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The Effect of Evening Primrose Oil in Cervical Ripening and Induction of Labor

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Abstract

Labor induction is one of the common clinical cases with a prevalence rate between 10% and 30%. Evening primrose is one of the most frequent herbal medications prescribed for cervical preparation, but its efficacy has not yet been established. This prospective interventional study (Randomized control trial) was conducted on low risk primigravida women with a gestational age (40 week ± 1week) & a Bishop score of less than four attending to Dar-Ismail Hospital & Alzahraa University Hospital Al-Azhar University during antenatal care (ANC). Population included were divided into 3 groups: Group 1: 50 pregnant women taking oral 1000 mg primrose oil capsule twice daily. Group 2: 50 pregnant women taking 1000mg capsule oral at morning & 1000mg capsule vaginal at night daily and Group 3: 50 pregnant women taking placebo (Vitamax multivitamin capsule) twice daily. All pregnant women take the capsules from the 39th week of pregnancy until onset of labor occur or 42 weeks of gestation. The basic demographic and clinical data including age, residence, gravidity, previous abortion and bleeding throughout the first two hours after birth had non-significant difference. However statistically significant difference was found regarding Bishop Score on admission to delivery, method of delivery, length of labor and neonatal intensive care unit admission. Evening primrose oil was found to have significant impact on bishop score and thereafter mode of delivery and duration of labor. The vaginal usage of Evening primrose oil with repeated doses has a substantial influence on the length of labor and was related with a higher Apgar score, taking into account the necessity for safe and healthy labor in the shortest amount of time, as well as enhancing neonatal outcomes. Evening primrose oil was found to have non-significant impact on Postpartum hemorrhage.

Keywords: Evening primrose oil; Cervical ripening; Labor induction.

1. Introduction

Induction of labor refers to the process whereby uterine contractions are initiated by medical or mechanical means before the onset of spontaneous labor [1]. Labor induction is recommended to increase the incidence of vaginal birth & decrease the incidence of cesarean birth. It also may be recommended when there are concerns

about the health of the mother or the fetus [2]. Ripening the cervix is a procedure that helps the cervix soften and thin out so that it will dilate during labor. In the absence of a ripe or favorable cervix, a successful trial of labor & vaginal birth is less likely. Therefore, cervical ripening or preparedness for induction should be assessed before a regimen is selected [3].

Various scoring systems for cervical assessment have been introduced. The bishop score is the most used. With this scoring system, a number ranging from 0 to 13 is given to rate the condition of the cervix. A score of less than 6 means that cervix is unfavorable for induction and a cervical ripening method should be used [4]. There are several methods of cervical ripening pharmacological & non-pharmacological. Evening primrose oil is one of the non-pharmacological herbal agents used to ripen the cervix and/or induce labor, therefore [5]. The oil extracted from evening primrose seeds contain an unusually high amount of gamma-linolenic acid that metabolized into di-homo-gamma-linoleic acid, a very active essential fatty acid, which is a precursor of prostaglandin E1 which is one of the joint capsules for preparation of the cervix [6].

The aim of this study was to evaluate the effectiveness of evening primrose oil in cervical ripening and induction of labor in primigravida with gestational age 40 week ± 1week to reduce complication associated with postdate pregnancy.

2. Patients and Methods

The study was prospective interventional research (Randomized control trial) conducted in Obstetrics and Gynecology Department, Dar Ismail Hospital & Alzahraa University Hospital Al-Azhar University. Al-Azhar University's school of medicine granted permission for girls to participate in low-risk primigravida mothers with a gestational age of 40 weeks ± 1week and a Bishop score of less than four. All Primigravida women aging (20-40) years old with singleton pregnancy with gestational age (40 weeks ± 1week) determined according to last menstrual period or early detected by ultrasound were included in the study. While women with Diabetes, hypertensive disorders, oligohydramnios, polyhydramnios, and high-risk pregnancy were excluded from the trial. Population included were divided into 3 groups: Group 1: 50 pregnant women taking oral 1000 mg primrose oil capsule twice daily. Group 2: 50 pregnant women taking 1000mg capsule oral at morning & 1000mg capsule vaginal at night daily and Group 3: 50 pregnant women taking placebo (Vitamax multivitamin capsule) twice daily. All pregnant women take the capsules from the 39th week of pregnancy until onset of labor occur or 42 weeks of gestation. Participants attending to the antenatal care clinic every week for follow up by doing per vaginal examination and reassess bishop score. Data collected throughout time, basic clinical exams, laboratory tests, and clinical outcomes were coded, documented, and analyzed using Microsoft Excel software. The statistical analysis application Statistical Package for the Social Sciences was then updated with new data (SPSS version 22.0).

3. Results

As show in table 1 there was no variation between the study groups as regard age (P-value = 0.237), residence (P-value = 0.301), gravidity (P-value = 0.338), and previous abortion (P value = 0.330). As show in table 2 there was no statistical variation between the study groups regarding Bishop Score during Antenatal care before administration of Evening Primrose Oil capsules ($P > 0.05$). Bishop score on admission to labor ward shows a substantial enhance in both group I and II more than group III ($p < 0.01$). As shown in table 3 there was high statistical variation between the study groups as regards duration of the latent, active phase and the second stage (P-value < 0.001). There was statistical substantial variation between the

studied groups as regards mode of delivery (P-value = 0.010). As shown in table 4 there was high statistical variation between the study groups regarding Apgar score at1 and 5 minutes (P-value < 0.0001). As shown in table 5 there was no statistical variation between the study groups as regards bleeding during the first two hours after delivery (P = 0.236). There was statistically substantial variation between the study groups as regards neonatal intensive care unit (NICU) admission (P-value = 0.022).

Table 1: Characteristics of the research groups' demographics.

	Group I "n=50"	Group II "n=50"	Group III "n=50"	ANOVA	P-value
Age Rang Mean S.D.	21-39 30.1 5.9	22-38 30.6 4.5	21-38 30.6 4.8	1.464	0.237
Residence n (%) Urban Rural	26 (52%) 24 (48%)	31 (62%) 19 (38%)	15 (30%) 35 (70%)	2.400	0.301
Gravidity Rang Mean S.D.	1.00-2.00 1.3 0.5	1.00-2.00 1.3 0.5	1.00-2.00 1.2 0.4	1.100	0.338
Previous abortion No Yes	33 (66.0%) 17 (33.3%)	35 (70.0%) 15 (30.0%)	25 (82.0%) 5 (18.0%)	2.219	0.330

Table 2: Bishop score among the study groups.

Bishop score	Group I "n=50"	Group II "n=50"	Group III "n=50"	ANOVA	P-value
During ANC Rang Mean S.D.	1-3 1.8 0.8	1-3 2.2 0.8	1-3 2.2 0.8	1.494	0.230 N.S.
On admission (at labor ward) Rang Mean S.D.	5-10 7.6 1.7	6-13 9.3 2.3	2-5 3.9 1.0	15.65	0.001*

EPO = Evening Primrose Oil. ANC = Antenatal care

Table 3: Characters of labor among the studied groups.

	Group I "n=50"	Group II "n=50"	Group III "n=50"	ANOVA	P value
Duration of latent phase (hours) Rang Mean S.D.	1.98-6.8 4.1 1.3	1.84-5.93 3.6 1.3	5.55-11.53 8.8 2.0	76.007	0.001
Duration of active phase (hours) Rang Mean S.D.	2.19-6.25 4.1 1.3	1.55-4.99 3.3 1.0	7.5-18.19 13.2 2.9	15.81	0.001
Duration of the second stage Rang Mean S.D.	0.7-1.31 1.0 0.2	0.63-1.2 0.9 0.2	1.05-2 1.5 0.3	51.573	0.001
Mode of delivery n (%) NVD CS	39 (78.0%) 11 (22.0%)	40 (80%) 10 (20%)	26 (52.0%) 24 (48.0%)	9.259	0.010

NVD = normal vaginal delivery CS = Caesarean section

Table 4: Comparison between the study groups as regard Apgar score at 1 and 5 min.

	Group I "n=50"	Group II "n=50"	Group III "n=50"	ANOVA P value
Apgar score at 1 min Rang Mean S.D.	7-9 8.1 0.8	8-9 8.6 0.5	6-8 7.0 0.8	 30.633 0.0001*
Apgar score at 5 min Rang Mean S.D.	8-10 9.3 0.7	9-10 9.5 0.5	7-10 8.6 0.8	 15.304 0.0001*

Table 5: Postpartum complications among the study groups.

	Group I "n=50"	Group II "n=50"	Group III "n=50"	ANOVA	P value
Hemorrhage during the first 2 hours after delivery N (%) No Yes	 42 (84%) 8 (16.0%)	 45 (90%) 5(10%)	 39 (78%) 11 (22.0%)	2.889	0.236
NICU admission No Yes	 44 (88%) 6 (12%)	 50 (100%) 0 (0%)	 40 (80%) 10 (20%)	7.664	0.022

NICU = neonatal intensive care unit.

4. Discussion

The use of natural processes during pregnancy is one of the notable issues that should be researched further [7]. The prevalence of using plant byproducts in pregnancy has been estimated up to 55% and this amount depends on the geographical region and ethnic cultures [8]. The natural plant known as evening primrose has yellow blossoms and may be found in both the north and south of the US and Europe. The plant is used for treating systemic inflammatory diseases [9].

One of the most popular herbal medications for cervical preparation is this plant's oil, although its efficacy has not yet been shown. [10]. Primrose capsules contain the oil of evening primrose. And it is made from the seeds of this plant Linoleic acid accounts for the greatest part of its ingredients (60-65%) [11].

This project's objective was to assess the effectiveness of evening primrose oil in cervical ripening and labor induction in primigravida with gestational age (40 weeks ± 1week) to decrease rate of cesarean section delivery and reduce complication associated with postdate pregnancy.

Our results showed that there was a highly substantial elevation in Bishop Score before delivery in group II greater than group I and group III "placebo" show a significant decrease in Bishop score less than group I and II. Also, it was found that there was a highly significant decreasing in the duration of latent phase, active phase and second stage in group I (oral 1000 mg primrose oil capsule twice daily) and group II (oral & vaginal 1000 mg primrose oil capsule daily) more than the control placebo group; on the other hand, the oral & vaginal 1000 mg primrose oil capsule daily show a significant shorter in the duration less than group I (1000 mg primrose oil capsule twice daily). The results of our thesis showed that the cesarean section was highly significant in placebo group more than the other two

groups taken both oral and vaginal primrose. The Apgar score at 1 minute and 5 minutes was substantially lower in placebo group more than group I and II, also neonatal intensive care unit admission was substantially greater in placebo group more than the other two groups.

In agreement with our results regarding Bishop Score, Najafi. [12], study the impact of vaginal evening primrose on term nulliparous women's Bishop Scores. 86 nulliparous women who were randomly assigned into two intervention and placebo groups for the research were included. From the 38th week of pregnancy until birth, the intervention group took 1000 mg vaginal capsules of evening primrose daily, while the placebo group got a comparable placebo with a comparable administration technique. Information was acquired and examined on the women's bishop score. As a consequence, it was discovered that vaginal evening primrose may be used to help term nulliparous women's cervix ripen.

Also, in parallel with our results, Shahali. [13], investigate how vaginal evening primrose capsules affect post-term cervical ripening in nulliparous women. In this randomized clinical investigation, 60 post-term pregnant women participated. A placebo and a vaginal pill containing 1000 mg of evening primrose oil comprised the study's 2 groups. After using 10 units of oxytocin to induce labor, the medication was given. One vaginal capsule containing 1000 mg of evening primrose oil was used in the intervention group, while gelatin capsules identical to the medication were utilized in the control group. Following that, oxytocin was administered to both groups at the same dosage (10 units per 1000 cc of serum ringer) to begin the induction of labor. Based on routine examinations, cervical ripening was evaluated (every one hour). Bishop-score checklist, time, and a demographic questionnaire were used to gather data, which was subsequently evaluated. The research found that using evening primrose oil vaginally shortens the latent phase's length and promotes cervical ripening and Cardinal score.

According to the study's findings, both intervention groups' Bishop scores were much higher than those of the control group, but there was no statistically substantial variation between them. Additionally, results demonstrated that vaginal and oral evening primrose oil capsule consumption for one week substantially enhanced cervical consistency and cervical position.

In contrast with our results, Jahdi. [14], revealed that regarding their Bishop scores, there was no discernible variation between the two groups, which did not agree with the results of the present study.

These contrasting outcomes might be a consequence of variations in the recommended technique and timeframe for taking the capsule. In the research of Jahdi. [14], normally, the capsules were taken from the 38th week of pregnancy until birth, but in the current trial, they were taken from the 38th week of gestation until the 40th week and sixth day.

In the study of Vahdat. [15], by using a simple randomization technique, 28 females got 2 vaginal tube gels containing a total of 1000 mg of evening primrose oil and 22 females received a placebo. In order to evaluate the impact of evening primrose oil on the simplicity of cervical softening and dilatation prior to operational hysteroscopy, soft gels were administered to the posterior vaginal fornix 6 to 8 hours before procedural hysteroscopy in both instances. The results demonstrated that Evening primrose oil works well to ripen the cervix prior to hysteroscopy. It is simple to use, readily accessible, affordable, and has no significant negative effects.

In agreement with our results regarding Apgar score, Rouse. [16], the lengthier second phase of labor durations have been linked to more frequent outcomes, such as a poor Apgar score at 1 minute and neonatal intensive care unit admittance, according to

research on the association between maternal and perinatal outcomes in nulliparous women.

5. Conclusion

Evening primrose oil was found to have significant impact on bishop score and thereafter mode of delivery and duration of labor. The vaginal usage of Evening primrose oil with multiple doses has a substantial influence on labor length and was related with a higher Apgar score, taking into account the necessity for safe and healthy labor in the shortest amount of time and enhancing neonatal outcomes. Evening primrose oil was found to have non-significant impact on Postpartum hemorrhage.

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