

Comparison of the Effects of Marine Omega-3 Fatty Acids and Ibuprofen on Primary Dysmenorrhea

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Abstract: Dysmenorrhea is common gynecological problem among women. This study was done to examine the effects omega-3 fatty acid compared to ibuprofen on dysmenorrhea. A double-blind crossover study was conducted among 18-22 years old female student. Women assigned to group 1 received 2 omega-3 capsules daily in the morning and night after food for 2 month and group 2 receive 400 mg ibuprofen very 8 hours in three days. It was a one month washout period. Then each group received drug other group. Data were gathered the start, after 8 and 20 weeks by using the Cox Menstrual Symptom Scale questionnaire. Data were analyzed using spss 16.0 via Paired t-test and Repeated Measurement. The mean age of students was 20.35 ± 1.03 years and their mean BMI was 21.03 ± 2.40 kg/m². Result showed a marked reduction in pain intensity after treatment with omega-3 ($P < 0.05$). Also our results indicate that in the first day ($P=0.28$), the second day ($P=0.30$) and the third day ($P=0.67$) of menstruation, the effect of omega-3 and ibuprofen was similar. The results indicate that dietary supplementation with omega-3 fatty acid can reduced noticeable pain as ibuprofen among young women with primary dysmenorrhea.

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Key word: Dysmenorrhea, Omega-3, ibuprofen

1. Introduction

Dysmenorrhea is common gynecological problem among women which is divided into two categories, primary and secondary. Primary dysmenorrhea is painful menstruation in the absence of pelvic disease. The pain of uterine origin is associated with symptoms such as nausea, vomiting, abdominal distension, diarrhea, headache and rarely even myocardial infarction (1,2).

Prevalence of primary dysmenorrhea in various communities should have between 50 to 90% (3,4). The prevalence of dysmenorrhea have been reported 74-86% in Iran (4)

The use of non-steroidal anti-inflammatory drugs (NSAIDs) can reduce pain of primary dysmenorrhea in women with primary dysmenorrhea (5). There fore, adverse side effects may occur after long-term use of these drugs. These adverse effects are impaired kidney function and gastrointestinal bleeding which could limit their use in primary dysmenorrhea (6,7).

Today, various studies dietary supplements have been effective for the treatment of dysmenorrhea. These supplements are omega-3 fatty acids, magnesium, zinc, vitamin B and vitamin E (8). Research has shown omega-3 two months can receive a blood concentration of this substance to induce anti-inflammatory and analgesic effects provided (9,10,11,12). Most studies have shown that omega-3 fatty acids are well tolerated by most people and

rarely in the high dose (more than 6 grams per day) are adverse side effects (13). Omega-3 fatty acids possess anti-inflammatory effects due to produce vasodilator eicosanoids such as PGE₃ and PGF₃ and inhibit of production vasoconstrictor prostaglandin PGE₂, PGF₂ from omega-6 which is the important cause primary dysmenorrhea (12,14).

The aim of the study was to evaluate the effects of marine omega-3 fatty acids compared to ibuprofen on primary dysmenorrhea.

2. Materials and methods

A double-blind crossover study was conducted among 18-22 years old female student at Sabzevar university of Medical science. The students had primary menstrual pain without significant pathology and with regular menstrual cycles. The research proposal was approved by the Ethics committee of Sabzevar university of Medical science and all students signed a consent form.

The sample size estimation for each group was 24 at a power of $1-\beta$ of 90% and $\alpha=0.05\%$ and C.V 10% and $t(0.025,26)=2.056$ and $t(0.1,26)=1.315$ based on below formula:

$$n \geq \left\{ t(\alpha/2, 2n-2) + t(\beta, 2n-2) \right\}^2 \left\{ C.V/10 \right\}^2 \quad (15)$$

After a primary examination, women who had inclusion criteria were participated in the present study. All student divide to two groups based on table of random numbers.

Women in group 1 received 2 omega-3 capsule (contain of 180 mg of EPA and 120 mg of DHA) daily in the morning and night after food for 2 month and group 2 receive 400mg ibuprofen a very 8 hours in three days.(One day before and two days after menstrual period three times in day). It was a one month washout period without any medication. Then each group received drug other group.

After the time, Data were gathered before the start, after 8 and 20 weeks by using the Cox Menstrual Symptom Scale questionnaire (16).In addition, the dietary intakes of subjects were assessed a 2-days dietary recall at baseline and the end of weeks 8 and 20. Subject diets were analyzed by Nutrition-IV software. Data were analyzed using SPSS version 16.0 via Paired t- test and Repeated Measurement.

3. Results

of the 50 female student who enrolled, 3 were lost to follow- up. The mean age of students and mean age

Table 2: Mean \pm SD of pain after intake of omega and Ibuprofen

| Omega group | | Ibuprofen group | |
|-----------------|-----------------|-----------------|----------------|
| before | after | before | after |
| 5.89 \pm 3.04 | 7.67 \pm 1.49 | 5.8 \pm 2.7 | 7.7 \pm 1.52 |
| P-value: 0.002 | | P-value: 0.0001 | |

4. Discussion

In the present study, omega-3 fatty acid supplementation was reduced dysmenorrheal in female students but this reduction pain was not significant comparison ibuprofen. This results of study is consistent with findings Dowlatiyan(1). Dowlatiyan et al showed that dietary supplementation with omega-3 fatty acids significantly decreased primary dysmenorrhea. However the present study design omega-3 was compared to ibuprofen. Rahbar et al showed that dietary supplementation with omega-3 fatty acids significantly decreased primary dysmenorrhea. However the present study design was higher dosage of omega-3 (2 versus 1capsule) and included a washout period and compared to ibuprofen (8).

In another study, Zamani et al evaluated the effect of dietary supplementation with omega-3 fatty acids on primary dysmenorrhea on 84 adolescents(9). The first group received 1 gram omega-3 supplement daily for 2 months and second group received placebo in the same time. Results of their study showed that omega-3 fatty acids supplement significantly reduced intensity and duration of pain in adolescent girls.

Moghadamnia et al showed that omega-3 fatty acids significantly decrease abdominal and low-back

of first menorrh and dysmenorrh was shown in table 1. 56% of all students in first day, 18% in second day and 16% in third day had pain.

Table 1: characteristics of study subjects

| Mean \pm SD | |
|----------------------------|------------------|
| Age (year) | 20.35 \pm 1.03 |
| Age first menorrh (years) | 13.47 \pm 2.29 |
| Age of dysemeorreh (years) | 12.26 \pm 5.67 |
| BMI (kg/m ²) | 21.03 \pm 2.40 |

AS shown in table 2, the mean pain severity score was significantly reduced after omega-3 supplementation among female students (P=0.002). Also, our results indicate that in the first day (P=0.28), the second day(P=0.30) and the third day(P=0.67) of menstruation, the effect of omega-3 and ibuprofen was similar. Anthropometric and dietary factors were not significantly different at baseline and the end of weeks 8.

pain and need for NSAIDs drug in adolescent girls with primary dysmenorrheal(17).

Safari et al assessed the effect of dietary supplementation with vitamin E on primary dysmenorrhea on 86 female students based to randomized design (18). The first group received 500 IU vitamin E supplement daily for 2days before and 1 day after menarche and second group received 250 mg of mefamic acid every 8 hours in the same time. Results of their study showed that reduction of pain was not significant between two group. In other words, vitamin E and mefamic acid reduced dysmenorrhea to a same value. The finding reported by Safari are similar to our results quality impact of dietary supplement with NSAIDs.

Finally, Detuch et al assessed the influence intake of fish and sea foods and menstrual pain on 220 women 20-45 years old(19). He found that low consumption of fish and sea foods correlated with primary dysmenorrheal. The other words, women had highest level of intake of fish in their diet, they not dysmenorrhea.

The results of the present study indicate that dietary supplementation with omeg-3 fatty acid can reduced noticeable pain as ibuprofen among young women with primary dysmenorrhea. Nevertheless, the use of omega-3 fatty acids could potentially offer

for the safe and effective treatment of women with dysmenorrhea compared to NSAIDs.

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