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The effect of auriculotherapy on the severity and duration of labor pain

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Abstract:

INTRODUCTION: Pain is a common phenomenon and an inevitable part of the labor process. Labor pain is one of the most severe pains. Auriculotherapy is one of the nonpharmacological aspects of relieving pain, reduces the intensity of pain, and improves its compatibility. The purpose of this study was to determine the effect of auriculotherapy on labor pain in primiparous women.

MATERIALS AND METHODS: This clinical trial was performed on 84 pregnant women aged between 18 and 35 years, who referred to Isfahan Shahid Beheshti Hospital in 2017. This study was carried out between two groups: control group (receiving routine hospital care) and interventional group (20 min for auriculotherapy). We used the McGill Short-Form Standard questionnaire with Visual Analog Scale. Data were analyzed by SPSS software using paired *t*-test and ANOVA.

RESULTS: The results showed that there was no significant difference between demographic variables in the two groups. Statistical analysis also showed that the severity of labor pain in the interventional group (auriculotherapy) was lower than that of the control group ($P = 0.001$).

CONCLUSION: Auriculotherapy reduces the severity of labor pain in primiparous women. Due to the easy, inexpensive, and noninvasive nature of this method, its use has been recommended in these cases.

Keywords:

Auriculotherapy, delivery, pain, primiparous women, Iran

Introduction

Pain is an important health phenomenon that exists from birth to the final stages of life and is one of the factors that patients refer to clinics and treatment centers.[1] According to the International Association for the Study of Pain, pain is an unpleasant feeling and mental experience that is associated with potential or actual damage.[2]

Pain is a common phenomenon and an inevitable part of the labor process.[3] This pain is caused by stimulation of the neuroreceptors (T10-L1) due to contraction of the uterus and is felt in the visceral, pelvic, and lumbosacral (S2, S3, and S4) regions.[4] Increased labor pain and anxiety by stimulating the sympathetic nervous system leads to increased secretion of catecholamines, which reduces the contractions of the uterus, prolongation of the first and second stages of labor, increased midwifery interventions, increased request for cesarean section, and the mother's dissatisfaction with the labor experience.[5,6] Therefore, control and management of labor pain is the goal of all maternity care units, where pharmacological and nonpharmacological methods are used for pain relief.[7,8]

In pharmacological methods, the sense of pain is reduced physically.[9] Using medication to reduce labor pain is often expensive and has harmful effects.[10] Nonmedicinal techniques include breathing techniques, relaxation techniques, Lamaze

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techniques, acupuncture, acupressure, reflexology, massage, hypnosis, music therapy, aromatherapy, prayer therapy, and using transcutaneous electrical nerve stimulation device.[11-13]

Nonpharmacological methods of pain control are important elements in midwifery care and, in many women, it is the first choice.[5,14] Among the benefits of using nonpharmacological methods, their effect on keeping the mother alert is the difference with the pharmacological methods that cause strong bonding between mother and infant after delivery.[15,16]

Alternative medicine for labor pain control is considered as a substitute for pharmacological therapies such as epidural anesthesia.[17] One of the alternative medicinal methods is the auriculotherapy.[18] Auriculotherapy is the stimulation of the ear as an acupressure method that, by applying pressure in the specific areas of the ear, leads to rehabilitation and returns energy to the body and improves the overall condition of the body.[19,20] Auriculotherapy is noninvasive in comparison with acupuncture and an acceptable method by the patient that the external ear is stimulated.[21,22] We use the ear to reach almost all the anatomical points of the body, as well as different parts of the brain, the spinal cord, and the central and peripheral nerves. Auriculotherapy is effective not only in controlling pain but also in balancing the level of hormones and neurotransmitters in the body and the brain.[23,24] One of the other benefits of this method is the activation of the energy channel and the regulation of energy flow in the body, as well as stimulation of the internal organs of the body such as the uterus and the ovary.[25] Treatments such as reflexology and acupuncture have a general effect on the overall health of the body, but auriculotherapy also affects the body's organs, in addition to its effect on overall health of the body.[26] Improving the overall circulation of the body, deep relaxation, brain stimulation, and improving the immune system as a disease prevention tool are among the other benefits of auriculotherapy.[27]

Auriculotherapy is used in many cases, including painful menstrual bleeding, uterine bleeding, inadequate milk secretion, vomiting, and acute diarrhea. In the case of labor pain, it should be noted that the uterus develops muscle cramps at contraction during labor, such as menstruation, and most women consider labor pain to be similar to menstrual pain.[28] In addition, in the study of Mirzaei *et al*., it was reported that massaging of the uterine spot of ear reduced the severity of labor pain in the interventional group.[29] Dolatian *et al*. suggested reflexology as one of the effective ways to reduce the severity of labor pain.[30] Another study conducted by Valiani *et al*. in Isfahan on the effect of reflexology on the severity of labor pain and its consequences indicated the effect of this method on reducing the severity of labor pain and increasing the satisfaction of mothers.[31]

In the recent years, the Iranian Ministry of Health and Medical Education has been looking for ways to reduce cesarean delivery and reduce labor pain, in which nonpharmacological methods are among these methods for reducing labor pain.

According to the Community Development Program for Health Promotion and Medical Education, which has declared natural delivery as a priority, and by considering the fact that the development of auriculotherapy is expanding, the fact that most of the researches were done on compressive and reflexology points, and few researches have been done on the effect of auriculotherapy, the researcher aimed to determine the effect of auriculotherapy on the severity of labor pain in primiparous women.

Materials and Methods

The present study is a randomized clinical trial that was conducted in 2017 on primiparous women aged 18–35 years, who referred to Shahid Beheshti Hospital in Isfahan. The study was conducted in two groups of intervention (auriculotherapy, n = 42) and control group (receiving routine nursing care, n = 42) by simple sampling and randomly assigned to two groups by odd and even numbers. The inclusion criteria included first pregnancy (nulliparous), Iranian nationality, gestational age 37–41 weeks of pregnancy, singleton pregnancy, fetal cephalic presentation, cervical dilatation 3 cm–5 cm, satisfaction of participation in the study, lack of febrile and infectious disease, lack of high-risk pregnancies including the underlying diseases (diabetes, hypertension, asthma, migraine, kidney disease, psychiatric disorders, epilepsy, or seizure) and any pregnancy-related illness (gestational diabetes, gestational hypertension, polyhydramnios, or oligohydramnios), lack of a history of obstetric problem during pregnancy (placenta previa and threatened abortion), and lack of any disorder, which is inconsistent with vaginal delivery (anatomic abnormalities of the pelvis, pelvis tightness, prolonged latent phase, etc.).

Samples were excluded during the study if they did not want to continue the intervention or in case of problems such as respiratory distress, bleeding, unexplained dystocia, and, if necessary, we informed the responsible physician and midwife and they were taken under special care.

The instrument was McGill's Short-Form Standard Questionnaire with Visual Analog Scale (VAS). The

severity of pain was assessed by the research units in different dilatations.

After obtaining written consent, the women were randomly assigned into control and interventional groups. Initially, the embryo's health was assessed and the severity of pain was recorded in a dilatation of 3–5 cm and uterine contraction. In the interventional group, the mother was first in the half-sitting position. Then, her ears were cleaned with cotton immersed in alcohol. Since the onset of the active phase, stimulation of the points on the left ear was performed by a pointer device. (The patient's response was taken into consideration during the technique.) Shen Men, Zero, thalamus, endocrine, autonomous, cerebral, sensorial, pelvic, uterus, posterior pituitary, prostaglandin, and external genitalia points were stimulated for 1 min with manual pointer and seeds.[32] After 30 min of the first intervention, the intensity of pain was recorded and again the intensity of pain was measured in dilatation of 6–8 cm. Once again, the specific points were stimulated in 9–10 cm dilatation for 5 min, and the pain intensity was recorded 30 min later. The severity of pain was recorded for the last time in the second stage of labor when the embryo was exited. In the control group, who received oxytocin for induction of childbirth and received only routine care in the hospital, the intensity of pain was measured after the first contraction in dilatations of 3–5 cm, 6–8 cm, and 9–10 cm, and the second stage of labor when the embryo was released. The researcher, in the same way as the intervention group, sat close to the participants in the control group and calmly stimulated the inert points of their ears so that the psychological and inductive effects of the intervention are similar in the two groups. Finally, eye contact and communication with the control group were performed as in the interventional group. The data recorded in the questionnaire were analyzed using SPSS software version 20(IBM Company, Armonk, NY). The researcher considered $P < 0.05$ to be statistically significant.

Results

The results of the study showed that the mean age of the pregnant mothers participating in the intervention group was 27.35 (4.35) years and in the control group was 28.36 (4.41) years. Statistical analysis showed no significant difference between the two groups in terms of age ($P > 0.05$). The mean of gestational age in the intervention group was 39.16 (1.47) and in the control group was 39.71 (0.92), which was not statistically significant ($P > 0.05$).

According to the findings, in the interventional group, 4 (3.9%) participants were illiterate, 14 (32.6%) had undergraduate and diploma education, and 25 (58.1%) had associate and bachelor's degree. Mothers' level of education in the control group was as follows: 3 (7.7%) were illiterate, 18 (42.9%) had a diploma and undergraduate education, 20 (6.47%) had associate and bachelor's degree, and finally 1 (4.2%) had master's and higher degrees. There were no significant differences between the two groups regarding the level of education ($P > 0.05$).

In the interventional group, 36 (7.83%) were homemakers, 4 (3.9%) were employees, 2 (7.4%) were workers and farmers, and 1 (3.3%) was self-employed.

In the control group, 34 (81%) were homemakers, 6 (14.3%) were employees, 1 (4.2%) was workers and farmers, and 1 (4.2%) was self-employed. Based on the results of the analysis, the two groups did not have any significant difference in terms of employment status ($P > 0.05$). As shown in Table 1, in the interventional group, the mean pain severity before and after the auriculotherapy was 2 (1.51) and in control group was 3.05 (1.36), which did not differ significantly ($P = 0.371$). After performing the first stimulation of auriculotherapy in 3–5 cm cervical dilatation, the severity of pain in the intervention group was significantly less than the pain intensity in the control group ($P = 0.001$).

The results showed that after the next interventions in 6–8 cm dilatation of the cervix ($P = 0.001$) and 9–10 cm dilatation ($P = 0.001$) and finally in the second stage of labor ($P = 0.001$), pain severity showed significant changes as the pain intensity in the interventional group was less than pain intensity in the control group.

Furthermore, the findings in Table 2 indicate that the duration of the first stage of labor ($P = 0.008$) and the second stage of labor ($P = 0.001$) was significantly different in the two groups. However, the duration of the third stage of labor in the two groups did not differ significantly ($P = 0.25$).

Discussion

In this study, 84 pregnant women were studied. It was

Table 1: Comparison of mean pain intensity in two groups

Variable	Group				*P*
	Auriculotherapy		Control		
	Mean	SD	Mean	SD	
Pain intensity in VAS					
Before intervention	2	1/51	3/05	1/36	0/371
After first intervention	3/35	1/23	4/76	1/60	0/001
After second intervention	5/05	1/04	7/02	1/56	0/001
After third intervention	6/00	1/00	9/07	0/97	0/001
After fourth intervention	7/51	1/27	9/95	0/21	0/001

VAS=Visual Analog Scale, SD=Standard deviation

Table 2: Comparison of mean length of delivery stages in two groups

Variable	Group				*P*
	Auriculotherapy		Control		
	Mean	SD	Mean	SD	
Duration of labor stages (min)					
Duration of the first stage	114/77	41/14	137/62	36/43	0/008
Duration of the second stage	41/59	24/63	61/63	23/93	0/001
Duration of the third stage	3/67	2/67	4/31	2/21	0/25

SD=Standard deviation

concluded that the severity of labor pain based on VAS index of McGill Short-Form Standard Questionnaire was lower in interventional group (auriculotherapy) than in control group. In other words, the results of the study showed that the intervention of auriculotherapy led to a decrease in participants' pain in different stages of labor.

In addition, based on the findings of the study, auriculotherapy examination showed a significant decrease in the mean duration of the first and second stages of delivery.

Given the fact that the auriculotherapy is a subclass of acupuncture and reflexology, this method also by resulting in the reduction of adrenaline, noradrenaline, and increasing endorphin makes regular uterine contractions, which can be effective in shortening labor time.

In the study of Mirzaie *et al*. (2010) which aimed to find the effect of foot massage on uterus pain point (reflexology) on pain intensity of the first stage and duration of labor, the results showed that the pain intensity in the interventional group decreased compared to the control group.[31] A research by Dolatian *et al*. (2010) conducted to determine the effect of massage on the severity of labor pain before intervention, immediately after intervention, and in dilations of 6–7 cm and 8–10 cm in the three groups of massage, support, and routine care showed that the severity of labor pain in the massage group was significantly lower than that in the other two groups.[30] In the study of Valiani *et al*., with the aim of evaluating the effect of reflexology on the severity of pain and delivery outcome, a significant difference was observed in the pain score between the two interventional and control groups before and after the intervention in both stages, indicating the effect of reflexology on reduction of severity of pain, which is consistent with the results of the present study.[31] Furthermore, Rastegarzade *et al*., in another study in Ahwaz on determining the effect of auriculotherapy on the pain of the active phase of labor reported that auriculotherapy reduces labor pain in the active phase of labor.[24]

Based on the present study, it has been found that auriculotherapy reduced the duration of the first and second stages of labor in the interventional group (auriculotherapy) compared to the control group ($P < 0.001$). However, no significant difference was observed during the third stage of labor. It seems that auriculotherapy has effect on the increase of endorphin, which can be the cause of increase in oxytocin from posterior pituitary, which leads to this outcome and shortens the length of delivery stages.

According to studies, fear and anxiety increase the secretion of adrenaline and norepinephrine, which act unlike oxytocin. This causes disruption of uterine contractions and prolonged labor. Reflexology by reducing adrenalin and neuradrenaline levels and increasing endorphins and oxytocin decreases mother's stress and leads to regular uterine contractions, which can be effective in shortening labor duration.[33]

Moghimi Hanjani *et al*. reported that reflexology would shorten the duration of labor (first, second, and the third stages of labor).[33] However, there was no significant difference in the reflexology and control groups in the McNeil *et al's*. study and they reported that in reflexology group, patients who received reflexology four times or more (60 min) had shorter duration of labor than that of the control group.[34]

Conclusion

Although according to the results of this study and that of few other available studies, it cannot be conclusively stated, it seems auriculotherapy can be used as one of the nonpharmacological methods to reduce labor pain. In this technique, making physiological changes and releasing endorphins and relaxation causes muscle relaxation, which eventually leads to pain reduction, improvement in labor progress, and positive changes in other symptoms. In general, this study suggests that auriculotherapy is effective on the duration and severity of labor pain.

This study is one of the few studies to investigate the effect of auriculotherapy on pain intensity and duration of delivery stages. Among the limitations of this study are repeated manipulations and unnecessary midwifery interventions in the hospital that may be involved in the occurrence of doubled pains and impairment in the labor process. However, considering the same conditions for all study units in the two groups, this has not caused any problems in the results of the research.

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Conflicts of interest

There are no conflicts of interest.

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