

Sesame a Treatment of Menstrual Bleeding Cessation in Iranian Traditional Medicine: Results From a Pilot Study

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Received: November 10, 2013; **Revised:** December 20, 2013; **Accepted:** March 30, 2014

Background: There is an increasing demand for alternative medicine methods in treatment of menstrual bleeding cessation and oligomenorrhea. *Sesamum indicum* L. is a well-known medication in the Avicenna traditional medicine to induce menstrual bleeding in women with oligomenorrhea.

Objectives: This study is the first effort to evaluate the efficacy of this treatment on the patients suffers from oligomenorrhea.

Patients and Methods: A pilot study was carried out on 21 cases of oligomenorrhea having complaint of menstruation retard for more than two weeks admitted to Beheshti hospital clinic. Patients who had not used hormonal chemical or herbal drugs and were not pregnant or lactating were enrolled and received sesame once daily for 7 days per oral. Patients were followed for 7 weeks after drug administration.

Result: 85% of the patients experienced menstrual bleeding after receiving sesame treatment by two weeks. The mean interval before menstruation upon treatment was 9.8 days while the mean postponement time after the last patients' menstruation, before treatment, was 92 days. Blood flow and pain during menstruation were not significantly higher than past menstruation episodes. No untoward side effect was noticed during clinical trial. The next menstruation episode follow up demonstrated that 80% of the patients had menstruation without using any drug with a delay of less than 2 weeks.

Conclusion: In conclusion, the results of this pilot study demonstrated that *Sesamum indicum* L. may be an effective choice in inducing bleeding in women with oligomenorrhea that has ignorable side effects compare to the current hormonal therapies. Thus, stronger clinical trials with control group are recommended to strength this hypothesis.

Keywords: Oligomenorrhea; *Sesamum indicum* L., Sesame; Iranian Traditional Medicine

1. Background

According to Iranian Traditional Medicine (also is called as Humoral or Avicenna traditional medicine), normal menstruation is an essential physiological function of women during their reproductive age and is the indicator of healthy reproductive organ. Avicenna (980 - 1037 A.D), one of the most influential Iranian physicians, in his famous book: Canon of Medicine describes oligomenorrhea under the title of "Ehtebas Tams" (1). The Iranian Traditional Medicine (ITM) physicians believe that patients with oligomenorrhea should be treated to avoid complications that may occur because of cessation of menstrual bleeding as a major excretory pathway (1).

In the conventional medicine, oligomenorrhea is defined as infrequent menstrual flow at intervals of 39 days to 6 months or 5-7 cycles in a year (2, 3). The overall prevalence of oligomenorrhea is about 10.2% (4). Oligomenorrhea is often associated with polycystic ovarian syndrome

(PCOS) (3, 5, 6), which is the most common endocrine disorder in women (4, 7). Available treatments for this disease are mostly hormonal drugs that unfortunately, are not free from side effects (8-10). The most common side-effects in women taking the hormonal drugs include headache, mood changes, gastrointestinal disturbances, and breast pain (11). These drugs are also responsible for more serious adverse effects like breast cancer (12).

Based on Iranian Traditional Medicine texts, there are several treatments for oligomenorrhea, among those, *Sesamum indicum* is the medicinal herbs that can induce menstrual bleeding with ignorable side effects (13-18). Sesame (*Sesamum indicum* L., aslo known as "Konjed" or "Samsam"), is one of the oldest oil seed crops, growing widely in tropical and subtropical areas and is a common constituent of the Middle East diet (19-21). This seed is an important source of oil (44-58%), protein (18-25%), and carbohydrates (13.5%) and is an important source of active ingredients used in antiseptics, bactericides, viri-

cides, disinfectants, and antitubercular agents (22, 23). In the traditional medicine, sesame has been reported as a useful remedy for oligomenorrhea treatment, fetus abortion, increasing the sexual tendency and sperm count (13-18). However, to our knowledge, its effect on menstruation has not been scientifically evaluated yet.

2. Objectives

The aim of the present study is to evaluate the efficacy of sesame in inducing bleeding in women with oligomenorrhea.

3. Patients and Methods

This pilot study was carried out among 21 cases of oligomenorrhea between 20 to 40 years old, admitted to Beheshti hospital obstetrics and gynecology clinic. Oligomenorrhea was defined as cessation of bleeding for at least 14 days, with past history of at least two episodes of menstrual bleeding cessation in the previous year. Exclusion criteria included any anatomical abnormality or gynecological neoplasia, pregnancy, breastfeeding, sesame allergy and intake of any hormonal products (chemical or herbal) in the previous 2 months. All patients provided written informed consent. The Ethics Committee of Shahid Beheshti University of Medical Sciences approved the protocol (code:143; 12.1.2013). The research protocol was also registered with Iranian Registry of Clinical Trials (IRCT ID: IRCT2013072014072N1). Physical and gynecological examinations and pregnancy test were performed at the beginning of study. *Sesamum indicum* L. seeds were purchased from Morvarid-No company. Laboratory quality control tests including bacterial and fungal load tests were done on the product before use. The seeds were stored in the temperature of 2-5 centigrade degrees. *Sesamum indicum* L. was prescribed for patients at a dose of 60 g once daily before breakfast for 7 days (18). Patients were educated to prepare the drug as follow: "60 g powdered sesame to be boiled in 400 cc water for 4 minutes, then filtered, be mixed with a tea spoon of honey and be drunk warm". Patients were followed by telephone calls every week after receiving the drug. Data on drug intake (yes/no), method of preparing the drug product (correct/incorrect), length of drug intake (days), amount of vaginal bleeding and the delay before bleeding initiation, dysmenorrhea and any complications of medications were collected.

The primary outcome measure was the occurrence (yes/no) of bleeding after receiving the drug. A bleeding episode was defined as bleeding if it occurred within 2 weeks after consumption of the drug. The mean period of waiting for menstrual bleeding without using any drug in the past menstrual episodes was also calculated. All women who received at least one dose of study drug were included in the safety analysis.

4. Results

21 females were enrolled in the study. The mean age was 28.5 years. Mean height and weight were 161.04 cm and 63.52 kg. 10 of the patients were known cases of polycystic ovarian disease. The mean postponement time after the last menstruation was 92 days. The main reason of dropping out of the study was due to unpleasant taste of sesame and nausea (1 person). 85% (17 out of 20) of the patient experienced bleeding after using sesame within two weeks. Patients experienced bleeding on an average of 9.88 days after the treatment initiation which is significantly lower than the waiting time without treatment in their past menstruation episodes (t-test, P value < 0.05). 7 patients (35%) of the patients reported the same menstruation bleeding pattern compare to their past episodes. 4 (20%) of the patients had a higher amount of bleeding while 9 patients (45%) reported a lower amount of bleeding after receiving sesame.

Sesame was well tolerated by the patients. There were no serious adverse reactions or allergy in the patients. The most common unpleasant report was nausea (1 person). A good side effect was decreasing dysmenorrhea (2 persons). The follow up for the next menstruation episode showed that 80% of the patients (16 patients) had menstruation without using any drug with a delay of less than 2 weeks (P value < 0.05 compare to the menstruation delay before using sesame treatment).

5. Discussion

Sesamum indicum is one of the most important oilseed crops with worldwide production reaching about 3*3Mt annually (24). Sesame is rich in unsaturated fatty acids and antioxidant lignans, exemplified by Sesamin, Sesamol and Sesaminol, which are also classified as phytoestrogens (25).

Sesame is an important herb mentioned in the Iranian Traditional Medicine for oligomenorrhea (13-18). Although this is widely used in the traditional medicine university clinics, no clinical trial has evaluated and approved its therapeutic effect. The present study is a pilot to evaluate menstruation upon *Sesamum indicum* L. use. The results from this study showed that sesame intake has noteworthy advantages on induction of uterus bleeding. The percentage of patients experiencing uterus bleeding following sesame use was 85% which is a fine response to treatment. The high rate of menstruation in the next menstrual cycle without treatment is also remarkable. To our knowledge no study has been performed yet to evaluate the effects of this herbal drug on uterus bleeding; so this is the first study to examine the effect of this herb on the treatment of oligomenorrhea.

Papadakis EN. et al. reported that the levels of enterolignans (i.e. enterolactone and enterodirole, which are the end metabolites of lignans in mammals and express

strong phyto-oestrogenic activity) were increased dramatically in the plasma of Wistar rats receiving sesame for 8 weeks (26). In a same experiment on Wistar rats supplied for 8 weeks with a diet rich in sesame, Anagnostis A. et al evaluated the expression of oestrogen receptors (ERalpha and ERbeta) in the uterus tissue (27). Significant increase in the expression of ERbeta was seen, while no statistically significant change was observed in the expression of ERalpha in uterus. Therefore a shift of ERalpha: ERbeta in favour of ERbeta was evident (27). The authors suggested that this effect is attributed to the lignans present in the pericarp which exert phyto-oestrogenic activity (27).

Another study by Mahabadi JA et al. was designed to examine the effect of a sesame seed regimen on the testicular structure and sex hormones in adult rats. The findings revealed that sesame seed intake improves the testicular parameters (the mean number and motility of sperms in epididymis, the number and volume percentage of epithelial cells, lumen and interstitial space as well as the diameters of the tubules), fertility, sperm production and LH level in male rats (28). In another study, Asghary et al. evaluated the blood fibrinogen and factor 7 levels in rabbits divided in to different groups with normal, hypercholesterol and sesame diets. The results showed that the blood fibrinogen and factor 7 were decreased in groups that had sesame seed or oil in their diet (29). This result is noteworthy as the PCOS is a foremost pathology in the oligomenorrhea and several studies of women with PCOS have shown dysregulation of the homeostatic system (30-32). For instance Manneras-Holm L et al. demonstrated that women with PCOS have high circulating concentrations of Plasminogen activator inhibitor 1 activity and Fibrinogen after adjustment for age and body mass index (33). The effects of sesame on coagulation factors should be considered as a possible mechanism in oligomenorrhea treatment.

In the field of oligomenorrhea treatment, a similar study with another herbal remedy was recently done by Mokaberinejad et al. They designed a clinical trial to assess the effect of *Mentha longifolia* L. in inducing bleeding in women with secondary amenorrhea and oligomenorrhea. Treatment consisted of sequential oral syrup, three times a day for two weeks. 68.3% of women in the drug group experienced bleeding during the first cycle (68.3% vs. 13.6% in the placebo group; $P < 0.001$) (34). In our study the length of treatment was shorter (once daily for a week vs. three times a day for two weeks) and the response rate in our drug group was higher. In our study no serious side effect was observed, while the treatment of oligomenorrhea in the conventional medicine is mostly based on empiric hormone therapy with estrogen and progesterone that is evident to have several adverse effects and complications (35, 36). However, the important limitation of this pilot study was the lack of control group. In conclusion, the results of this study showed that *Sesamum indicum* L. is effective in inducing menstrual bleeding in women

with oligomenorrhea. Due to the beneficial effects of this herbal drug, besides its safety, availability and low cost; it is recommended to plan a randomized clinical trial with a control group to compare its therapeutic effect with hormonal treatments. If the result of stronger studies would approved the effects shown in the current pilot study, *Sesamum indicum* L. can be used as a good choice for treatment of patients with oligomenorrhea.

Acknowledgements

The authors gratefully acknowledge the help of Ms Shoaei, Dr Elahe Zarean, Dr Fereshteh Haghghat and Dr Soheila Riahinejad in data acquisition for this pilot study. This work is part of a PhD postgraduate thesis by Maryam Yavari, MD in the Shahid Beheshti University of Medical Sciences.

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