

Full Length Research Paper

Comparison of the effect of acupressure, fish oil capsules and ibuprofen on treatment of primary dysmenorrhea

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Primary dysmenorrhea is one of the common causes of absence from workplace and decline in the quality of life of women. Because of the importance and prevalence of dysmenorrhea among women and girls of childbearing age, and due to the publication of reports concerning the effectiveness of fish oil and acupressure in curing primary dysmenorrhea, this study was conducted with the purpose of comparing the effectiveness of acupressure, fish oil capsules, and ibuprofen in treating primary dysmenorrhea. This empirical study was carried out on students of the University of Medical Sciences of Mazandaran in 2010. Students afflicted with primary dysmenorrhea were randomly divided into three groups. The first group (60 students) received 1000 mg of fish oil capsule every day for the duration of two successive cycles; the second group (76 students) was given 400 mg ibuprofen pills, as soon as the pain started, for two months; and in the acupressure group (60 students), the Saninjao point was pressed, at the start of the pain, with a thumb for 20 min. After the information was gathered, the SPSS software, Fisher's test, Duncan's test, Friedman's test, and analysis of variance ($\alpha + 0.05$) were used to test the data. Results obtained showed that there was a significant difference with respect to pain before and after the use of the medicines and acupressure ($P = 0.000$). Moreover, all three groups needed the same quantity of extra painkillers during the treatment duration ($P = 0.295$); and participants were most satisfied with ibuprofen, with acupressure and fish oil ranking second and third, in this respect ($P = 0.000$). Acupressure, fish oil capsules, and ibuprofen had similar effects in curing dysmenorrhea.

Key words: Primary dysmenorrhea, ibuprofen, fish oil capsule, acupressure.

INTRODUCTION

Dysmenorrhea, or painful menstruation, is a common gynecological disorder experienced by at least 50% of women during their fertility period. Ten percent of these women have such severe pain that it keeps them from attending their school or from going to their workplace. Therefore, women afflicted with dysmenorrhea are more often absent from their workplace and do worse in their studies than women who do not suffer from this disorder. Dysmenorrhea has two forms: Primary and secondary. From the accounts given by patients, and in clinical

studies and tests, no clear background reasons have been found for primary dysmenorrhea, but secondary dysmenorrhea is accompanied by a background disorder (Yaghmaee et al., 2004).

The prevalence of primary dysmenorrhea varies from 50 to 90% in different communities. In Iran, its prevalence has been reported to be from 74 to 86.1%. Although primary dysmenorrhea does not threaten lives and does not cause any disfigurement, it can influence the quality of life of women and, in severe cases, it can so disable them and make them inefficient that they cannot attend their school or go to their workplace (Dolatian and Jaafari, 2004). Several reasons have been given for primary dysmenorrhea, the most agreed upon of which is the increase in the production of prostaglandins, and the

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role these compounds have in causing pain. The common treatment of primary dysmenorrhea is based on the prevention of the production of prostaglandins through the use of nonsteroidal anti-inflammatory drugs (NSAIDs), or on taking oral contraceptives so that ovulation and the entrance of the endometrium into the luteal stage are prevented, and the level of prostaglandins in the body is reduced. Other recommended treatments include prescription of tocolytic drugs, inhibitors of the calcium canal, progesterones, magnesium, calcium, vitamin B1; quitting alcohol and cigarettes, TENS, changing the lifestyle, sleep therapy, psychotherapy, and consumption of herbal medicines and fish oil (Yaghmaee et al., 2004).

Fish oil supplements are dietary supplements that contain oil from the flesh of cold water fish such as mackerel, salmon, black cod, albacore tuna, sardines, and herring. The active ingredients in fish oil supplements are essential fatty acids known as omega-3 fatty acids. They typically include eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Most fish oil capsules or pills are obtained from the flesh of fish. In contrast, fish liver oils are derived from the livers of white fish, such as cod and halibut. Fish liver oils contain vitamins A and D and may have a different concentration of EPA and DHA than fish oils derived from flesh. The chemical composition of fish oil is, 120 mg DHA and 180 mg EPA per fish oil softgel (www.fishoil-s.com).

According to studies conducted, consumption of fish oil causes the production of prostacyclin and reduces the intensity of dysmenorrhea. It seems that the main effect of using the Omega-3 fatty acid supplements is in the production of weaker prostaglandins and leukotrienes. Increasing the Omega-3 fatty acids content of the diet brings about an increase in the inclusion of these fatty acids into the structure of cellular membranes. As one of the results obtained in this study, it can be said that more of series three prostaglandins (PGE2, PGI3, and TXA2) are produced during menstruation; and that the use of fish oil causes the production of prostaglandins belonging to the prostacyclin class in the uterus, which brings about a reduction in the contraction of myomeres and in the contraction of the vessels of the uterus, which, in turn, decreases ischemia, and hence reduces pain (Zamani et al., 2005).

In acupressure, the technique of touching the body is used to balance the flow of energy in the body. The Saninjiao, the intersection of the three canals between the spleen, the kidneys, and the liver, is one of the most important points used in acupuncture. This point is situated 3 Kans (four fingers) above the inside ankle of the foot behind the hind edge of the tibia; and it is extensively used in curing gynecological, genitourinary, and digestive disorders, in the treatment of weakness and low blood pressure, in creating anesthesia during operations in the pelvic area, and in painless childbirth (Pooresmaili and Ibrahimzadeh, 2002).

Although the nonsteroidal anti-inflammatory drugs are the

drugs of choice for curing primary dysmenorrhea, and despite the fact that they are widely available without prescription, adolescents do not take advantage of effective treatment programs. Because of fears concerning the side effects of nonsteroidal anti-inflammatory drugs and oral contraceptive pills, and based on a number of false beliefs, these two types of drugs are not regularly used. The purpose of this study is to compare the effects of fish oil and acupressure on painful menstrual cramps with that of ibuprofen pills; so that we can substitute fish oil, if it is effective, for ibuprofen; because fish oil has few side effects, while ibuprofen has many.

METHODS

Preparation of plant extracts

The criteria for being accepted as participants in this study were that the students had to be 18 to 22 years old, single, have regular menstrual periods (every 26 to 30 days), have had menstrual pains in most of the menstrual cycles of the past six months, and have had severe and moderate pains, according to the standard criterion of multi-dimensional speech. The criteria for omitting student candidates for the study included sensitivity to nonsteroidal anti-inflammatory drugs, use of medicinal and non-medicinal methods of relieving pain, having special diets (those undergoing hydrotherapy, vegetarians, uncooked-food eaters), doing any kind of regular sports activities or attending special classes (sports classes, physical fitness classes, etc.), having used body relaxation techniques during the past six months, having any kind of diagnosed physical and mental illnesses or any type of genital diseases, having a history of surgery of the stomach or of the pelvis, addiction to cigarettes or alcohol, taking hormonal drugs or contraceptive pills, or having intense psychological or mental stresses in the duration of the study.

Experimental groups

The first group (60 students) received the daily dosage of one gram of fish oil. This capsule is gheatin form and yellow colour. It contains polyunsaturated fat (1 g), saturated fat (1 g), EPA (180 mg) and DHA (120 mg). The company produces these drugs in the American 21st Century. According to the study that was done in animals by Jacoby et al. (1992), there was no specific side effect during the ordinary dose of fish oil and its authorization number was 91-460 (issued in 5 June). The second group (76 students) was prescribed ibuprofen, and for the third group (60 students) acupressure was used.

Experimental design

This study was conducted as a random clinical test of effectiveness. Among the medical students of the University of Medical Sciences of the province of Mazandaran, 196 students were afflicted with moderate and severe primary dysmenorrhea. They were randomly divided into three groups.

Study outcomes

The primary outcomes were to compare the severity and duration of pain before and after treatment. The secondary outcomes need more sedative with an amount of satisfaction.

Experimental

The entire participant was studied for the duration of three menstrual cycles. For the first cycle (the control cycle) no treatment was offered, and the participants were only asked to write down the features of the menstruation period with respect to the intensity and the duration of pain: They had to determine the intensity of their pain using the grading system of multi-dimensional speech. In this grading system, those having the very slight form of painful menstruation (grade zero) are not hindered in their normal activities and feel a very slight pain. Those who suffer from the slight form of the menstruation pain (Grade 1) feel a very slight pain and their normal activities are rarely limited. In those afflicted with the moderate form (Grade 2) daily activities are affected, they feel a moderate pain, a few bodily symptoms appear, and they need painkillers. Those with the severe form (Grade 3) have their daily activities greatly limited, painkillers give them little relief, they have intense pain, and there are physical and somatic symptoms like fatigue, nausea, vomiting, and diarrhea. The participants calculated the duration of pain, from the time it started till the time it ended, in hours. Then the participants were treated, using the three methods, for the duration of the second and the third menstruation periods.

Treatment of pain

The 60 students of the first group received 100 mg/day of fish oil capsules for two months; the 76 students in group two were prescribed 400 mg ibuprofen pills, to be taken at the start of the pain, and be repeated 8 h later if the pain persisted; the 60 students in group three were trained to press the Saninjiao point, at the start of the pain, with their thumb for 5 min (press the point for 6 s, release the pressure for 2 s, press for another 6 s, release the pressure for two s, and so on). After the 5 min, they had to change feet and repeat this process is on the same point for 5 min. Altogether; this point was pressed for 20 min (2 to 5 min on each foot). It must be added that each student was interviewed once a week to check upon the correct use of the medicines and the proper way of performing the acupuncture. The medicine packages were monthly given to the students; the possibility of the occurrence of side effects was explained to them, and they were asked to report any side effects they observed. At the end of the two months, both groups receiving medicines were studied and investigated with respect to the intensity and the duration of pain.

Data collection

Patients received drug boxes each month, and we described for three groups how they use drug and do acupuncture technique. We asked them to refer us if mentioned complications occurred. Treatment of three groups was studied on intensity and duration of pain, and amount of satisfaction.

Statistical analysis

After gathering the information, it was coded and analyzed using the statistical software SPSS and Fisher's test, Friedman's test, Duncan's test, and the analysis of the variance.

Ethical issues

This study was approved by the research and ethics committee of Medical University of Babol, and it was registered in a clinical trial center.

RESULTS

General observations

There were no statistically significant differences among the 196 student participants with respect to the average age, the age at which the first menstruation happened, the age at which dysmenorrhea started, the intensity of pain before and after the treatment, and the duration of pain: The average age, the age at which the first menstruation happened, the age at which dysmenorrhea started, the pain before and after the treatment, and the duration of pain in the group receiving fish oil capsules were respectively 20.13, 11.96, 14.2, 2.33, and 48.8; in the group taking ibuprofen were, 20.13, 12.69, 14.77, 2.39, 36.31; and in the acupuncture group were 21.16, 12.13, 14.88, 2.28, and 35.1.

Severity and duration of pain before and after treatment

As for the intensity of pain before and after the intervention, there was a statistically significant difference in the group using fish oil capsules ($P = 0.000$), the group taking ibuprofen pills ($P = 0.000$), and the acupuncture group ($P = 0.000$).

Regarding the duration of pain before and after the treatment, there was a statistically significant difference in the group taking ibuprofen pills ($P = 0.000$), the group using fish oil capsules ($P = 0.000$), and the acupuncture group ($P = 0.000$). The intensity of pain after treatment was not the same in the three groups, and the average intensity of pain was the same only for the acupuncture and the fish oil groups ($P = 0.000$) (Table 1).

The duration of pain after treatment was not the same for the three groups either ($P = 0.000$) (Table 2).

The three groups had the same need for extra painkillers ($P = 0.295$), but there was a statistically significant difference in the degree of satisfaction in the three groups ($P = 0.000$): The group taking ibuprofen was the most satisfied, followed by the acupuncture and the fish oil groups.

DISCUSSION

In this study, the average age, the age at which the first menstruation happened, the age at which dysmenorrhea started, and the intensity and the duration of pain before intervention were the same for all three groups. However, after the treatments, the intensity and the duration of pain decreased in the fish oil capsule group. Therefore, it can be concluded that fish oil has a considerable effect in reducing the intensity of pain in primary dysmenorrhea. In this respect, the results of this study are similar to those obtained by Harel et al. (1996), Wilkinson and Murphy

Table 1. Comparison of average and standard deviation of menses intensity before and after receiving treatment.

Group pain intensity	Ibuprofen (M±SD)	Acupressure (M±SD)	Fish oil capsulD (M±SD)	p-Value
Before use	2/39±0/49	2/28±0/45	2/33±0/47	0/000
After use	1/24±0/49	1/63±0/54	1/75±0/47	

Table 2. Comparison of average and standard deviation of menses pain duration before and after receiving treatment.

Group menses pain duration	Ibuprofen (M±SD)	Acupressure (M±SD)	Fish oil capsulD (M±SD)	p-Value
Before use	36/31±0/66	35/10±12/13	48/80±21/96	0/000
After use	14/46±0/68	29/9±11/20	43/30±22/09	

(2001), Dolatian and Jaafari (2004), Yaghmaee et al. (2004), and Zamani et al. (2005). In the study conducted by Wilkinson and Muphy (2001), fish oil (at 4 g/day) was more effective than the placebo. Fish oil has a significant influence in reducing the duration of pain in primary dysmenorrhea. We obtained these result with 1 g/day. Increasing the side effects can accrue in high dose intake (more than 3 g/day), such as: Vomiting and diarrhea; reduce the absorption of vitamin A. D.K.E, acceleration of glucose in diabetic person and hemorrhagic infarcts (www.fishoil-s.com).

In the study conducted by Deutch et al. (2000) the effectiveness of treatment with fish oil and seal oil was compared with that of a combination of fish oil and vitamin B12, and it was found that the curative effect of fish oil and vitamin B12 was more stable. Fish oil is effective for healthy brain and effective on alzheimers disorder, anxiety, bipolar disorder, eyesight, heart disease, inflammation and painful menses (www.fishoil-s.com).

Due to the relatively severe digestive side effects of nonsteroidal anti-inflammatory drugs (that cure 80 to 90% of the cases of dysmenorrhea), these drugs, despite their considerable curative effects, enjoy a low level of acceptability; and although they have been the most widely used cure for dysmenorrhea so far, numerous studies have been carried out to find drugs with similar effects, but with fewer side effects. Playing various sports together with sauna, using hot water bottles, quitting cigarettes and alcohol, including supplements such as calcium and sodium in the diet, and recently, acupuncture, somewhat cure dysmenorrheal (Pooresmaili and Ibrahimzadeh, 2002).

In this study, the intensity and the duration of pain decreased when acupressure was used. In this respect, these results were consistent with those obtained by Habek and Mehmet (2007), Bostani et al. (2010), and Kidney et al. (2001). After the intervention, the intensity of pain in the acupressure group was significantly reduced.

Pooresmaili and Ibrahimzadeh (2002), who carried out a study in this area, concluded that the three methods of, acupressure, the use of placebo, and taking ibuprofen were effective in reducing primary dysmenorrhea, but that acupressure and ibuprofen had very similar effects, which were considerably greater than those of the placebo.

Chen and Chen (2004) also conducted a study in the same area and stated that in the two groups of acupressure and ibuprofen, there was a significant difference in the intensity of pain before and after the treatments. Of course, these

differences did not considerably vary in the three consecutive months, but were very noticeable and important compared to the pain before the treatments. They also found that both the acupressure method and the use of painkillers were very effective in reducing pain, and reduced it equally.

In another study carried out on 216 female students of 14 to 18 years of age, in 50% of those in the acupressure group, and in 18% of those in the placebo group, the intensity of pain after the treatments was reduced to zero (Lee et al., 1999).

Conclusion

Acupressure and fish oil capsules (which have few side effects and are very acceptable and tolerable) can be substituted for the nonsteroidal anti-inflammatory drugs (which have many side effects) in curing those afflicted with dysmenorrhea. It is also recommended that different levels of fish oil should be used in future studies.

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