The Effects of Combining the Strength Exercises and Thyme Supplements on Girls’ Menstrual Pain

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ARTICLE INFO

ABSTRACT

Article history:
Received 22 October 2013
Received in revised form 14 January 2014
Accepted 20 January 2014
Available online 25 February 2014

Key words:
Dysmenorrhea, Prostaglandins, Shirazi Thyme, Strength Exercises

Primary dysmenorrhea refers to painful menstrual cramps with no known organic cause. Given the high prevalence of primary dysmenorrhea and its adverse impact on women's quality of life and the existence of some evidence pointing to the effects of the thyme supplements as a medicinal plant and anti-spasm of the muscles, the aim of the present study was to examine the effects of combining the strength exercises and thyme supplements on young girls’ menstrual pain. Accordingly, a double-blind clinical trial research method was employed. The participants were 35 students of Islamic Azad University, Abhar Branch with moderate and severe symptoms of premenstrual syndrome who were selected as the research sample through purposeful and availability sampling and then they were divided into four experimental groups including strength exercise group, thyme group, strength exercise and thyme group, and placebo group. In addition, the pain intensity, the prostaglandin concentrations in blood samples taken from the participants in the sample were examined in the pre-test and post-test, the results of which will be discussed in the present article.

INTRODUCTION

A significant number of women around the world are suffering from painful menstrual conditions. Given women’s serious family and social responsibilities it is needed to invest more in the improvement of women’s physical and mental health and to value their health.[8] Painful menstruation brings about adverse economic, demographic, social, and emotional consequences and almost 50 percent of women experience it. About 1 percent of women of childbearing age are not able to attend the workplace for one to three days a month due to severe menstrual pain.[7] Dysmenorrhea or painful menstruation is a common gynecologic disorder that affects almost 50 percent of women of childbearing age.[16] Dysmenorrhea is one of the most common gynecological medical issues. Dysmenorrhea means the pains associated with menstruation which is usually of a crampy nature and is concentrated in the lower abdomen.[3] Since the use of herbal medicines have less side effects than synthetic or artificial drugs, the world renowned botanists believe that the vast territory of Iran is one of the world’s greatest treasures of medicinal and aromatic plants. Women are now turning to herbs in order to relief from pain.[9] Thyme is one of the herbs that they use to reduce menstrual pain.[3] Unlike drugs such as NSAIDS, not only it does not cause gastrointestinal side effects, but also it is useful for the treatment of gastrointestinal disorders such as ulcers, indigestion, constipation, flatulence, and asthma as well as.[12] Meanwhile, physical activities and exercises are beginning to assume a significant position in this regard as the flexibility and isometric exercises and yoga have a beneficial impact on the reduction of the severity and duration dysmenorrheal Saadatabadi et al, and Shavandiet al.

Research Methodology:

Since the aim of the present study was to discover a causal relationship between independent and dependent variables affecting human beings and as all other intruding factors could not be controlled adequately, and more importantly given that all participants were chosen purposefully as it was not possible to select them randomly, the present study is regarded as a clinical trial research. The participants were selected through VAS
Questionnaire and the use of purposeful and availability sampling form among 18-28 year old females with a history of primary dysmenorrhea who were willing to participate in the study. They were also examined in order not to have a history of any hereditary diseases, taking any drug, smoking or taking any supplements. Upon the completion of the written consent, they were sent for an abdominal ultrasound test in order to be assured that they are not suffering from pelvic diseases or secondary dysmenorrhea. Those subjects whose general health was confirmed were included in the final sample under study. After the participants were classified into four groups i.e. strength exercise, thyme, strength exercise and thyme, and placebo groups, they were sent to a specialized immunology laboratory to take a blood sample test (pre-test). After the treatment, they were sent again to the laboratory to take the second blood sample test (post-test). The herbal medicine used in the study was Shirazi thyme whose leaves were collected, powdered by the researchers, and were measured and put into capsules by Amin Pharmaceutical Company. Then the participants were asked to take one gram of the drug per ten kilograms of their weight. Finally, the collected data were codified and then analyzed by SPSS Software through a 4*2 factorial design index and ANOVA test with repeated measures.

Results of the study:
Table 1 shows the number of the participants, means, and standard deviations as measures of central tendency and dispersion of data.

The following table shows the test mean scores for the variables in each group of participants separately.

Mauchly’s Sphericity Test:
To test the research hypothesis, analysis of variance with repeated measures was used. In addition, Mauchly’s sphericity test was used to evaluate the homogeneity of the groups. The results of this test shown in Table 3 indicate lack of the covariance homogeneity between the groups (P < 0.05). Therefore, the Greenhouse-Geisser column must be used for the analyzing the variances of the main and mutual effects.

Discussion and Conclusions:
The findings of the study suggested that the mean value of the blood PGE in the first test for 35 participants is 284.44 and its standard deviation is equal to 141.47, showing the high level of dispersion of PGE scores in the first blood test. Besides, the mean value of the blood PGE in the second blood test for 35 participants is 274.64 and its standard deviation is equal to 164.91, indicating that the level of dispersion of PGE scores in the second blood test is higher than that of the first blood test. In addition, the mean of the participants’ age was 22.69 years with a standard deviation of 3.98 and the mean of the participants’ weight was 61.28 kilograms with the standard deviation of 9.86. The results also suggested that the participants experienced the first menstruation at

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**Table 1:** Descriptive statistics of variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGE in the first blood test</td>
<td>35</td>
<td>284.44</td>
<td>141.47</td>
</tr>
<tr>
<td>PGE in the second blood test</td>
<td>35</td>
<td>274.64</td>
<td>164.91</td>
</tr>
<tr>
<td>Participants' age</td>
<td>35</td>
<td>22.69</td>
<td>3.98</td>
</tr>
<tr>
<td>Participants' weight</td>
<td>35</td>
<td>61.28</td>
<td>9.86</td>
</tr>
<tr>
<td>Participants' height</td>
<td>35</td>
<td>164.54</td>
<td>6.70</td>
</tr>
<tr>
<td>Age of the first menstruation</td>
<td>35</td>
<td>13.51</td>
<td>1.17</td>
</tr>
<tr>
<td>Age of the first painful menstruation</td>
<td>34</td>
<td>14.91</td>
<td>2.04</td>
</tr>
<tr>
<td>Time between two menstrations</td>
<td>32</td>
<td>27.97</td>
<td>1.80</td>
</tr>
<tr>
<td>Duration of bleeding per cycle</td>
<td>35</td>
<td>6.06</td>
<td>6.13</td>
</tr>
</tbody>
</table>

**Table 2:** Descriptive statistics of variables under study.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Type of test</th>
<th>Thyme</th>
<th>Strength exercises</th>
<th>Thyme and strength exercises</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pretest Mean</td>
<td>Posttest Mean</td>
<td>Pretest Mean</td>
<td>Posttest Mean</td>
</tr>
<tr>
<td>Blood PGE</td>
<td></td>
<td>290.79</td>
<td>359.85</td>
<td>252.45</td>
<td>355.31</td>
</tr>
<tr>
<td>Psychological symptoms</td>
<td>Psychological symptoms</td>
<td>1600</td>
<td>7.38</td>
<td>11.50</td>
<td>4.00</td>
</tr>
<tr>
<td>Physical symptoms</td>
<td>Physical symptoms</td>
<td>4.75</td>
<td>1.25</td>
<td>4.00</td>
<td>0.70</td>
</tr>
</tbody>
</table>

**Table 3:** Results of Mauchly’s sphericity test for the first hypothesis (blood PGE level).

<table>
<thead>
<tr>
<th>Blood PGE level</th>
<th>Mauchly</th>
<th>Chi-square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>0.134</td>
<td>11.513</td>
<td>5</td>
<td>0.045</td>
</tr>
<tr>
<td>Time</td>
<td>1.000</td>
<td>0.000</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Group * Time</td>
<td>0.069</td>
<td>15.266</td>
<td>5</td>
<td>0.010</td>
</tr>
</tbody>
</table>

**Table 4:** Results of ANOVA with repeated measures for psychological symptoms.

<table>
<thead>
<tr>
<th>Psychological symptoms</th>
<th>( \sum s^2 )</th>
<th>df</th>
<th>( X^2 )</th>
<th>F Ratio</th>
<th>p</th>
<th>Effect value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphericity Assumed</td>
<td>156.56</td>
<td>3.00</td>
<td>52.19</td>
<td>1.82</td>
<td>0.174</td>
<td>0.21</td>
</tr>
</tbody>
</table>
age of 13.51 years old with a standard deviation of 1.17 and the first painful menstruation at age of 14.91 years old with a standard deviation of 2.04. Besides, the time interval between the two menstruations was on average 27.97 days with a standard deviation of 1.8. It was also noted that the average duration of bleeding was 6.06 days with the standard deviation of 5.31 and the menstrual pain last on average 3 days with the standard deviation of 1.63. A review of the literature indicates that primary dysmenorrhea is caused by increased production of endometrial prostaglandins. Prostaglandins are the main cause of primary dysmenorrhea. Most of the results indicate that doing sport exercises affects psychological and physical symptoms of premenstrualgia. The results of studies show that the performance of regular aerobic exercises affects the severity of premenstrual dysmenorrhea and reduces its painfulness. In addition the research shows that pilates and aerobic exercises have a significant effect on the intensity and duration of pain associated with primary dysmenorrhea.

ACKNOWLEDGMENT

This article is extracted from my thesis under the title of “The effects of combining the strength exercises and thyme supplements on girls’ menstrual pain”. Hereby, I extend my sincere appreciation to Science and Research Branch, Islamic Azad University, Mazandaran for the efforts and supports they provided to me.

REFERENCES