Use of EMLA cream for skin anesthesia and epidural insertion in the patients with cesarean section

Katsushi Doi, Yoko Ueda, Kei Ugata, Hiroyuki Kushizaki, Noritaka Imamachi
NHO Hamada Medical Center, Dept. of Anesthesiology, Shimane, JAPAN

Background and Aim

Pain relief of the insertion of epidural catheter in cesarean section is difficult. EMLA (Eutectic Mixture of Local Anesthetics) cream, a eutectic mixture of lidocaine and prilocaine, is effective for pain reduction during venipuncture and superficial surgery. However, its effectiveness during epidural insertion is not well elucidated. The aim of this randomized, double blind study was to evaluate the efficacy of EMLA for epidural insertion in elective cesarean section.

Methods

With Intuitional Review Board approval and written patients' informed consent, forty ASA physical status 2 patients (aged 23 to 45) scheduled for elective caesarean section were included in this study. The parturient were randomized to applied ELMA cream (Group A) or placebo cream (Group B) about one hour prior to anesthesia. The application site was marked by the anesthesiologist on the preoperative visit and covered with an occlusive dressing. Pain during skin infiltration with 1% mepivacaine and subsequent insertion of an 18 gauge Touhy needle was assessed immediately after each procedure using 100 mm visual analog scale. The presence of patient's response with physical withdrawal on both procedures were recorded. The overall duration time of epidural insertion was compared. Statistical analysis was performed using Mann-Whitney U test and Chi-squared test. A P value < 0.05 was considered significant.

Results

- Total Number of Pts : 39
(Group A;ELMA cream : 20 pts , Group B; Placebo : 19 pts)

[patients characteristics]

	Group A (n=20)	Group B (n=19)	P
Age(yrs.) (mean±SD)	32±5	33±5	0.86
Height(cm) (mean±SD)	156±6	157±5	0.56
Weight(Kg) (mean±SD)	63±9	60±6	0.46
BMI (mean±SD)	25±3	24±2	0.24

[Mean VAS value]

	Group A (n=20)	Group B (n=19)	P value
Skin infiltration (mean±SD)	46±25	48±17	0.42
Touhy needle insertion (mean±SD)	35±30	38±23	0.64

[The presence of pt's response with physical withdrawal during skin infiltration and insertion of 18 G Touhy needle]

	patient's response	Group A (n=20)	Group B (n=19)	P
Skin infiltration	(+)	7(35%)	11(57%)	0.20
	(-)	13(65%)	8(43%)	
insertion 18 G Touhy needle	(+)	0(0%)	4(21%)	0.04
	(-)	20(100%)	15(79%)	

[The overall duration time of epidural insertion]

	Group A	Group B	P
Time (sec) (mean±SD)	297±197	226±100	0.57

Discussion

The combination of EMLA and lignocaine infiltration results in minimal patient discomfort and significantly reduces pain scores for epidural insertion, compared to either EMLA or lignocaine infiltration alone¹⁾ Our results of less withdrawal response confirmed the effect for the patients satisfaction. After 60 and 120 minutes of EMLA application, the mean insertion depths with acceptable pain were 2.9 and 4.5 mm, respectively ²⁾. This may be the reason why EMLA cream application did not reduce the pain score during skin infiltration with 1% mepivacaine and subsequent insertion of an 18 gauge Touhy needle in this study.

Conclusion

EMLA cream could not reduce the pain during epidural insertion. However, EMLA plus 1% mepivacaine infiltration may optimize patients comfort for Touhy needle insertion.

References

- 1) Elson JA, et al. EMLA cream prior to insertion of elective epidurals. Anaesth Intens care 1995
- 2) Wahlgren CF et al. Depth of cutaneous analgesia after application of a eutectic mixture of the local anesthetics lidocaine and prilocaine (EMLA cream). J Am Acad Dermatol. 2000