

## The effect of ginger for relieving of primary dysmenorrhoea

Ensiyeh Jenabi

### Abstract

**Objective:** To assess the effectiveness of ginger in providing relief to patients of primary dysmenorrhoea.

**Methods:** The clinical trial was conducted at Toyserkan Azad University in western Iran from July 10 to September 5, 2010. It comprised of 70 female students of the university with primary dysmenorrhoea. The subjects were randomly divided in to two equal groups and were given either placebo or ginger in capsule form for 3 days in first menstruation cycles. They graded the severity of their pain using a visual analogue scale. A 5-point Likert scale was used to assess response to treatment. Wilcoxon's rank-sum test was used to compare the severity of pain in the two groups.

**Results:** Compared with the baseline, the decrease in the visual analogue scores of post-therapy pain in the ginger group was significantly greater than that for placebo group. In the ginger group, 29 (82.85%) subjects reported an improvement in nausea symptoms, compared with 16 (47.05%) in the placebo group.

**Conclusion:** Ginger is effective in minimising the pain severity in primary dysmenorrhoea.

**Keywords:** Ginger, Primary dysmenorrhoea. (JPMA 63: 8; 2013)

### Introduction

Primary dysmenorrhoea is one of the most common gynaecological disorders in young women of menstrual age.<sup>1,2</sup> Symptoms usually begin at the start of menstruation, continue for a few days, and are characterized by pain that radiates from the lower abdomen to the inner thighs.<sup>3</sup>

Because no tests can confirm primary dysmenorrhoea, the diagnosis is made on the basis of a patient-completed daily symptom calendar and the exclusion of other medical disorders. It occurs only in ovulatory cycles, is usually limited to the first 48 or 72 hours of menstruation, and is experienced by as many as half of all young women.<sup>4</sup>

One theory is that increased prostaglandin levels produce increased myometrial contractility, uterine ischaemia, and sensitisation of pain fibers, which lead to pelvic pain. Women with primary dysmenorrhoea have higher levels than non-dysmenorrhoeic women of endometrial prostaglandins F2- $\alpha$  and E2 and leukotrienes.<sup>5</sup>

Studies have shown that dysmenorrhoea can affect adolescents' academic performance as well as their social and sports activities.<sup>6</sup> The efficacy of medical treatment, such as non-steroidal anti-inflammatory drugs (NSAIDs) and oral contraceptive pills, is considerable; but the failure rate can still be as high as 20% to 25%.<sup>7</sup> In a Swedish study, 38% of women used analgesics and 22% used oral contraceptives to alleviate their dysmenorrhoea.<sup>8</sup> Evidence of efficacy supports use of pharmacological agents such as NSAIDs,<sup>9</sup> or the use of oral

contraceptives<sup>10</sup> to alleviate menstrual pain. However, pain relief may be inadequate for some women, or side effects may not be well tolerated.

Complementary and alternative medicine (CAM) can be described as those medical systems, practices, interventions, applications, theories, and claims that are currently not part of the dominant or conventional medical system.<sup>11</sup> Between 50% and 70% of Americans use some form of CAM to prevent or treat health-related problems.<sup>12</sup> Surveys have shown that women are more likely to be the users of unconventional therapies.<sup>5</sup> Clinicians also prescribe CAM. For example, more than 90% of certified nurse-midwives in North Carolina reported advising their clients to use an alternative therapy — most commonly herbs, massage, or chiropractic care.<sup>13</sup> There has been an increase in the use of herbal medicines in the United States over the last 15 to 20 years.<sup>5</sup>

Herbal and dietary therapies are especially suitable for treatment of disorders such as dysmenorrhoea, as they can be self-administered and are often easily available from shops, pharmacies and supermarkets. CAM treatments for dysmenorrhoea that have been studied include transcutaneous electrical nerve stimulation (TENS), acupuncture, acupressure, spinal manipulation, behavioural interventions, and herbal and dietary therapies.<sup>5</sup>

A recent review of seven trials evaluating the efficacy of herbal and dietary therapies in primary and secondary dysmenorrhoea showed that vitamin B1 taken at 100mg daily may be an effective treatment for dysmenorrhoea.<sup>14</sup>

A study of 706 Hispanic female adolescents found that the participants with dysmenorrhoea reported using multiple

.....  
Department of Midwifery, Toyserkan Branch, Islamic Azad University,  
Toyserkan, Iran.

**Correspondence:** Email: enciehjenabi@yahoo.com

treatments to relieve their symptoms. The methods included rest (58%), medications (52%), heating pad (26%), tea (20%), exercise (15%), and herbs (7%).<sup>13</sup>

A study in Iran showed that women reported more efficacy with the use of herbal drugs compared to drug mefenamic acid for pain relief.<sup>15</sup>

Ginger, known scientifically as *Zingiber officinale*, is native to many Asian countries.<sup>16</sup> Information on the effectiveness of ginger for the relief of primary dysmenorrhoea is limited, although two studies from Iran and China reported that ginger was effective for relieving the severity of primary dysmenorrhoea.<sup>17,18</sup>

The purpose of the present study was to compare ginger and placebo for the relief of primary dysmenorrhoea.

### Subjects and Methods

After approval from the Research Ethics Committee of the Toyserkan Azad University in western Iran, the study was conducted from July 5 to September 10, 2010, and comprised of 70 female students who provided informed written consent. The subjects underwent general physical examinations and students with pain scoring higher than 3 on the visual analogue scales (VAS) were included in the study. Cases of mild dysmenorrhoea were excluded. All the students were single.

The 70 students subsequently randomised into two groups using a table of random numbers. Students in the ginger and placebo groups received 3 capsules daily in the first menstruation cycles for 3 days.

The ginger and placebo capsules were prepared by a pharmacist. Briefly, fresh ginger root was chopped into small pieces, baked at 60°C for 24 hours, and then ground into powder. Ginger powder was weighed and 500mg of it was filled in each capsule. Excess powder was wiped off the capsule surface with a clean dry cloth. Both placebo and ginger capsules were packed in an envelope containing nine capsules.

Two independent measurement scales were used to quantify the changes in severity of dysmenorrhoea: a visual analogue scale and a Likert scale. For VAS, the subjects were asked on their first visit to grade the severity of their dysmenorrhoea by marking an asterisk corresponding to their perceived state on a 10-cm vertical line, ranging from 0 (no pain) to 10 (pain as bad as it could be). To obtain an objective measurement, the VAS markings were measured in centimeters. The mean pain scores over the 3 days of treatment for each subject was then calculated.

After one menstruation, a five-point Likert scale (much worse; worse; same; better; much better) was used to assess response to treatment.

The severity of pain in the two groups was compared using Wilcoxon's rank-sum test.

Power analysis was used to determine the sample size. A sample of 31 women per group was needed to achieve a power of 0.80 with an alpha =0.05. To allow for a 10% report rate, a total sample size of 70 was projected. Therefore, 35 women were randomized to each group, which allowed for a 10% attrition rate.

SPSS Version 10.0 was used for statistical analyses and a p-value of 0.05 was considered to be significant.

### Results

After one (2.8%) student from the placebo group withdrew herself, the group finally consisted of 34. Differences in baseline characteristics of the two groups were not statistically significant (Table-1).

The mean change in pain score (before and after use) in the ginger group was significantly greater than that in the placebo group (Table-2).

Table-1: Change in pain scores by treatment groups.

| Characteristics          | Ginger group<br>(n=35)<br>(Mean±SD) | Placebo group<br>(n=34)<br>(Mean±SD) |
|--------------------------|-------------------------------------|--------------------------------------|
| Age (year)               | 21.33± 1.16                         | 21.54±1.78                           |
| Menarch age              | 13.36±1.71                          | 13.66±1.32                           |
| BMI (Kg/m <sup>2</sup> ) | 21.33±1.30                          | 22.78±1.55                           |

Table-2: Characteristics of participants by treatment groups.

|                          | Before use<br>(Mean±SD) | After use<br>(Mean±SD) | Before use-<br>after use |
|--------------------------|-------------------------|------------------------|--------------------------|
| <b>Type of treatment</b> |                         |                        |                          |
| Ginger (n=35)            | 7.08±1.02               | 4.81± 1.70             | 3.81±1.17                |
| Placebo (n=34)           | 7.61±1.20               | 7.11± 1.12             | 0.48±0.91                |
| p-value*                 | 0.61                    | 0.001                  | 0.001                    |

\*Wilcoxon's rank-sum test.

Table-3: Frequency of reported change in symptoms by treatment groups.

| Change in symptoms | Ginger    | Placebo   |
|--------------------|-----------|-----------|
| Much worse         | 0(0.0%)   | 0(0.0%)   |
| Worse              | 0(0.0%)   | 0(0.0%)   |
| Same               | 6(17.4)   | 18(53.5%) |
| Better             | 14(40.0%) | 10(29.0%) |
| Much better        | 15(42.6%) | 6(17.5%)  |
| n                  | 35        | 34        |

Fisher's exact test, p<0.05.

A five-point Likert scale was used to assess post-treatment responses. In the ginger group, 29 (82.85%) subjects reported an improvement in their symptoms compared to 16 (47.05%) in the placebo group ( $p = 0.01$ ) (Table-3).

No students in the trial had any complication after using ginger.

## Discussion

The efficacy of ginger for the treatment of primary dysmenorrhoea was assessed by comparing with placebo in the study. The mean change in pain scores in the ginger group was significantly greater than that in placebo group and 82.85% of women in the ginger group reported an improvement in dysmenorrhoea symptoms.

A study in China in 2009 showed that pain scores after the treatment and 3 months of post-treatment in ginger group were significantly lower than those in the control group which was given a Chinese herbal patent drug.<sup>18</sup>

In another study, ginger was found to be more effective than placebo for relieving the severity of primary dysmenorrhoea.<sup>17</sup> These findings support the results of the current study.

Another study compared the effects of ginger, mefenamic acid and ibuprofen on pain in women with primary dysmenorrhoea. It showed that ginger was as effective as mefenamic acid and ibuprofen in relieving pain in women with primary dysmenorrhoea.<sup>19</sup>

The effect of anti-inflammation action of ginger is through inhibition of prostaglandin biosynthesis and leukotrienes.<sup>20</sup>

Ginger has also been found to be especially helpful in cases of arthritis, kidney stones, bronchitis, asthma, pneumonia, some forms of depression, osteoarthritis and nausea and vomiting in pregnancy.<sup>21,22</sup>

## Conclusion

Conventional management using anti-inflammatory drugs and analgesics is often an unsatisfactory answer due to side effects and/or patient-compliance issues. The study showed that ginger is effective for relieving the severity of pain. Therefore, healthcare providers should consider it as treatment for women with primary dysmenorrhoea. Similar studies in other countries are recommended to test the feasibility and effectiveness of ginger therapy in large segments of population.

## References

1. Doubova SV, Morales HR, Hernández SF, Martínez-García MC, Ortiz MG, Chávez-Soto MA, et al. Effect of a *Psidium guajavae* folium extract in the treatment of primary dysmenorrhoea: a randomized clinical trial. *J Ethnopharmacol* 2007; 110: 305-310.
2. Kennedy S. Primary dysmenorrhoea. *Lancet* 1997; 349: 1116.
3. Ohde S, Tokuda Y, Takahashi O, Yanai H, Hinohara S, Fukui T. Dysmenorrhoea among Japanese women. *Int J Gynecol Obstet* 2008; 100: 13-7.
4. Dawood MY. Dysmenorrhoea. *Clin Obstet Gynecol* 1990; 33: 168-78.
5. Tseng YF, Chen CH, Yang YH. Rose tea for relief of primary Dysmenorrhoea in adolescents: A randomized controlled trial in Taiwan. *J Midwifery Women Health* 2005; 50: 51-7.
6. Banikarim C, Chacko MR, Kelder SH. Prevalence and impact of dysmenorrhoea on Hispanic female adolescents. *Arch Pediatric Adolescent Medicine* 2000; 154: 1226-9.
7. Proctor ML, Smith CA, Farquhar CM, Stones RW. Transcutaneous electrical nerve stimulation and acupuncture for primary dysmenorrhoea. *Cochrane Database System Reviews* 2002; 1: CD002123.
8. Harel Z. Dysmenorrhoea in adolescents and young adults: etiology and management. *J Pediatr Adolesc Gynecol* 2006; 19: 363-71.
9. Wong CL, Farquhar C, Roberts H, Proctor M. Oral contraceptive pill as treatment for primary dysmenorrhoea. *Cochrane Database of Systematic Reviews* 2009; 2: CD002120.
10. Sundell G, Milsom I, Andersch B. Factors influencing the prevalence and severity of dysmenorrhoea in young women. *Br J Obstet Gynaecol* 1990; 97: 588-94.
11. Chez RA, Jonas WB. Complementary and alternative medicine. II. Clinical studies in gynecology. *Obstet Gynecology Survey* 1997; 52: 709-16.
12. Astin JA. Why patients use alternative medicine Results of a national study. *JAMA* 1998; 279: 1548-53.
13. Allaire Ad, Moos MK, Wells SR. Complementary and alternative medicine in pregnancy a survey of North Carolina certified nurse-midwives. *Obstet Gynecol* 2000; 95: 19-23.
14. Proctor ML, Murphy PA. Herbal and dietary therapies for primary and secondary dysmenorrhoea. *Cochrane Database System Reviews* 2010; 11: CD002248.
15. Nahid K, Fariborz M, Ataolah G, Solokian S. The effect of an Iranian herbal drug on primary dysmenorrhoea: a clinical controlled trial. *J Midwifery Womens Health* 2009; 54: 401-4.
16. Borrolli F, Capasso R, Aviello G, Pittler MH, Izzo AA. Effectiveness and safety of ginger in the treatment of pregnancy-induced nausea and vomiting. *Obstet Gynecol* 2005; 105: 849-56.
17. Rahnama P, Fallah H, Mohammadi KH, Moddares M, Khajooi K, Asgari M, et al. The effect of Zingiber on girls with primary dysmenorrhea. *Drug plants* 2009; 9: 81-6.
18. Sun LH, Ge JJ, Yang JJ, She YF, Li WL, Yuan J et al. Randomized controlled clinical study on ginger-partitioned moxibustion for patients with cold-damp stagnation type primary dysmenorrhoeal. *Zhen Ci Yan Jiu* 2009; 34: 398-402.
19. OZgoli G, Goli M, Moattar F. Comparison of effects of ginger, Mefenamic Acid and Ibuprofen on pain in women with primary dysmenorrhoeal. *J Altern Complement Med* 2009; 15: 129-32.
20. Hagigi M, Toliat T. Zingiber and unconventional therapy. *J Medicinal Plants* 2001; 1: 19-28.
21. Therkleson T, Sherwood P. Patients experience of the external therapeutic application of ginger by anthropomorphically trained nurses. *Indo-Pacific J Phenomenol* 2004; 4: 86-97.
22. Jenabi E, Mohammad-Alizadeh S. Comparing ginger and vitamin B6 for the treatment of nausea and vomiting in pregnancy: a randomized controlled trial. *Midwifery* 2009; 25: 649-53.