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Effect of LI4 and BL32 acupressure on labor pain and delivery outcome in the first stage of labor in primiparous women: A randomized controlled trial

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ABSTRACT

Objective: This study examines and compares the effect of LI4 and BL32 acupressure with each other and control group on labor pain and delivery outcomes.
Design: In this randomized controlled trial, 105 primiparous women in active phase of first-stage of labor were equally assigned to two experimental groups [acupressure on LI4 (n = 35) or BL32 (n = 35)] and a control group (n = 35).
Interventions: The experimental groups received routine labor care and acupressure in LI4 or BL32 points in three cervical dilatations (4–5, 6–7, and 8–10 cm). The control group only received routine labor care.
Main outcome measures: Pain was assessed by numerical rating scale in three cervical dilatations, before and after intervention. Type of delivery (cesarean, vaginal or operative delivery) and neonatal Apgar score were considered as delivery outcomes, these data collected by a check list. Data were analyzed using Repeated Measurement, ANOVA, Chi-Square, Kruskal-Wallis, and Mann-Whitney tests.
Results: Pain reduction was significantly greater in LI4 and BL32 groups compared with control in all periods of study. Also, acupressure on BL32 point was superior to LI4 point in pain relief in the first and second but not third intervention. No statistically significant difference was observed in terms of delivery outcomes.
Conclusion: Acupressure on BL32 and LI4 points are effective in reducing labor pain compared to control group with a slight superiority for BL32 points. Acupressure on these points could apply for relief pain in labor as an inexpensive and easy to administered method.

1. Introduction

Labor pain is amongst the most severe reported pain that women experiences in their life.[1 1 #184] The conventional medical approach to the management of pain in labor and delivery has increasingly come to rely on the pharmacological methods. However, because of potential side-effects on mother and fetus, there is a growing interest in non-pharmacological pain relief approaches. But, according to systematic reviews, the effects of many of these approaches have not yet been determined by well-designed studies.[2 #5, 3 #4]

Acupressure is a non-pharmacological pain relief method which belongs to the non-invasive Traditional Chinese Medicine (TCM) methods and is based on the principles of acupuncture.[4 #6] TCM considers human body as a bundle of channels to conduct energy (meridians), each of which start from a specific point and passes a

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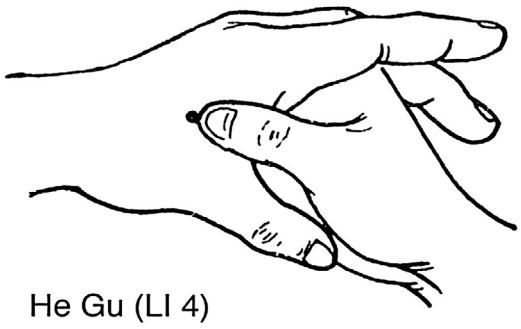

Fig. 1. Location of the LI4 point.
Source: http://www.internalartsinternational.com/wp-content/uploads/2014/03/He-Gu-LI-41.jpg.

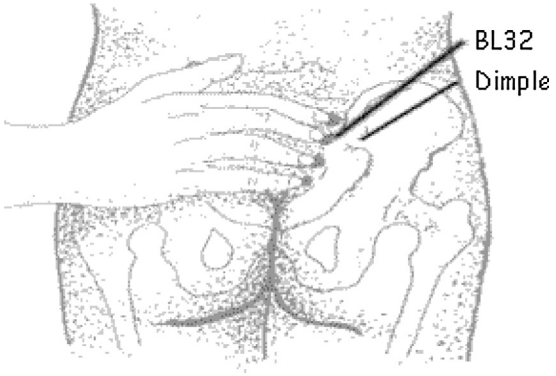

Fig. 2. Location of the BL32 point.
Source: http://www.maternityacupressure.com/acupressure-techniques-for-use-during-childbirth.html.

long way through the body. Meridians are responsible for connecting internal organs or various tissues and body's superficial centers. There are 12 main meridians in the body out of which bladder and large intestine meridians can be exemplified.[5 #7] Studies have mentioned different acupuncture points that can be used to relieve labor pain including LI4 and BL32 points.[6 #20, 7 #24, 8 #22]

The LI4 point is a main point of large intestine meridian which locates on the dorsal of the hand between the first and second metacarpi (Fig. 1). The BL32 point is a major point on the bladder meridian which locates on the second foramen of sacrum (Fig. 2).[9 #13] Vixner et al. stimulate different acupoints in different meridians by acupuncture, they could not find significant effect on labor pain.[10 #18] Peng et al. assessed the efficacy of transcutaneous electrical nerve stimulation on four specific acupoints, including LI4, PC6, BL19, and BL21 for relief labor pain at the beginning of active phase of labor. They found the effectiveness of these points.[11 #25]

The effect of stimulating LI4 point to reduce labor pain was appeared in several studies.[8 #22, 7 #24, 12 #23] Few controlled clinical trial has directly evaluated stimulating of BL32 point in labor pain relief.[4 #6] Akbarzadeh et al. used BL32 point to relief labor pain and found its effectiveness.[6 #20] In some studies, the stimulation of more than one point were examined.[10 #18, 11 #25] However, to the best of our knowledge, no clinical trial has been carried out to compare the effect of acupoints. While the stimulation of different points maybe have different effects. There is this belief that local segmental stimulating–near the painful or ill center (e.g. BL32 in labor)- usually gives a more intensive analgesia than distal non segmental stimulating – far the painful or ill center (e.g. LI4).[17 #13]

Like other complementary and alternative therapies, lack of controlled trials to accredit the pain relieving effects of acupressure have limited the clinical education and application of this inexpensive and easy to administered method. The present randomized controlled trial was carried out to determine and compare the effect of LI4 and BL32 acupressure, with each other and control group on the severity of pain in active phase of first-stage labor and delivery outcomes.

2. Methods

2.1. Setting and participants

This randomized controlled trial was carried out on primiparous women in the obstetric department of Shahid Akbarabadi Hospital (Tehran) from 22th August to 21th of November 2008.The inclusion criteria were: age range of 19–35 years, term pregnancy (>37 weeks of gestation), planned vaginal delivery without obstetrical or non-obstetrical complications, fetal vertex presentation, and being in active phase of first-stage labor with cervical dilatation of $\geq$4 cm and presence of at least three uterine contractures within 10 min.

The exclusion criterion was unwillingness to continue taking part in the study. The study was approved by ethics committee at Shahid Beheshti University of Medical Sciences with ethical approval code: P.25.12.57 and IRCT reference number: IRCT201601283860N23. Written informed consent was obtained from all subjects after explanation of the aim and methodology of the study. All the data were kept anonymous for the confidentiality and all information were given special codes to guarantee mothers' anonymity.

2.2. Pilot study

The pilot phase was carried out to evaluate the feasibility of the study, methodology, and instruments. Validity of the correct location of acupressure points and the correct way of applying pressure was verified by concurrent validity determination method. After passing an educational course under supervision of an acupuncture specialist, the one of the researcher and acupuncture specialist applied pressure to LI4 and BL32 points of ten participants of each group and the aroused DeQi feelings including feeling of warmness, numbness, heaviness, and relaxation were recorded.[13 #9]

All items for the two examiners were evaluated by McNemar and Kappa tests. Kappa = 1 and McNemar results with $P > 0.05$ was indicative of the high degree of consistency of the researcher and the acupuncture specialist in terms of applying acupressure. After pilot study, it was concluded to modify the two times intervention (beginning and end of the active phase) into three times intervention (cervical dilatations of 4–5 cm, 6–7 cm, and 8–10 cm). The feasibility and convenience of the time of intervention were checked. Mothers preferred the intervention when they feel more pain. Due to medicalization that surrounded normal vaginal birth in Iran,[14 #177] all the mothers in active phase of labor had to have routine IV line, and the same time stimulation of LI4 points on both hands made difficulty for mothers. Therefore, unilateral pressure was applied on LI4 point for all the mothers in this interventional group.

2.3. Randomization and interventions

The primiparous women who were admitted for delivery to the obstetric department and met the inclusion criteria were selected goal-oriented and then were assigned to three groups based on the selected type of blocking, using Random Allocation Software.msi.[15 #10] The sample size (n = 105), the number (n = 3) and name of groups (LI4, BL32, control) were entered to the Software. The output contained a list of numbers from 1 to 105. Each number was allocated to the specific group, randomly. We prepared this list before beginning of the study. Therefore, each mother was