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Omega 3 Supplementation in Relief of Pain Associated with Primary Dysmenorrhea

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Abstract

Background: Primary and secondary dysmenorrhea are frequent gynecological issues in women. Primary dysmenorrhea is painful menstruation without pelvic illness. Some studies have shown that using fish oil can alleviate dysmenorrhea symptoms.

Aim: This study aimed to evaluate the efficacy of omega-3 fatty acids in relieving the pain associated with primary dysmenorrhea in young females

Patients and methods: Our study is a randomized controlled study that was conducted in obstetrics and gynecology outpatient clinic at Al-Azhar university hospital, Damietta, Egypt. The study included 90 patients with primary dysmenorrhea who were randomized into two groups; Group A included 45 females who received Ibuprofen 400 mg/day during menses for two cycles. Group B included 45 females who received 1000 mg/day of Omega 3 capsules [OMEGA 3 FISH OIL1000 MG 100 TAB] for 2 months. Pain intensity was evaluated by the Visual Analog Scale [VAS].

Results: There was statistically significant decrease in both groups of ibuprofen and omega 3 regarding severity of pain before and after intervention. There were 34 females [75.6%] in omega 3 group needed rescue dose of ibuprofen during menses in first cycle and 26 females [57.8%] needed rescue dose of ibuprofen during menses in second cycle. The mean rescue dose of ibuprofen during menses in first cycle was 288±206.9 while during menses in second cycle was 210±156.3

Conclusion: Our study findings suggested that continuous use of omega 3 for 2 months achieved a significant pain reduction and reduced NSAIDs use with decrease side effects.

Keywords: Omega 3; Primary Dysmenorrhea; Ibuprofen 400.

INTRODUCTION

Dysmenorrhea is a prevalent gynecological issue. It is classified into two categories: primary and secondary. The primary dysmenorrhea [PD] refers to painful menstruation without the presence of pelvic pathology [1]. Painful cramping is the most common symptom of dysmenorrhea impacting 45.0%–95.0% of menstruating women worldwide [2]. It is frequently accompanied with nausea, vomiting, diarrhea, headaches, muscle cramps, lumbar discomfort, exhaustion, and in more severe instances sleep disturbances [3]. The primary goal of PD treatment is to alleviate discomfort to a level where women can go about their daily lives as normal. Since the non-steroidal anti-inflammatory drugs [NSAIDs] and hormonal contraceptives block the generation of prostaglandins, they are considered the first-line medications indicated for the treatment of dysmenorrhea [4]. However, in some conditions the NSAIDs are contra-indicated. So that an alternative such as Fish oil [omega-3] are indicated. Some studies have shown that using fish oil can alleviate dysmenorrhea symptoms [5]. The rational for the usage of omega-3 is that, Omega-3 fatty acids exhibit anti-inflammatory properties by promoting the synthesis of vasodilatory eicosanoids, such as PGE3 and PGF3, while simultaneously inhibiting the generation of vasoconstrictive prostaglandins PGE2 and PGF2 derived from omega-6, a significant contributor to PD [4]. So, our study aimed to evaluate the efficacy of omega-3 fatty acids in relieving the pain.

PATIENTS AND METHODS

Our study is a randomized controlled study that was conducted in obstetrics and gynecology outpatient clinic at Al-Azhar university hospital, Damietta, Egypt. The study included 90 patients with primary dysmenorrhea who were randomized into two groups; Group A included 45 females who received Ibuprofen 400 mg/day during menses for two cycles. Group B included 45 females who received 1000 mg/day of Omega 3 capsules [OMEGA 3 FISH OIL1000 MG 100 TAB] for 2 months. Pain intensity was evaluated by the Visual Analog Scale [VAS]. Our study was guided by the principals of Helsinki declarations. Ethical approval was obtained from the Ethical committee of our university. An informed consent was obtained from every patient at the time of recruitment. We included our patients according to the following criteria:

The inclusion criteria were: 1] Young female 18-25 years. 2] Nulliparous women. 3] Women with primary dysmenorrhea. 4] Regular menstrual cycles. 5] Participants who agreed to participate in this study. **The Exclusion criteria were**: 1] Presence of local gynecological pathology or lesions. 2] Presence of secondary dysmenorrhea. 3] Refuse to participate.

Data Collection: Complete medical history taking especially the menstrual history including duration, presence of primary dysmenorrhea, general and local gynecological examinations were done for every woman at the time of recruitment. Gynecological pelvic [transabdominal] ultrasound was done to exclude any underlying pelvic pathology. the females within group A received Ibuprofen 400 mg/day during menses for two cycles. The females within group B received 1000 mg/day of Omega 3 capsules for two months.

Assessment of pain: Pain intensity was evaluated using the Visual Analog Scale [VAS], which is a unidimensional measure of pain intensity, used to record patients' pain progression, or compare pain severity between patients with similar conditions [6]. Stratification was conducted based on pain severity [mild 0–3; moderate 3.1–6; severe 6.1–10] [7].

Follow up: All participants were assessed as regards VAS after the first and second cycles. In the second group, rescue dose was estimated [dose of Ibuprofen used to provide relief from breakthrough pain or discomfort in individuals taking omega-3 fatty acid supplements during menses].

Statistical Analysis: The collected data was coded, processed and analyzed using the SPSS [Statistical Package for Social Sciences] version 22 for Windows® [IBM SPSS Inc., Chicago, IL, USA]. Qualitative data was described in the form of number and percentage while quantitative data was expressed as mean± SD or median [range] according to normality of distribution. The appropriate statistical tests were used according to the nature of the data. A P value<0.05 was considered statistically significant.

RESULTS

A total number of 90 females were included in our study. The mean age of the females in group A was 23.6±4.3 years vs 22.3±2.5 years in group B [P= 0.08]. The mean analgesic dose was 408.9±59.6 [mg/day] vs 573.3±151.3 [mg/day] [P =0.001] **[Table 1]**. According to the intensity of pain, in group A we found a statistically significant reduction in the VAS from 7.28±1.3 at the baseline to 4.97±1.78 at 1 month after the treatment [P=0.001] and to 4.57±1.92 after the 2nd month of treatment [P=0.001] **[Table 2]**.

In group B we found a statistically significant reduction in the VAS from 7.5± 1.13 at the baseline to 6.02± 1.45 at 1 month after the treatment [P=0.01] and to 3.08± 1.74 after the 2nd month of treatment [P=0.001] **[Table 3].** By comparing the two groups, at the baseline the severity of pain was similar in both groups [P =0.3]. At 1 month after the treatment the severity of pain was significantly higher in group B than group A [6.02 ± 1.45 vs 4.97 ± 1.78 respectively] [P =0.002]. However, after two months of treatment the VAS was significantly higher in group A vs Group B [4.57 ± 1.92 vs 3.08 ± 1.74 respectively] [P= 0.0002] **[Table 4].** In our study, there were 34 females [75.6%] in group B who needed rescue dose of ibuprofen during menses in the first cycle and 26 females [57.8%] who needed rescue dose of ibuprofen during menses in the second cycle **[Table 5].** The mean rescue dose of ibuprofen during menses in first cycle was 288±206.9 while during menses in second cycle was 210±156.3. Treatment with omega-3 fatty acids reduced the need of ibuprofen use **[Table 6].**

Table [1]: Average analgesic dose used to be taken per day before.

	Variable	Group A [ibuprofen] N=45	Group B [omega 3] N=45	Test	P value
Analgesic/day [mg/day]	Mean± SD	408.9±59.6	573.3±151.3	t=6.781	**0.0001***

Table [2]: Pain score before and after treatment in the ibuprofen group.

Variable		Group A [Ibuprofen] N=45	Test	P value
Severity of pain before	Mean± SD	7.28±1.3	F=33.8106	**P1=0.001*** **P2= 0.001*** **P3= 0.7**
Severity of pain during menses in first month	Mean± SD	4.97±1.78		
Severity of pain during menses in second month	Mean± SD	4.57±1.92		

P1= Before vs After 1 month. P2= before vs after 2 months. P3= after 1 month vs after 2 months.

Table [3]: Pain score before and after treatment in the omega 3 group.

Variable		Group B [Omega 3] N=45	Test	P value
Severity of pain before	Mean± SD	7.5± 1.13	F=106.6543	**P1=0.01*** **P2= 0.001*** **P3= 0.7**
Severity of pain after first month	Mean± SD	6.02± 1.45		
Severity of pain after second month	Mean± SD	3.08± 1.74		

P1= Before vs After 1 month. P2= before vs after 2 months. P3= after 1 month vs after 2 months.

Table [4]: Comparison of severity of pain score between the studied groups.

Variable		Group A [ibuprofen] [n=45]	Group B [omega 3] [n=45]	Test	P value
Severity of pain before	Mean± SD	7.28 ± 1.3	7.5 ± 1.13	t=0.85	0.39
Severity of pain after first month	Mean± SD	4.97 ± 1.78	6.02 ± 1.45	t=3.068	**0.002***
Severity of pain after 2nd month	Mean± SD	4.57 ± 1.92	3.08 ± 1.74	t= 3.8575	**0.0002***

Table [5]: Number of patients needed rescue dose of ibuprofen in omega 3 group.

	Rescue dose of ibuprofen 200 mg T during menses in first cycle [N=45]	Rescue dose of ibuprofen 200 mg T during menses in second cycle [N=45]
Not need	11 [24.4%]	19 [42.2%]
Yes	34 [75.6%]	26 [57.8%]

Table [6]: Mean rescue dose of ibuprofen in omega 3 group.

	Rescue dose of ibuprofen 200 mg T during menses in first cycle [n=34]	Rescue dose of ibuprofen 200 mg T during menses in second cycle [n=26]
Mean± SD	288±206.9	210±156.3

DISCUSSION

Regarding analgesic dose per day used to be taken by women before the study in group A and group B, it was 408.9±59.6 and 573.3±151.3 respectively. There was a statistically significant decrease in each group [ibuprofen and omega 3] regarding severity of pain before and after treatment. These finding are comparable to those of **Chen *et al.*** [8] who indicated a significant difference in pain intensity before and after therapy between the fish oil and ibuprofen groups. Also, **Mehrpooya *et al.*** [9] documented an enhancement in dysmenorrheal discomfort from pre- to post-treatment in the comparison group, noting a 31% and 50% reduction with ibuprofen [as needed] and a 36% and 20% reduction with fish oil.

Along with the current study, **Zafari *et al.*** [10] observed that, when comparing pain intensity before and after ibuprofen administration, the percentages were 15.8% in the first month, 18.4% in the second month, and 22.4% in the third month. **Rahbar *et al.*** [11] demonstrated that dietary supplementation with omega-3 fatty acids can significantly alleviate discomfort in young women suffering from primary dysmenorrhea. Moreover, the administration of omega-3 fatty acids diminished the necessary rescue dosage of ibuprofen to manage severe menstruation pain.

Kuncoroaji *et al*. [12] demonstrated a negative connection between omega-3 fatty acid consumption and the occurrence of dysmenorrhea, along with a reduction in pain. In another study, omega-3 was compared with ibuprofen. **Sabzevar *et al.*** [1] showed that omega-3 fatty acid supplementation results in decreased primary dysmenorrhea among female students; nevertheless, this alleviation of pain was not statistically significant when compared to ibuprofen.

Our findings are in line with those of **Kooshki *et al*.** [13] who demonstrated that primary dysmenorrhea is substantially reduced by dietary supplementation of omega-3 fatty acids. In addition, **Rahbar *et al*.** [11] found that dietary treatment with omega-3 fatty acids dramatically reduced PD. In another study by **Zamani *et al.*** [14] assessed the impact of omega-3 fatty acid dietary supplementation on primary dysmenorrhea in 84 adolescents. The first group was administered a daily dosage of 1 gram of omega-3 supplement for a duration of 2 months, whereas the second group received a placebo for the same period. The study's results indicated that omega-3 fatty acid supplementation considerably diminished both the intensity and duration of pain in adolescent girls. In another study by **Zafari *et al.*** [10] demonstrated a significant difference in pain intensity between the two groups post-treatment [p=0.0001]. A notable decrease in pain intensity occurred following the conclusion of

both the first and second months of treatment, as well as two months post-treatment.

Our results observed that, omega-3 supplementation reduces pain score and reduces NSAIDs use as efficient as ibuprofen with decrease side effects but with continuous use. Our findings align with those of **Sabzevar *et al.*** [1], who reported a substantial reduction in the mean pain severity score following omega-3 supplementation among female students [P=0.002]. Also, **Moghadamnia *et al.*** [15] showed that omega-3 fatty acids considerably reduce abdomen and back pain, as well as the necessity for NSAIDs, in adolescent girls suffering from primary dysmenorrhea. **Rahbar *et al.*** [11], found that for groups 1 and 2, the mean pain severity score before treatment was similar [7.5±1.7 vs. 7.6±1.9; P=0.692]. Women who got omega-3 fatty acids had significantly lower mean pain severity scores [3.5±2.0] after 3 months of treatment, while those who received placebo [6.9±2.1] had higher scores. At this moment, the two groups differed significantly [P=0.001]. Post-crossover, group 1 [placebo] had a mean pain severity score of 6.2±2.2, while group 2 [omega-3 fatty acids] had 3.8±2.2 [P=0.001]. These findings show that omega-3 fatty acids significantly reduced pain severity in women compared to placebo. **Demirturk *et al.*** [5] examined 44 15–19-year-old girls with primary dysmenorrhea. For two months, they solely used oral analgesics, then they received fish oil [omega-3] and could use them if needed. In the two months of fish oil [omega-3] use, school absence, oral analgesic use, and VAS ratings were significantly reduced. **Zafari *et al.*** [10] observed that the impact of fish oil on menstrual pain intensity revealed a significant difference in pain levels before and after administration [p=0.0001]. The efficacy of fish oil surpasses that of ibuprofen. Another study by **Harel *et al.*** [16] examined how omega-3 fatty acid supplementation affect adolescent dysmenorrhea. The first group received fish oil daily for 2 months, then placebo. The second group received placebo every day for 2 months, then fish oil for 2 months. Cox Menstrual Symptom Scale scores were similar at baseline and after 2 months of placebo. A considerable reduction was observed after omega-3 supplementation [P<0.004]. **Schorge *et al.*** [17] noted that participants assessed low back and abdominal discomfort severity. A rescue dosage of 400 mg of ibuprofen was indicated for women with significant pain after 1 month. Another study by **Sabzevar *et al.*** [1] found that omega-3 fatty acid supplementation lowered rescue ibuprofen dose, abdominal discomfort, low-back pain, and NSAID use in adolescent girls.

Conclusion: Our study findings suggested that continuous use of omega 3 caps for 2 months achieved a significant pain reduction and reduced NSAIDs use with decrease side effects. However, these findings require confirmation by larger, more-powered study with larger sample size.

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