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Research Article

Effects of Cold Application to the Perineum on Pain Relief After Vaginal Birth

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ABSTRACT

Purpose: Perineal pain developing during the postpartum period affects women's relationships with their families and infants. The aim of this study was to determine the efficacy of cold gel pad application for relieving perineal pain and possibly increasing mothers' comfort after vaginal delivery.
Methods: This experimental randomized controlled study was conducted in the postpartum department of obstetrics and gynecology hospital. A total of 200 mothers were included in the study. Cold gel pads were applied to the perineum of mothers in the experimental group for 20 minutes in the postpartum first 2 hours and 4 hours after the first application. All the data were collected by using an information form, the visual analog scale, and the postpartum comfort questionnaire.
Results: In the experimental group, the first visual analog scale score was 6.73 ± 1.68; after cold gel pad application, the pain levels decreased to 2.59 ± 1.20 in both primiparous and multiparous mothers. In addition, the postpartum comfort questionnaire score increased from 2.58 ± 0.14 to 2.69 ± 0.14 in the second assessment after the cold gel pad application and the difference was statistically significant ($p < 0.05$).
Conclusion: The application of the cold gel pad to the perineum relieved perineal pain and increased postpartum comfort in all the women. The pain felt by the women during the recovery and the daily activities decreased. Postpartum perineal pain adversely affected daily activities such as lying down, sitting, and walking; infant care, breastfeeding, and urination; and comfort levels of the postpartum women.

Introduction

Vaginal delivery offers many benefits such as a rapid postpartum recovery process and an early start to the mother–infant relationship; but, it can be associated with perineal trauma [1]. Perineal pain affects physical, psychological, and social well-being of the mother in the postpartum period. It can also disrupt breastfeeding, family life, and sexual relations [2]. Most women experience perineal pain during the postpartum period [3,4]. The perineal pain that persists for hours after delivery results in feelings of discomfort during physical activities, elimination, insomnia, and short-term interference with infant care and breastfeeding. In the long-term, it may give rise to depression, maternal anxiety, stress urinary incontinence, dyspareunia, communication problems, irritability, and fatigue [5,6]. Health care professionals need to actively promote the ways to assist women to manage their perineal pain experiences as this will help them to be adapted to motherhood more easily [7].

Postpartum perineal pain adversely affects daily activities, infant care, and comfort levels of mothers. It is very important to determine comfort levels of postpartum women during the postpartum period in terms of identifying and solving problems experienced by women during the postpartum period [8].

Perineal pain should regularly be monitored [9] to facilitate mothers' adaptation to the postpartum period, the early onset and continuation of lactation, and mother–infant interaction as well as accelerating the recovery process and preventing complications [10]. The approach for treatment of postpartum perineal pain includes various pharmacological methods such as oral and local anesthetics and nonpharmacological methods such as ice packs, cold/ice baths, and seat cushions [11–13].

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Cold application effectively relieves pain in two ways. Firstly, it reduces edema, panicula, and muscle spasms associated with inflammation or trauma; secondly, it relieves pain by inducing short-term paresthesia of the peripheral nerve fibers and decreasing the inflammatory response [6]. Cold application to the perineum decreases the temperature of the skin and underlying tissue, causes alpha receptors in the blood to become stimulated by the sympathetic nervous system, and decreases blood circulation to the region because of vasoconstriction, all of which reduce pain [11,14]. A systematic review has revealed the studies testing cold application durations ranging from 15 to 30 minutes [12]. Another systematic review has reported evidences indicating the temperature decrease in the first 10–20 minutes [15]. A reduction of 10 to 15°C in perineal temperature because of cold pad application performed for 10–20 minutes is considered ideal to achieve an analgesic effect [3,16]. Several studies aiming to assess perineal pain in women treated with cold gel pad after delivery have revealed a decrease in their perineal pain severities [17,18].

Cold gel pad application is an inexpensive, safe, and easy-to-use method which does not have any side effect and does not prevent breastfeeding [9]. Few randomized controlled studies have been conducted to examine cold gel pad application, which is effective in reducing postpartum perineal pain.

Being carried out by nurses in health centers, most of the hot–cold applications generally require doctors' order. Nurses have important responsibilities for performing cold applications under desirable conditions. They are expected to have sufficient knowledge and skills about effects and side-effects of cold applications and necessary methods because these applications can cause important problems like numbness, pain, cold burns, and tissue damage and likely have negative effects on patients' health when they are not implemented properly and appropriate precautions are not taken. Nurses following advances in cold application methods will increase the quality of nursing care. Therefore, this study was conducted to determine the efficacy of cold gel pad application for relieving perineal pain and possibly increasing mothers' comfort in the early postpartum period after vaginal delivery and improving independent nursing practices. Furthermore, the results obtained in the study would contribute to the current literature on effects of cold applications on postpartum perineal pain.

Methods

Study design

This study was conducted with the randomized, controlled experimental design in the postpartum department of Mersin obstetrics and gynecology hospital in 2013. This hospital, having a capacity of 306 beds, was selected because it generally serves a population with low socioeconomic level and has a high number of births. Annual birth number in hospital 8.035, 62.8% (5.062) were vaginal births, 1.4% (112) were interventional vaginal births, and 35.8% (2.892) were cesarean sections. Delivery is performed by midwives; however, a specialist physician intervenes in case of a risky situation. The postpartum woman who is monitored in her bed for 2 hours is sent to the maternity ward if there is no problem. In the maternity ward in which the study was conducted, delivery nurses administer only oral analgesics prescribed by the medical doctor. They do not use any nonpharmacological method to relieve perineal pain.

Setting and sample

The G*Power 3.1 program was used to calculate the sample size. The level of perineal pain was considered as the main parameter. In the study by Sheikhan et al [19], it was found that the average pain intensity of the patients was 3.20 ± 1.58 in the experimental group and 4.23 ± 1.59 in the control group. When the alpha level was set at 0.05 and the power of the study was expected to be 90%, the minimum size calculated based on the mean pain severity was 51 patients for each one of the experimental group and the control group.

This was a single-blind study. Simple randomization, a simple probability sampling method, was used to assign the participants into the experimental and control groups. To assure randomization, the women, who met the inclusion criteria and agreed to participate in the study, were included in the study via the closed envelope method and according to the table of random numbers. In the closed envelope method, pink envelopes were used for primiparas and blue envelopes were used for multiparas to determine experimental and control groups. By using the computer-assisted randomization and the numbers ranging from 1 to 100 in the website https://www.randomizer.org/, postpartum primiparous and multiparous women presenting to the hospital were assigned into two groups including 50 women in each group.

By using the simple randomization method, the participants were assigned to the experimental group or the control group. The experimental group included 50 primiparous mothers and 50 multiparous mothers who had experienced a vaginal delivery, and the control group included the same number of primiparous and multiparous mothers (a total of 200 participants). The participants in the experimental and control groups stayed in separate wards so that they did not get in contact and interfere with each other.

The inclusion criteria were as follows:

- Giving the first, second, or third birth
- Being 18 years old and more
- Experiencing a vaginal delivery at the gestational week 37 and over
- Having no complication (hemorrhage, preeclampsia, etc.)
- Delivering a single and healthy fetus with cephalic presentation
- Going through the postpartum period of 30 minutes to 1 hour
- Not receiving any oral analgesics within 4 hours after delivery.

Ethical considerations

Before the study, the approval was obtained from the ethics committee of Mersin obstetrics and gynecology hospital (approval number: B.30.2.IST.0.30.90.00/26843). Before data collection, the women, who met the inclusion criteria, were informed about the informed consent form and their consent was obtained.

Measurements

The following instruments were used: information form, the visual analog scale (VAS), and the postpartum comfort questionnaire (PCQ).

Information form

The authors of this study prepared the information form according to the literature. It consisted of 42 questions determining sociodemographic characteristics such as age, education, profession, and age at marriage; general health characteristics such as smoking, chronic diseases, and medication use; and obstetric characteristics such as pregnancy, birth, and abortion.

VAS

VAS, which is used to assess pain level, is a 10-cm-long vertical line ranging from 0 to 10; 0 signifies no pain, and 10 signifies the worst pain that can be endured [20].

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