Effects of Auricular Acupressure on Menstrual Symptoms and Nitric Oxide for Women with Primary Dysmenorrhea

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Abstract

Objectives: The aim of this study was to evaluate the effects of auricular acupressure on relieving menstrual symptoms and decreasing nitric oxide (NO) for women with primary dysmenorrhea.

Design: This was a randomized clinical trial comparing the effects of auricular acupressure by seed-pressure method and placebo adhesive patch.

Setting: Settings included colleges in northern and central Taiwan.

Subjects: Serum CA-125 testing was used as a screening test for primary dysmenorrhea (<35 mg/dL). The study included 36 college females randomized to acupressure group, 35 to control group.

Interventions: The acupressure group received auricular acupressure by seed-pressure method on liver (CO12), kidney (CO10), and endocrine (CO18) acupoints. The control group had a plain adhesive patch placed on the same acupoints with no seed attached. Acupressure protocol included massaging 15 times on each acupoint, 3 times a day, for a total of 20 days.

Outcome measures: Primary: Short-form Menstrual Distress Questionnaire (MDQs). Secondary: blood sample of NO. Assessments of MDQs and NO were performed at baseline and within the first 2 days of their next menses (after completion of 20 days of acupressure).

Results: In the acupressure group, the overall menstrual symptoms (95% confidence interval [CI] = -49.8 to -6.5, effect size [ES] = 0.43, p = 0.01) and two subscales, menstrual pain (95% CI = -16.4 to -2.2, ES = 0.45, p = 0.01) and negative affects (95% CI = -11.9–2.0, ES = 0.38, p = 0.04), revealed that menstrual symptoms decreased significantly after auricular acupressure by the seed-pressure method. The ES for the MDQs were in favor of the auricular acupressure by seed-pressure method. NO level increased in the acupressure group, although this difference did not achieve statistical significance (p > 0.05).

Conclusions: This study supports the effects of auricular acupressure by seed-pressure method in improving menstrual symptoms, and offers a noninvasive complementary therapy for women with primary dysmenorrhea.

Introduction

Dysmenorrhea is categorized as primary or secondary based on the presence of known etiology or pelvic pathology. Medically defined, primary dysmenorrhea is diagnosed by exclusion when painful menstruation occurs in the absence of pathology such as endometriosis. Secondary dysmenorrhea involves an underlying pathology acting directly or indirectly on pelvic anatomy to cause the pain symptoms during menstrual flow. Primary dysmenorrhea is

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a common women’s health condition and health-related experience among women worldwide. Primary dysmenorrhea includes cramping pain in the lower abdomen and associated discomfort symptoms such as fatigue, mood swing, headache, backache, and irritability. These symptoms are either psychologic or physical in nature and most are routinely considered in a medical model differential diagnosis of premenstrual syndrome or dysmenorrhea. Prevalence of primary dysmenorrhea ranged from 41% to 95%. Many women report experiencing cyclic pelvic pain (CPP) that significantly impacts their quality of life. Another form of CPP is *mittelschmerz*, a term used to denote midcycle pain often associated with ovulation. This type of CPP is far less common than dysmenorrhea. The incidence of CPP is as high as 80% for women in their teens and early 20s, with half of these women experiencing loss of time from school or work. For 10%–20% of women, CPP is severe. Young women in their teens and early 20s experience menstrual pain most often, with the onset occurring within 3 years of menarche. This leads to expenses for self-care, over-the-counter treatments, and visits to health care professionals.

The cause of primary dysmenorrhea is unknown, but a number of influencing factors, for example, uterine hyperactivity, prostaglandins, leukotrienes, and antidiuretic hormone, have been implicated. Combined oral contraceptives and non-steroidal anti-inflammatory drugs (NSAIDs) or NSAIDs used alone are widely used for prevention or treatment of premenstrual pain. Both medications are effective in about 70%–90% women with primary dysmenorrhea. Western medicine may not be entirely effective and has side-effects for some cases. Nonresponse to drug treatment is estimated to occur in about 10% of patients with primary dysmenorrhea. However, women and girls with primary dysmenorrhea may not wish to take medications and show resistance or unwillingness to take any treatment. Thus, there is a need to develop easy and effective methods to ease many forms of their discomfort, so their quality of life can be improved.

Acupressure is a long-standing treatment in Traditional Chinese Medicine technique and may be a valuable treatment in improving menstrual symptoms. The effects of acupressure have been demonstrated to be comparable to ibuprofen (a type of NSAID) in treating dysmenorrhea. The use of acupressure as a complementary therapy for more severe cases of dysmenorrhea is also supported.

In Chinese medicine, menstrual symptoms are caused by either the lack of blood in the body or stagnant qi or Blood. The general treatment principles of Chinese medicine for dysmenorrhea are to tonify the Kidney Deficiency, clear the accumulation of Liver Fire, dissipate Cold, expel Wind, and move qi and Blood. Acupressure involves the stimulation of acupuncture points and meridians without the use of needles. Moreover, acupressure has been found to be safe and effective for improving anxiety and stress-related ailments, reducing tension, promoting wellness, maintaining the normal bodily functions, and providing comfort. Particularly, in Chinese medicine theory, auricular acupressure can activate and regulate the flow of qi and Blood. It brings relief of symptoms by rebalancing Yin and Yang status of internal organs and qi. Stimulating acupoints with pressure triggers the production of a morphine-like natural painkiller in the body called endorphins. Such acupressure promotes the secretion of neurotransmitters that lead to pain relief.

Dysmenorrhea may be related to nitric oxide (NO). Nitric oxide is a potent vasodilator produced by endothelial and other cells, which helps to control blood pressure, platelet aggregation, and cytotoxicity. The uterine muscle stability is associated with a higher concentration of serum NO level. NO activity has influences in the severity of dysmenorrhea symptoms and affects the homocysteine metabolic pathway in dysmenorrhea symptoms. Decreased serum NO level caused more frequent muscular and vascular contractility of the uterus. There has been little evidence-based research to support the effects of auricular acupressure for the management of primary dysmenorrhea. Moreover, most of existing studies does not include any physiologic indices to confirm the effect of acupressure in their research. Reports regarding the role of auricular acupressure on NO changes in reducing menstrual symptoms are scanty. No studies compared the differences of auricular acupressure by seed-pressure method and placebo adhesive patch for primary dysmenorrhea. Therefore, the present study was undertaken to evaluate the effects of auricular acupressure on menstrual symptoms and serum level of NO in women with primary dysmenorrhea.

### Materials and Methods

#### Sample

This double-blinded, randomized clinical trial was conducted in Taiwan. All participants met the following criteria: (1) they were between 18 and 28 years old; (2) they had no prior internal and gynecologic diseases, or secondary dysmenorrhea affecting the progress of their menstrual period, or underlying medical illness that causes primary dysmenorrhea; (3) a serum CA-125 level less than 35mg/dL was confirmed; (4) the initial onset of primary dysmenorrhea occurred shortly after 6 months following menarche; (5) they had complaints of menstrual pain at least three times in the past 6 months; (6) they had no smoking or drinking history; (7) they were not taking over-the-counter analgesics (e.g., NSAIDs or other painkillers) during the study period; and (8) they were able to speak Chinese or Taiwanese.

Power analysis by using SSize software (version 2.0; for Windows; ECHIP, Inc.) was used to calculate the sample size. A significance level of 0.05, power of the test of 0.8, proportion of group 1 of 0.9, and proportion of group 2 of 0.6 showed that 32 women were needed in each group.

#### Procedures

The pilot study. A convenience sample of 32 eligible participants was sought for the pilot study. An issue arose from this pilot study was that the adhesive acupressure patch could not consistently stick well on acupoints after showering. However, this problem was solved after the provision of education related to protection in the area of the acupressure patches.

The recruitment of the participants. A total of 90 college women were recruited. A team staff not involved in the trial organized and held the randomization list and numbered envelopes. The team staff passed envelopes to one of the two researchers after demonstrating that the college student was eligible and had consented to the trial. The researcher opened...
envelopes to reveal study treatment allocation and then administered the acupressure protocol. Another researcher was only responsible for evaluating outcome measures.

All potential participants were screened using the Health Examination Survey for any internal and gynecologic diseases. No health problems listed were found. They also completed Short-form Menstrual Distress Questionnaire (MDQs) and collection of CA-125 blood samples. CA-125 is a bio-

FIG. 1. Flow diagram of the progress of all data collection procedures. MDQs, Menstrual Distress Questionnaires.
chemical marker that was used to monitor benign disease such as endometriosis and ovarian disease. Thus, CA-125 assay was selected as a screening test for determination of primary or secondary dysmenorrhea. Six (6) participants in the experimental and control groups, respectively, were identified and excluded from the study as having CA-125 test results of greater than 35mg/dL. The blood sample was then collected from the other 74 eligible participants in order to determine their serum NO levels prior to acupressure therapy just 0–2 days before menstrual period. The progress of all procedures is outlined in Figure 1.

**Auricular acupressure protocol**

All participants were given a detailed description of the auricular acupressure protocol. To control the reliability and validity of auricular acupressure, the protocol was developed and set up as follows:

1. The acupressure protocol was developed based on the literature and the consultation with 3 physicians and experts in Chinese medicine. Three (3) auricular acupressure points—Liver (CO12), Kidney (CO10), and Endocrine (CO18)—were selected for the study.

2. In the acupressure group (n = 37), auricular acupressure was performed by using acupressure seeds named *Semen vaccariae*. The seeds were kept in place by a piece of opaque adhesive patch and fixed onto the three acupoints selected.

3. Members of the control group (n = 37) had a plain adhesive patch placed on the same points with no seed attached. Both groups had acupressure.

4. Participants were instructed by one of the researchers on (1) how to apply auricular acupressure, for example, the procedure, duration, and intensity of auricular acupressure by manually pressing lightly on every acupressure point; (2) how to check and keep acupressure patches in the right place and how to protect them; and (3) how to record the time of application of acupressure and any possible side-effects in a diary after each session.

5. The next step in the application of acupressure included massaging 15 times on each point of a sequence of three acupressure meridian points, three times a day, for a total of 20 days.

6. To both enhance and ascertain the accuracy of timing for a follow-up test, the anticipated time of the next menstrual period was monitored.

7. For optimal treatment outcome and better hygiene, the adhesive patch with/without the ear seed was renewed and recorded every 5 days by the researcher.

8. Assessments of MDQs and NO level were performed again starting within the first 2 days of their next menses.

However, 1 participant in the acupressure group and 2 in the control group were dropped from the study because of prolonged time between two menstrual periods and time management problems.

**Measures**

**Short-form MDQs.** The primary outcome measure was Moos MDQs. The MDQs were used comprehensively to screen women and identify those suffering from premenstrual or menstrual distress on both psychologic and physical aspects. The original questionnaire has been shown previously to have split half reliabilities of 0.74–0.98, and good internal consistency (Cronbach α = 0.83–0.84). The MDQs were composed of 22 items from the full MDQ scale, which were grouped into 4 categories, namely, pain, water retention, autonomic reactions, and negative affect. Participants were asked to rate the presence of menstrual symptoms experienced during their most recent menstrual period on a 4-point Likert-type scale, ranging from 1 (no experience of the symptom) to 4 (severe or partially disabling symptoms). Higher scores are indicative of increasing symptom distress.

**Serum NO level.** The secondary outcome was assays of serum NO level. It was performed by utilizing the enzyme-linked immunosorbent assay (ELISA) kit (Cayman Chemical Company, Ann Arbor, MI) and ELISA reader (Immuno Biological Laboratories, IBL, Minneapolis, MN) according to the manufacturer’s instructions for measurement. The incubation time of the substrate reaction in the laboratory was carefully controlled and ensured. Absorbance was determined by ELISA reader at 540 nm in a micro ELISA reader.

**Statistical analysis**

Values were presented as mean ± standard deviation (SD). Mann-Whitney U tests and independent t-tests were used for the analysis of menstrual symptoms. The 95% confidence interval (95% CI) for the difference in the outcome measures between groups was calculated. An effect size (ES) analysis was computed to compare the mean of the acupressure group with the mean of the control group. ES was measured as the standardized difference between two post-test means.

**Results**

**Participants**

The mean age of the participants was 22.4 years (range: 19–28 years; Table 1). The average age of menarche was 12.5 years (range: 10–15 years). The average menstrual cycle was 29.2 days. More than half the participants (52%, n = 37) had their initial onset of menstrual pain 6 months to 2 years following menarche. At baseline, mean serum CA-125 level for all participants was 13.4 ± 0.9 mg/dL (range: 0.5–33.2). No baseline differences existed for demographics or assessments between acupressure/control groups.

**Primary outcome measure**

Pain (61.9 ± 14.6) and water retention (69.2 ± 18.7) were commonly reported categories for menstrual symptoms during the menstrual period. Figure 2 presents the differences at baseline and after application of acupressure among groups. The 10 most frequently reported symptoms experienced during participants’ most recent menstrual period are presented in Table 2. The global score of the MDQs showed that the mean post-test scores of both the experimental and control groups decreased compared with that of the pretest scores. This indicated that improvements in menstrual symptoms were observed in both groups (Table 3). Moreover, the overall menstrual symptoms (95% CI −49.8 to −6.5, ES = 0.43, p =
and the categories of pain (95% CI −16.4 to −2.2, ES = 0.45, p = 0.01), and negative affect (95% CI −11.9−2.0, ES = 0.38, p = 0.04) of the acupressure group revealed that menstrual symptoms of the acupressure group decreased significantly after auricular acupressure by the seed-pressure method, in comparison with that of the control group. However, the ES for the four categories of the MDQs were in favor of the auricular acupressure by the seed-pressure method.

### Table 1. Characteristics of Sample

<table>
<thead>
<tr>
<th></th>
<th>Acupressure group (n = 36)</th>
<th>Control group (n = 35)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>n (%)</td>
<td>Mean (SD)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Age</td>
<td>22.3 (2.4)</td>
<td>22.6 (2.6)</td>
<td></td>
</tr>
<tr>
<td>Age at menarche (years)</td>
<td>12.6 (1.2)</td>
<td>12.4 (1.1)</td>
<td></td>
</tr>
<tr>
<td>Menstrual cycle (days)</td>
<td>28.8 (3.6)</td>
<td>29.7 (3.5)</td>
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<tr>
<td>The initial onset of menstrual pain</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Within 6–24 months after menarche</td>
<td>22 (61.1)</td>
<td>15 (42.9)</td>
<td></td>
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<tr>
<td>After 24 months of menarche</td>
<td>9 (25)</td>
<td>12 (34.3)</td>
<td></td>
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<tr>
<td>Cannot remember Times of menstrual pain/half year</td>
<td>4.9 (1.5)</td>
<td>5.3 (1.2)</td>
<td></td>
</tr>
<tr>
<td>MDQs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>60.9 (11.1)</td>
<td>62.9 (17.5)</td>
<td></td>
</tr>
<tr>
<td>Water retention</td>
<td>68.5 (18.2)</td>
<td>69.9 (19.4)</td>
<td></td>
</tr>
<tr>
<td>Autonomic reactions</td>
<td>58.7 (18.3)</td>
<td>58.7 (19.9)</td>
<td></td>
</tr>
<tr>
<td>Negative affect</td>
<td>54.9 (13.2)</td>
<td>58.6 (18.8)</td>
<td></td>
</tr>
<tr>
<td>Total scores</td>
<td>242.97 (44.9)</td>
<td>250.1 (57.4)</td>
<td></td>
</tr>
<tr>
<td>CA-125</td>
<td>11.7 (6.8)</td>
<td>15.3 (8.8)</td>
<td></td>
</tr>
<tr>
<td>Nitric oxide</td>
<td>0.353 (0.12)</td>
<td>0.340 (0.16)</td>
<td></td>
</tr>
</tbody>
</table>

MDQs, Menstrual Distress Questionnaires, SD, standard deviation.

![Graph](image-url)

**FIG. 2.** Comparisons of Menstral Distress Questionnaires in acupressure and control groups at baseline and after application of acupressure. *p < 0.05; **p < 0.01
method. This suggested that overall menstrual symptoms in the acupressure group significantly improved more than in the control group (Table 3).

**Secondary outcome measure**

Mean serum NO level at baseline for the acupressure group was 0.353 (SD 0.12) and 0.340 (SD 0.16) for the control group (Table 3). There was no statistically significant difference in serum NO levels when the acupressure group was compared with the control group ($p = 0.46$).

**Discussion**

Women experience menstrual distress and related discomforts during the menstrual period that result in impaired quality of life, fatigue, irritability, and depression. These lead to negative impacts on the emotional health, performance, and functioning of women. The auricular points including endocrine, uterus, shenmen, brain, liver, spleen, kidney, etc. have often been used for dysmenorrhea. Three selected auricular acupressure points—liver, kidney, and endocrine in the present study—are considered to encircle the reproductive organs, simultaneously activate the endocrine system, store blood, and ensure the smooth flow and direction of 

$\textit{Qi}$ movement in the body. Although the applied acupressure points and ways of doing acupressure in the present study differed from those used in other studies, the reported effects of acupressure are generally similar to those of previous studies in the same area. The effect of acupressure on the management of primary dysmenorrhea has been proven. Furthermore, acupressure is effective in reducing low back pain, labor pain, and pain relief for patients with sickle cell disease. Thus, acupressure, with no complications, appears to be effective for pain management and the decrease of the severity of primary dysmenorrhea. The effect of acupressure on the management of primary dysmenorrhea has been proven. Furthermore, acupressure is effective in reducing low back pain, labor pain, and pain relief for patients with sickle cell disease. Thus, acupressure, with no complications, appears to be effective for pain management and the decrease of the severity of primary dysmenorrhea. The effect of acupressure on the management of primary dysmenorrhea has been proven. Furthermore, acupressure is effective in reducing low back pain, labor pain, and pain relief for patients with sickle cell disease. Thus, acupressure, with no complications, appears to be effective for pain management and the decrease of the severity of primary dysmenorrhea. The effect of acupressure on the management of primary dysmenorrhea has been proven. Furthermore, acupressure is effective in reducing low back pain, labor pain, and pain relief for patients with sickle cell disease. Thus, acupressure, with no complications, appears to be effective for pain management and the decrease of the severity of primary dysmenorrhea. The effect of acupressure on the management of primary dysmenorrhea has been proven. Furthermore, acupressure is effective in reducing low back pain, labor pain, and pain relief for patients with sickle cell disease. Thus, acupressure, with no complications, appears to be effective for pain management and the decrease of the severity of primary dysmenorrhea.

This study design is unique in the comparison of the effects of auricular acupressure using $S. \textit{vaccariae}$ seeds and acupressure without seed attachment. Females college students undergoing auricular acupressure treatment by the seed-pressure method experienced a statistically significant and overall improvement in menstrual symptoms compared to those who received acupressure without seed attachment to the points. There is a possible reason for such a...

### Table 2. The Most 10 Commonly Reported Complaints of Menstrual Symptoms

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean (SD)</th>
<th>Menstrual symptom Mean (SD)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>61.9 (14.6)</td>
<td>Fatigue 1.6 (0.95)</td>
<td>2</td>
</tr>
<tr>
<td>Backache</td>
<td>1.5 (0.96)</td>
<td>5</td>
<td></td>
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<tr>
<td>Cramp</td>
<td>1.2 (0.96)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>General aches and pains</td>
<td>0.9 (0.95)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Water retention</td>
<td>69.2 (18.7)</td>
<td>Abdominal swelling 1.7 (1.08)</td>
<td>1</td>
</tr>
<tr>
<td>Tender breasts, breast swelling</td>
<td>1.3 (1.10)</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Kidney</td>
<td>1.2 (0.92)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Negative affect</td>
<td>56.8 (16.2)</td>
<td>Mood swings 1.6 (1.06)</td>
<td>3</td>
</tr>
<tr>
<td>Irritability</td>
<td>1.5 (1.10)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Restlessness</td>
<td>0.8 (0.86)</td>
<td>10</td>
<td></td>
</tr>
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</table>

SD, standard deviation.

### Table 3. Comparisons and Differences in MDQs and Serum Levels of Nitric Oxide (NO) Among Groups

<table>
<thead>
<tr>
<th></th>
<th>Acupressure group (n = 36)</th>
<th>Control group (n = 35)</th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test Mean (SD)</td>
<td>Post-test Mean (SD)</td>
<td>Mean difference</td>
<td>Pre-test Mean (SD)</td>
<td>Post-test Mean (SD)</td>
<td>Mean difference</td>
<td>95% CI</td>
<td>p-value</td>
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<tr>
<td>MDQs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>60.9 (11.1)</td>
<td>45.6 (9.19)</td>
<td>-15.2</td>
<td>62.9 (17.5)</td>
<td>57.0 (13.3)</td>
<td>-5.9</td>
<td>-16.4--2.2</td>
<td>0.01**</td>
</tr>
<tr>
<td>Water retention</td>
<td>68.5 (18.2)</td>
<td>52.9 (12.8)</td>
<td>-15.5</td>
<td>69.9 (19.4)</td>
<td>60.7 (13.8)</td>
<td>-9.2</td>
<td>-14.6--2.1</td>
<td>0.14</td>
</tr>
<tr>
<td>Autonomic reactions</td>
<td>58.7 (18.3)</td>
<td>47.3 (9.5)</td>
<td>-11.4</td>
<td>58.7 (19.9)</td>
<td>55.1 (14.4)</td>
<td>-3.6</td>
<td>-16.4--0.7</td>
<td>0.19</td>
</tr>
<tr>
<td>Negative affect</td>
<td>54.9 (13.2)</td>
<td>42.2 (8.2)</td>
<td>-12.7</td>
<td>58.6 (18.8)</td>
<td>50.8 (12.1)</td>
<td>-7.8</td>
<td>-11.9--2.0</td>
<td>0.04*</td>
</tr>
<tr>
<td>Total score</td>
<td>242.97 (44.9)</td>
<td>188.08 (30.1)</td>
<td>-54.8</td>
<td>250.1 (57.4)</td>
<td>223.7 (43.6)</td>
<td>-26.4</td>
<td>-49.8--6.5</td>
<td>0.01**</td>
</tr>
<tr>
<td>Serum NO level</td>
<td>0.353 (0.12)</td>
<td>0.366 (0.24)</td>
<td></td>
<td>0.340 (0.16)</td>
<td>0.321 (0.22)</td>
<td></td>
<td>-0.01--0.1</td>
<td>0.46</td>
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</table>

The ES represents effect sizes of the post-test between both groups. The 95% CI is the confidence interval for differences. MDQs, Menstrual Distress Questionnaires; SD, standard deviation; CI, confidence interval; ES, effect sizes.

*p < 0.05; **p < 0.01.
difference in relieving menstrual symptoms (i.e., the effect of seed-embedded acupressure to the applied points). Auricular acupressure is thought to promote wellness and optimize overall health.36 There is often a clear sensation of qi when the seed is applied. Auricular acupressure by seed-pressure method facilitates the movement of qi and blood through the channels. This method has a synergistic effect compared with auricular acupressure with no seed placed. It is possible that seeds could deeply stimulate the acupressure points and work at a higher energy level. Thus, auricular acupressure with the seed-pressure method may be more effective to deal with menstrual symptoms than acupressure with no seed-attachment method. Prior research has not consistently identified the role S. vaccariae plays to achieve a better therapeutic effect, but does indicate the consistent use of S. vaccariae as a popular method for seed-pressing.

A possible mechanism of NO in response to the improvement of menstrual distress was presented by a current study.25 They suggest that the NO pathway may be involved in the pathophysiologic mechanism responsible for the damaging effects of homocysteine on women with dysmenorrhea. An effect on NO level was expected after using acupressure. Measurement of NO level increased slightly over the study period (not significant) in the acupressure group and decreased in the control group. However, there was also no significant difference in serum NO level between the two groups. This indicated that further research may be needed to determine whether there is indeed an effect of auricular acupressure as designed in the present study on NO level.

Limitations in this study must be considered when reviewing the results. The use of serum CA-125 testing may have limited clinical value as a screening test for endometriosis and in evaluating women with dysmenorrhea. The limitations also included the short time frame. The short time frame made it unlikely that measurable changes in NO levels would be evident.

Conclusions

Auricular acupressure by seed-pressure method effectively improved menstrual symptoms of women. An expected effect of auricular acupressure on NO level was not found. However, findings from this study have implications for health care providers to consider incorporating auricular acupressure in their clinical practice when caring for women with menstrual symptoms. It is also important for women to consider administering auricular acupressure technique for themselves through appropriate training and find relief through self-management.

References


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