young nursing students in China.
Methods: A randomized double blind clinical trial of crossover design was used. In the two-phase study, a total of 56 nursing students with menstrual pain in Guangzhou University of Chinese Medicine in China was randomly allocated into two groups. In the first treatment phase, the participants in Group A ($n = 28$) received moxibustion therapy from five days before the menstrual period to the onset through a specific heating box in which burning moxa stick was fixed, the participants in Group B ($n = 28$) received the same heating box but with a paper-wrapped stick incense fixed inside (placebo therapy) during the same intervention period. The acupoints Guanyuan(CV4) and Shenque(CV8) were selected for treatment. After the first treatment phase for two menstrual cycles, the intervention was stopped for three menstrual cycles during a wash period. In the second treatment phase, the intervention of two groups were switched. Group A received the placebo therapy and Group B received moxibustion therapy. NRS, VRS, PRI, VAS and BRS-6 were evaluated at the baseline and after each treatment phase.
Results: There was no statistically significant difference in age, history of dysmenorrhea, length of menstrual cycle, age at menarche, duration of menstrual flow, PRI score, VAS score, BRS score and RSS score between Group A and Group B ($p > 0.05$). After the first treatment phase, the score of BRS-6 has significant differences between two groups at the first menstrual cycle ($p < 0.05$). At the second menstrual cycle, the score of VAS, BRS-6,sensory of PRI, affective dimension of PR and total score of PRI in Group A were much lower than Group B ($p < 0.05$). NRS and VRS had significant differences between two groups with Wilcoxon Mann–Whitney test after the first treatment phase ($p < 0.05$). The frequency rating of weakness, loss of appetite, diarrhea, and the total score had significant differences between two groups at the first menstrual cycle ($p < 0.05$). And the frequency rating of weakness, backache, facial blemishes, loss of appetite, diarrhea, and the total score had significant differences between two groups at the second menstrual cycle ($p < 0.05$). The severity rating of backaches, loss of appetite, sleeplessness, and the total score had significant differences between two groups after the second menstrual cycle ($p < 0.05$). After three months' wash period, the score of VAS, BRS-6, sensory of PRI, affective of PR, total score of PRI and VRS had significant differences between two groups after the second treatment phase ($p < 0.01$). And the frequency rating of leg aches, dizziness, nervousness and the total score had significant differences between two groups after the second treatment phase ($p < 0.05$). And the severity rating of abdominal pain, weakness, leg aches, dizziness, nervousness and the total score had significant differences between two groups after the second treatment phase ($p < 0.05$).

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Conclusions: The results suggested that moxibustion therapy with a heating box was effective for alleviating menstrual pain and symptoms of young female university students in China. The effect of moxibustion might not only due to heat stimulation, but also from the burning of moxa stick. Boxing moxibustion could be recommended as a nonpharmacological pain relief intervention for university students for its cost effectiveness, practical design and relative safety, and it is easy for the university students themselves to self-administer at home.

1. Introduction

Dysmenorrhea means that women feel periodical pain in the lower abdomen or lumbosacral before, during or after menstruation.[1] The pain occurs according to the menstrual cycle with the accompanying symptoms of nausea, vomiting, profuse cold sweating, cold hands and feet and even fainting in severe cases.[2] Dysmenorrhea is classified into primary dysmenorrhea (PD) and acquired dysmenorrhea (AD) in modern medicine. PD is defined as a cramp-like pain in the lower abdomen at the onset of menstruation without any identifiable pelvic pathology,[3] the prevalence of which was reported in many studies to vary between 50% and 90%.[4] A study concluded that the prevalence of PD among young adult female university students was 64% in Nigeria and Mexico, 84% in Thailand, 88% in Turkey and 93% in Taiwan.[5] The prevalence of PD in a sample of female university students in Gunagzhou of China was also as high as 79.4%.[6] Dysmenorrhea is a prevalent problem in menstruating female university students.[7,8] In traditional Chinese medicine, dysmenorrhea is mostly due to emotional disturbance, liver qi stagnation, obstructed blood flow or external contraction of cold-damp, cold-damp retention in the uterus to obstruct qi-blood flow.Furthermore, it might result from weakness of qi and blood or deficiency of the liver and kidney, resulting in malnourishment of the uterus and giving rise to dysmenorrhea.[9] Even though dysmenorrhea is a very common disease, women from Chinese cultural background consider pain as a normal part of menstruation, and prefer avoiding medical contact as far as possible due to embarrassment. Zhang et al. found that the most common specific strategies used were sleeping, massage, or even grinning and bearing it or taking medicine (48.8%).[10] Nonsteroidal anti-inflammatory drugs (NSAIDs) are supposed as an effective treatment for PD used with a combined oral contraceptive pill.[11,12] Unfortunately, there are a number of side effects with this medicine, such as abdominal pain, nausea, vomiting.[13] As an external therapy in Traditional Chinese Medicine, moxibustion has the therapeautic effect of warming and dispering pathogenic cold, invigorating blood circulation, resolving stagnation,restoring yang for resuscitation due to the pharmaceutical properties of moxa products,warming and heating stimulation on the meridian acpoints, and the spectrum feature of moxibustion.[14,15] But well-designed randomised controlled trials were needed to evaluate the safety and efficacy of moxibustion. The purpose of this study was to investigate the effect of moxibustion on alleviating menstrual pain and relieving the symptoms of dysmenorrhea by randomized cross-over design.

2. Subjects and methods

2.1. Study design

A randomized,double blinded, parallel-controlled pilot trial of crossover design was conducted in Guangzhou University of Chinese Medicine (GZUCM) to evaluate the effectiveness of moxibusion. Each participant spent 8 menstrual cycles in this study, including 1 menstrual period at baseline, 2 menstrual cycles in the first treatment phase, 3 menstrual cycles in wash period, 2 menstrual cycles in the second treatment phase, respectively.

2.2. Participants

The present study was conducted in School of Nursing Guangzhou University of Chinese Medicine, during the period from April 2014 to November 2014. The eligibility criteria for participants include: nursing students aged 17–25 years-old who suffered menstrual pain, with regular menstrual cycles (21–35 days) and length (3–7 days), and had no systemic or gynecologic disease. Excluded from the study were participants on hormonal therapy during the last 6 months, receiving analgesics during the study period, suffering known or suspected secondary dysmenorrhea (major abdominal or pelvic surgery, endometriosis, pelvic inflammatory disease ovarian cysts, pathological vaginal secretion, chronic abdominal pain, inflammatory bowel disease, and irritable bowel syndrome).

2.3. Interventions

All students signed a written consent followed by a baseline interview. During the interview, the collected data included students' age, history of dysmenorrhea, length of menstrual cycle, age at menarche, duration of menstrual flow, level of pain and symptoms of dysmenorrhea. In the first treatment phase, participants in Group A received moxibustion therapy through a heating box in which a burning moxa stick with 5 cm in length was fixed. The intervention duration was 20 min once a day lasting 5–7 days before the onset of menstruation. The chosen acupoints were Guanyuan (CV4) and Shenque (CV8). The participants in Group B received treatment through the same heating box in which burning paper-wrapped incense stick with 20 mm in diameter and 5 cm in length was fixed. The raw material of incense is wood flour, sticky powder, potassium nitrate with colourant and perfume added. The heating box was a cube-shaped wooden box with three sides enclosed, a cover above and a dense metal-nets like baseplate below. There is a special fixing device inside the box, which allowed the paper-wrapped moxa stick and incense stick to be able to be lighted first and then put into the heating box for burning, With the protection of the nets baseplate, the ashes would not fall down to the skin of the patient during the burning process.The participants laid down in supine position in beds located in simulated patient room in School of Nursing, Guangzhou University of Chinese Medicine when they accepted the treatment. Please see Figs. 1 and 2 for the actual instrument and treatment scene. In the second phase, the intervention was switched between the two groups.

2.4. Outcomes

2.4.1. Primary outcome measures

The pain level experienced by the students was assessed using the following measures: (1) numerical rating scale (NRS) which rates the pain on a 0 to 10 scale where 0 indicates "No pain" and 10 indictaes "The worst possible pain";(2) verbal rating scale (VRS)