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The impact of manual massage on intensity and duration of pain at first phase of labor in primigravid women

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Abstract
Background and aim: Theoretically massage therapy inhibits the transmission of the pain to the brain. In this study, we evaluated the effect of manual massage on intensity and duration of pain in the first phase of labor in primigravid women.
Materials and methods: This was a randomized controlled trial carried out on 60 primigravid women expected to have normal vaginal delivery, admitted to Amiralmomenin Hospital in Zabol, Iran, during 2007. Women were randomized into two groups: 30 women who received massage (A) and 30 women in the control group (B). Visual analog scale (VAS) was used to measure the labor pain. Intensity and duration of pain were compared in two stages of the active phase of labor as follow: 1-cervical dilatation 5 cm, 2-cervical dilatation 8cm.
Results: This study showed that manual massage significantly decreases intensity and duration of labor pain in both of stages of active phase (1.963 Vs 2.718, p=0.0001- 2.311 Vs 3.720, p=0.0001).
Conclusion: Circular manual massage at lumbosacral region during the active phase of labor reduced labor pain efficiently.

Keywords: lumbosacral massage, labor pain, primigravida women

1. Introduction

Labor is often thought of as one of the more painful events in human experience and in primiparous, it is more severe than multiparous women [1]. The expanding of labor pain duration induces anxiety that would affect the function of respiratory and circulation system which may increase dystocia and labor manipulation [1-3]. Pain during labor is caused by contractions of the muscles of the uterus and by pressure on the cervix. This pain may be felt as strong cramping in the abdomen, groin, and back, as well as an achy feeling [2]. Some women experience pain in their sides or thighs as well. Other causes of pain during labor include pressure on the bladder and bowels by the baby's head and the stretching of the birth canal and vagina. Pain during labor is different for every woman and it ranges widely from woman to woman and even from pregnancy to pregnancy [3]. To relief pain during labor several techniques such as epidural anesthesia, spinal anesthesia, medication, hypnosis, yoga, massage or counter pressure have been applied [4-6]. Theoretically massage therapy inhibits the transmission of the pain to the brain. Moreover, it motivates endorphin release, increases serotonin and inhibits the transmission of noxious nerve signals to the brain [7-8]. Previous studies have indicated the efficacy of massage for pain relief on labor [9-10]. In a controlled trial in Taiwan, the mother received 30 minutes massage; the authors indicated that a pain intensity scale of five observed level of pain regarding normal respiration, increased frequency or amplitude of respiration, intermittent gasping, persistent gasping and agitation significantly decreased [9]. Furthermore, another controlled trial in turkey indicated that the pain perception decreased in women who received massage [10]. Based on our knowledge there is not controlled trial evaluating the effect of massage therapy on labor pain and outcomes in Iran? Hence, we directed this randomized controlled trial to evaluate the possible impact of massage therapy on pain relief at first stages of labor on primigravida women.

2. Materials and methods

This randomized clinical trial recruited 60 primigravida women aged between 18 to 35 years, who were admitted for labor in Amiralmomenin Hospital –Zabol Iran from 2007 to 2008. The study protocol was approved by ethical committee of Zabol University of medical sciences. Furthermore, the enrolled participants were counseled, and informed consent was obtained before randomization, as per the institution's protocol. The criteria for enrollment were age between 18 to 35 years and gestational age between 38 -42 weeks, primigravida, cephalic presentation, expected fetal weight between 2500-4000 grams, cervical dilatation at 4 cm and the intact amniotic membrane that was cleared after rupture. Women were excluded if they had clinically significant conditions; positive HIV serology, positive hepatitis B antigen serology, obvious ultrasound fetal abnormality, clinical cephalo- pelvic disproportion (CPD), active substance abuse and oxytocin augmentation. Then the patients were randomly divided into two groups as follow: 30 patients in manual massage group and 30 patients in control group. To randomization, we used sequential numbers, in this case, the first number was given to the first patient and manual massage (case group, n=30) was performed for 15 minutes and then intensity and duration of pain were recorded and repeated at 8cm cervical dilatation. Sequentially the next number was

given to next patient as a control group (n=30) and received the routine delivery method in our center. The basal intensity and duration of pain at cervical dilatation 5 cm and 8 cm was recorded based on visual analog scale (VAS) in the initiation of the trial in all patients.

Duration of the first stage of labor from 4cm cervical dilatation to delivery, contraction duration and the interval between contractions were measured by an expert midwife. After delivery, neonate height, weight, and head circumference were measured and recorded in the data sheet. Module instruments were canonical and similar. The massage was performed by a well-trained licensed massage therapist, confirmed to effleurage method. It is known that there are two types of effleurage: superficial and deep. Superficial effleurage uses a light touch and is very soothing, deep effleurage or deep gliding uses more pressure stretching and broadening the muscle tissue and fascia, acceleration lymph and vein drainage of soft tissues. Movements at lumbosacral surface started towards the heart, with the return stroke being much lighter and away from the center of the body.

3. Statistical analysis

Statistical analysis of the data was performed with the SPSS software for windows version 13.0. The mean of the intensity of pain was compare using independent t-test. Paired T-test showed the mean intensity of pain before and after massage procedure. The significant level of all analysis was $p<0.05$.

4. Results

Totally 60 patients in two groups with mean age 21.86±3.22 years were evaluated. Two groups were properly matched and there were no significant differences between two groups, regarding age, weight and height, and neonate variables (length, weight, head circumference). Before intervention, based on VAS the mean values of intensity of pain around 5 cm cervical dilatation (2.6±515 vs.2.5±0.436, P=0.95), and 8cm (3.61±0.37 vs.3.66±0.45, P=0.56) were similar in two groups, There were, however, significant differences after massage between two groups at 5 cm dilation (1.963±o.532 vs.2.71 ±0.416, p=0.001) and at 8 cm dilation (2.31± 0.45vs 3.72±0.32, P=0.001). The satisfaction in massage group was 96.7% and 20 % of them indicated that the massage reduced their pain effectively while 76.7% stated that pain reduction was moderate. Duration of the first stage of labor was not different in the two groups (table 1-3).

5. Discussion

The labor pain is the most severe experience in women, hence, several methods have been applied to labor pain relief comprising massage therapy [10-15]. However, previous studies have prepared conflicting information about the possible impact of massage therapy on pain relief of labor [9-15]. In this randomized study, we indicated massage therapy during the first stage of labor significantly decreased the pain intensity in women. In agreement with our findings, Chang *et al* in a case-control trial reported 16mm reduction on the 100 mm visual analog scale (VAS) at 3-5 cervical dilation in women who received massage therapy [10]. This notion is further supported by another trial from Brazil by Gallo *et al*. that showed massage therapy significantly reduced the VAS during the active phase of labor with a mean effect of 20mm [12]. Additionally Waters *et al*. signified that the ice massage therapy would soften labor pain as a safe and efficient technique [13]. Consistently, some studies in Iran were in line with our findings, for instance, Taghinejad *et al*. in a comparative clinical trial compared massage therapy with music therapy on pain relief and indicated more reduction in labor pain in massage group than music therapy [14]. However, as stated in the first paragraph, the results of prior trials about the effectiveness of massage therapy are not consistent. Slade *et al*. signified that the massage therapy did not lessen the labor pain as expected [15]. Moreover, Escatt *et al*. in their trial did not show the obvious distinction between massage therapy and control group in reducing emotional stress and labor pain [16]. Additionally, Janssen *et al* in a controlled trial signified no significant difference between massage therapy and control group regarding pain relief in labor [17]. The reason for such discrepancy between previous experience results is not well known but may relate to massage technique, patients selection and different pain perception by women. In the current trial, we did not detect the significant difference between case and control groups regarding duration of the active phase. However, the clinical results seem controversial, Field *et al*. emphasised that the message would shorten the duration of active phase in women [18]. Conversely, Gallo *et al*. indicated that massage therapy increased the duration of active phase of labor [12]. We identified that women in massage therapy group were more satisfied than the control group. In agreement with our findings, Gallo *et al*. implied that the massage therapy increased the patient's satisfaction [12]. In general, former studies about massage therapy in labor have been small; with the largest having less than 100 women and the most of these trials did not employ registered massage therapists, moreover, the massage therapy in these studies was intermittent for 20–30-minute sessions or the duration was unspecified [11, 18-20]. Similarly, the main limitations of our experience were small sample size (60 patients) and relatively short duration of massage therapy (15 minutes) that limited the ability to generalize the result of our survey. Therefore; further investigations with larger series and longer massage duration by the registered massage therapist are recommended to validate the findings reported here.

Conclusion: we identified the massage significantly reduced the intensity of pain and increased the patient's satisfaction. However, the massage therapy did not affect the duration of the first stage of labor.

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Table 1: Comparison of the variables means in samples of two groups

	group	N	Mean	Std. Deviation	T	df	P
age	Intervention	30	21.8667	3.22419	.185	58	.853
	control	30	22.0333	3.71839			
Weight	Intervention	30	67.1000	8.04020	1.834	58	.072
	control	30	63.6500	6.43957			
Height	Intervention	30	159.2333	3.32891	.910	58	.366
	control	30	158.5667	2.23889			
Weight of neonates	Intervention	30	3236.66	399.985	.889	58	.378
	control	30	3136.66	468.477			
Head circular of neonates	Intervention	30	33.90	.994	.705	58	.484
	control	30	33.66	1.516			

Table 2: Comparison of the mean of labor pain scores at the first stage of delivery before and after massage therapy

	group	N	Mean	SD	T	df	P
The mean of labor pain scores at the 5 centimeters dilatation before intervention	Massage	30	2.600	.5152	.054	58	.957
	Control	30	2.593	.4360			
The mean of labor pain scores at the 5 centimeters dilatation after intervention	Massage	30	1.96	.532	5.743	58	0.001
	Control	30	2.71	0.416			
The mean of labor pain scores at the 8 centimeters dilatation before intervention	Massage	30	3.61	.371	-.581	58	.564
	Control	30	3.66	.339			
The mean of labor pain scores at the 8 centimeters dilatation after intervention	Massage	30	2.31	0.45	13.48	58	0.001
	Control	30	3.72	0.32			

Table 3: the frequency of satisfaction in massage group

Satisfaction	N	%
no	1	3.3
moderate	23	76.7
good	6	20%
total	30	100

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