Lidocaine-Prilocaine Cream versus Lidocaine-HCL Injection for Pain Relief during Second Degree of Perineal Tear Suturing after Vaginal Delivery: A Comparative Study

Lidokain-Prilokain Topikal versus Injeksi Lidokain-HCL dalam Menghilangkan Nyeri Selama Penjahitan Luka Perineum Tingkat Dua Pascapersalinan Pervaginam: Sebuah Studi Komparatif

Rahmawati, David Lotisna, Nursratuddin Abdullah, Maisuri T Chalid, Telly Tessy

Department of Obstetrics and Gynecology
Faculty of Medicine Universitas Hasanuddin/
Dr. Wahidin Sudirohusodo Hospital
Makassar

Abstract

Objective: To compare the effectiveness of topically applied lidocaine-prilocaine cream with lidocaine-HCl injection in the reduction of pain during second degree of perineal tear suturing after vaginal delivery.

Methods: One hundred and twenty-four subjects with second degree of perineal tear after vaginal delivery were enrolled in this randomised clinical trial. Subjects were assigned randomly to have either application of lidocaine-prilocaine cream (n=62) or local injection of lidocaine-HCl (n=62) for anaesthetic during perineal suturing. Pain measured with visual analogue scale (VAS) for the first 5 minutes during the perineal suturing. Statistical analysis was performed by comparative analytic numerical unpaired with independent t-test between the two groups and significance was assessed at p<0.05. Data were presented as mean ± standard deviation (SD).

Results: There was no significant different of pain score between lidocaine-prilocaine cream and lidocaine-HCl injection group (5.66 ± 1.07 vs 5.56 ± 1.5; p=0.473).

Conclusion: Application of lidocaine-prilocaine cream as effective as injection of lidocaine-HCl for reducing pain during second degree of perineal tear suturing after vaginal delivery.

Keywords: lidocaine-prilocaine cream, lidocaine-HCl injection, pain, perineal suturing, vaginal delivery

INTRODUCTION

Approximately 75% of women post vaginal birth will have some degree of trauma to their labia, vaginal walls or perineum. The inadequate diagnosis and inappropriate management of the trauma are strongly associated with maternal morbidity. Perineal trauma is associated with significant short- and long-term morbidity. Perineal trauma can occur spontaneously or result from episiotomy. Perineal pain is reported to be the most severe in the immediate postnatal period. Discomfort of perineal pain continues for up to two weeks postpartum in about 30% of women and 7% report pain at three months.

More than 60% of labours are followed by rupture of the perineum which require suturing. Perineal tear is one of the birth trauma which the
main factor is perineal condition. Rates of perineal trauma from episiotomy that require suturing between 44% and 79%. A 2nd-degree perineal tear is defined as injury to perineum involving perineal muscles but not involving the anal sphincter. Morbidity following perineal trauma has led to these arch of different interventions to be used during the second stage to reduce perineal trauma. Perineal injection with local anaesthetics is the most common technique to provide anaesthesia during perineal suturing. Another alternative technique to injectable anaesthetic is topical anaesthetic such as lidocaine-prilocaine cream. This anaesthetic is a mixture of 2.5% lidocaine and 2.5% prilocaine that is used widely as topical anaesthetic for pediatric, dermatologic, reconstructive, and gynecologic minor procedures. The advantages of this anaesthetic are locally effect without significant systemic absorption, ease of use, and transient side effects.

Hence, this study was aimed to compare the effects of lidocaine-prilocaine cream and lidocaine-HCl injection on reduction of perineal pain during episiotomy repair after normal vaginal delivery.

METHODS
This randomised clinical trial was conducted at Dr. Wahidin Sudirohusodo Hospital and some of its affiliated hospitals between April and September 2016. The study protocol was approved by the Health Research Ethics Committee of Faculty of Medicine, Universitas Hasanuddin. Vaginally postpartum women with second degree of perineal tear were enrolled in this study. Written informed consent was obtained from all women who agreed to participate in the trial before study entry. Women were assigned randomly to have either local injection of lidocaine-HCl or application of lidocaine-prilocaine cream for pain relief during perineal suturing. Pain measured with visual analogue scale (VAS) for the first 5 minutes during the perineal suturing. Statistical analysis was performed by comparative analytic numerical unpaired with independent t-test between the two groups and significance was assessed at p<0.05. Data were presented as mean ± standard deviation (SD).

RESULTS
A total of 124 vaginal postpartum subjects were enrolled. Of these, 62 subjects were assigned to receive local anaesthesia with lidocaine-HCl injection, and 62 subjects had topical application of the lidocaine-prilocaine cream. The only significant difference of characteristics between both groups was BMI (p<0.05). The clinical characteristics of postpartum women are summarised in Table 1. Analysis of pain score during perineal suturing based on subject characteristics shows length of perineal suturing for longer than 15 minutes significantly different (p=0.026) between lidocaine-prilocaine cream and lidocaine-HCl injection (Table 2). Pain scores during perineal suturing are displayed in Table 3. There was no significant difference in pain score between both groups (p>0.05).

| Characteristics                  | Lidocaine-prilocaine cream (n=62) | Lidocaine-HCl injection (n=62) | p-value |
|----------------------------------|-----------------------------------|--------------------------------|---------|
| Age (years)                      | 24.3 ± 3.6                        | 24.6 ± 4.3                      | 0.654   |
| BMI (kg/m²)                      | 21.5 ± 1.9                        | 22.3 ± 2.4                      | 0.038   |
| Length of the second stage of labour (minute) | 31.2 ± 12.0                       | 36.5 ± 20.6                     | 0.089   |
| Birth weight (gram)              | 3002.3 ± 339.6                    | 2996.9 ± 348.2                  | 0.931   |
| Length of perineal suturing (minute) | 15.1 ± 4.2                        | 15.8 ± 5.1                      | 0.401   |
Table 3. Pain Score during Perineal Suturing

| Characteristics                        | Lidocaine-prilocaine cream (n=62) | Lidocaine-HCl injection (n=62) | p-value |
|----------------------------------------|-----------------------------------|--------------------------------|---------|
| Age                                    | Mean ± SD                         | Mean ± SD                      |         |
| Low risk                               | 5.66 ± 1.07                       | 5.06 ± 1.49                    | 0.473   |
| High risk                              | 0                                | 4.5 ± 2.12                     | 0       |
| BMI (kg/m²)                            | Normal                            | 5.68 ± 1.09                    | 0.699   |
|                                        | Abnormal                          | 5.33 ± 0.58                    | 0.655   |
| Length of the second stage of labour (minute) | < 60                             | 5.66 ± 1.09                    | 0.386   |
|                                        | ≥ 60                              | 5.67 ± 0.58                    | 1.000   |
| Episiotomy                             | Yes                               | 5.59 ± 1.1                     | 0.426   |
|                                        | No                                | 6 ± 0.89                       | 0.558   |
| Length of perineal suturing (minute)   | ≤ 15                              | 5.4 ± 0.74                     | 0.243   |
|                                        | > 15                              | 6 ± 1.33                       | 0.026   |

Table 3. Comparison of Pain Score Based on the Characteristics between Lidocaine-Prilocaine Cream and Lidocaine-HCl injection

**DISCUSSION**

This study shows there is no significant difference between lidocaine-prilocaine cream and lidocaine-HCl injection in reducing pain during second degree of perineal tear suturing of vaginally postpartum suggest that the two anaesthetics had similar effects. Similar results were also reported by previous study that compared the same anaesthetic for perineal suturing with this study. However, our findings are in disagreement with results from the study by Franchi et al. who observed lidocaine-prilocaine cream more effective in reducing pain compared to mepivacaine injection during perineal repair after delivery.

Injection anaesthetics are most frequently used due to its safety, inexpensive, wide availability, and immediate effect. Insertion of the needle and injection of the anaesthetic into the skin, burning sensation during infusion, oedema, and risks of accidental intravascular administration are the side effects of this anaesthetic. Lidocaine-prilocaine cream releases two amide anaesthetic (2.5% lidocaine and 2.5% prilocaine) to the dermal layers before penetrating the smooth and striated muscle and the individual axons within the nerve. An inward flux of sodium ions through the nerve membranes inhibit nerve conduction to induce pain. Compared to the side effects of lidocaine injection, lidocaine-prilocaine cream generally mild and transient and no serious reactions that were reported.

Although this present study show lidocaine-prilocaine cream and lidocaine-HCl injection in terms of pain reduction, our results indicated that lidocaine-prilocaine cream as effective as lidocaine-HCl injection. Therefore, the lidocaine-prilocaine cream can be an alternative for lidocaine which has been routinely used for years during perineal tears repair and episiotomy. Finally, it has been stated that lidocaine-prilocaine cream can be an efficient alternative to the injectable analgesics used for local obstetric and gynecologic procedures.

**CONCLUSION**

In conclusion, this study has shown that application of lidocaine-prilocaine cream as effective as
injection of lidocaine-HCl for reducing pain during second degree of perineal tear suturing after vaginal delivery.

REFERENCES

1. Aasheim V, Nilsen AB, Lukasse M, Reinar LM. Perineal techniques during the second stage of labour for reducing perineal trauma. Cochrane Database Syst Rev. 2011; (12): CD006672.

2. MacArthur AJ, MacArthur C. Incidence, severity, and determinants of perineal pain after vaginal delivery: a prospective cohort study. Am J Obstet Gynecol. 2004; 191(4): 1199-204.

3. McCandlish R, Bowler U, van Asten H, et al. A randomised controlled trial of care of the perineum during second stage of normal labour. Br J Obstet Gynaecol. 1998; 105(12): 1262-72.

4. Albers LL, Borders N. Minimizing genital tract trauma and related pain following spontaneous vaginal birth. J Midwifery Womens Health. 2007; 52(3): 246-53.

5. Dahlen HG, Homer CS, Cooke M, et al. Perineal outcomes and maternal comfort related to the application of perineal warm packs in the second stage of labor: a randomized controlled trial. Birth. 2007; 34(4): 282-90.

6. Soong B, Barnes M. Maternal position at midwife-attended birth and perineal trauma: is there an association? Birth. 2005; 32(3): 164-9.

7. Fernando RJ, Sultan AH, Freeman FM, et al. The management of third- and fourth-degree perineal tears. RCOG Green top Guidelines 2015; 29: 5.

8. Franchi M, Cromi A, Scarperi S, et al. Comparison between lidocaine-prilocaine cream (EMLA) and mepivacaine infiltration for pain relief during perineal repair after child birth: a randomized trial. Am J Obstet Gynecol. 2009; 201(2): 186.e1-5.

9. Kargar R, Aghazadeh-Nainie A, Khoddami-Vishteh HR. Comparison of the effects of lidocaine-prilocaine cream (EMLA) and lidocaine injection on reduction of perineal pain during perineum repair in normal vaginal delivery. J Family Reprod Health. 2016; 10(1): 21-6.