

152970 - LIDOCAINE PRELOADED IN THE ETT CUFF REDUCES EMERGENCE COUGH

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INTRODUCTION

Alkalinized lidocaine in the endotracheal tube (ETT) cuff decreases the incidence of cough and throat pain on emergence after surgery lasting more than two hours (1)(2). However, as alkalinized lidocaine needs 90-120 minutes to cross the ETT cuff membrane(3)(4), its usefulness in shorter duration surgery is unknown. This prospective double-blind RCT tested the hypothesis that prefilling ETT cuffs with alkalinized lidocaine > 90 minutes before intubation would reduce the incidence of emergence cough after surgeries lasting less than 120 minutes.

METHODS

After local Ethics Board approval, 200 ASA I-III patients consented to be randomized into one of two groups receiving either alkalinized lidocaine (group AL) or saline (group S) to inflate the ETT cuff.

Cuffs were prefilled > 90 minutes before intubation with either 2 ml of 2% lidocaine and 8 ml of 8.4% bicarbonate (group AL) or 10 ml of normal saline (group S). Cuffs were emptied immediately before intubation. After intubation, either 2 ml of 2% lidocaine (AL) or 2 ml of saline (S) were injected into the cuff. Additional 8.4% bicarbonate (AL) or saline (S) was injected into the cuff until there was no air leak.

Anesthesia was maintained using desflurane, rocuronium and either fentanyl or sufentanil in order to maintain vital signs within 20% of baseline values. Opioids administered in prophylaxis of extubation cough were proscribed.

A standardized "no touch" emergence technique was used (5). A blinded assessor noted any cough above 0.2 MAC of expired desflurane. At 0.2 MAC, once every 30 seconds, the patient was instructed to open his eyes and extubation occurred once a

directed response was noted.

Sample size calculation was based on a local incidence of emergence cough of 30%. One hundred patients per group were necessary to detect an absolute 15% reduction in cough in the AL group (power: 80%; alpha 5%). Results were assessed using Student's t test and Fisher's Exact test as appropriate. Logistic regression with the Lack of Fit P being reported (6) evaluated the relation between cough and continuous variables.

RESULTS

Table 1 shows that the total amount of opioids administered, ETT cuff pre-loading times, duration of surgery and extubation times were not significantly different. The incidence of extubation cough in group AL was 12%, significantly ($p=0.04$) lower than the 22% incidence in the saline group.

Emergence cough was not significantly influenced by smoking ($p=0.16$) or the use of ACE inhibitors ($p=0.71$). Fentanyl dosage was inversely correlated with the incidence of cough ($p=0.01$), while preloading time ($P=0.67$) and age ($P=0.28$) showed no significant correlation.

CONCLUSION

Preloading alkalinized lidocaine in the ETT cuff significantly decreased general anesthesia emergence cough after surgeries with an average duration of less than one hour.

References:

1. Dollo G, Estebe J-P, Le Corre P, Chevanne F, Ecoffey C, Le Verge R. Endotracheal tube cuffs filled with lidocaine as a drug delivery system: in vitro and in vivo investigations. *Eur J Pharm Sci.* 2001 Jun 1;13(3):319–23.
2. Estebe J-P, Dollo G, Le Corre P, Le Naoures A, Chevanne F, Le Verge R, et al. Alkalinization of intracuff lidocaine improves endotracheal tube-induced emergence phenomena. *Anesth Analg.* 2002;94(1):227–30, table of contents.
3. Jaichandran. Diffusion of Lidocaine Buffered to An Optimal pH Across the Endotracheal Tube Cuff-An in-Vitro Study. *Indian Journal of Anaesthesia.* Medknow Publications and Media Pvt. Ltd.; 2008. p. 536.
4. Huang CJ, Tsai MC, Chen CT, Cheng CR, Wu KH, Wei TT. In vitro diffusion of lidocaine across endotracheal tube cuffs. *Can J Anaesth.* 1999;46(1):82–6.
5. Tsui BCH, Wagner A, Cave D, Elliott C, El-Hakim H, Malherbe S. The incidence of laryngospasm with a “no touch” extubation technique after tonsillectomy and adenoidectomy. *Anesth Analg.* 2004;98(2):327–9.
6. Statistical analysis was done using: JMP 11 software (SAS institute Inc. Cary, NC)