ROLE OF BUPIVACAINE IN REDUCING POST TONSILLECTOMY PAIN

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Abstract: Pain following tonsillectomy is of major concern to both the surgeons and the Anesthesiologists. Pre-incisional Bupivacaine infiltration into the tonsillar fossa has been used as a method of relieving post-operative pain in children. In this study pre-incisional Bupivacaine infiltration into the tonsillar fossa resulted in immediate post-operative pain lasting four to six hours.

Keywords: Tonsillectomy, Pain relief, Bupivacaine.

INTRODUCTION

Pain management in patients undergoing tonsillectomy is of concern to the anesthesiologists, especially in pediatric population where measurement of pain is difficult. Bupivacaine infiltration has been used as pre-emptive method of relieving post operative pain by blocking nociceptive impulses from entering the central nervous system. The present study was carried out to test the hypothesis that blockade of nociceptive input with Bupivacaine during tonsillectomy can decrease postoperative pain.

METHODS

After approval of Hospital Ethical Committee this prospective, randomized, double blind study was carried out in Lok Nayak Hospital, New Delhi. Forty patients of ASA status 1, 6-16 years of age, scheduled for tonsillectomy in 2000-2001 were selected for this study. Exclusion criteria included known Hypersensitivity to Bupivacaine. Written and informed consent was taken from the either of the parents. All the patients belonged to similar socio-economics and educational status.

Pre-operatively patients were detailed about the correct use of visual Analog Scale (V.A.S.) since the study involved direct questioning. All patients were pre-medicated with inj. Glycopyrrolate 100µg/kg and inj. Morphine 0.1 mg/kg-1 intravenously given before induction.

Anaesthesia was induced with Thiopentone Sodium and Halothane in Nitrous Oxide and Oxygen. Myorelaxation was achieved with inj. Vecuronium Bromide 0.1 mg/kg-1. All the patients were intubated with nasotracheal tube, after the application of Boyle-Davis mouth gag, patients were randomly allocated the two groups. In one group (group A) Peri tonsillar infiltration of 5ml. of 0.25% Bupivacaine was given on either side. In the other group (group B), equal quantities of isotonic saline was used for infiltration. Oropharyngeal packing was done.

Post-operative pain was measured by an independent. Anesthesiologist, unaware of the patient group, in both the group at 0 min (on awakening from anesthesia) at 1hr, 2hr, 4hr and 24 hrs periods.

The intensity of Post-operative pain was assessed using a 10cm graduated Visual Analog Scale, marked with 0 mark (no pain) to 10 mark (worst pain experienced) the patients were told to indicate the intensity of pain by marking between the two marks.

If any time during the measurement of pain, a score of 5 or more was reported, inj. Diclofenac sodium 1 mg/kg-1 was given intramuscularly for pain relief. The statistical analysis was done using student-t-test.

RESULTS

The study groups were comparable with respect to age, weight and sex (Table 1)

The pain relief in the Bupivacaine group in terms of VAS score was highly significant at 2hrs, and 6 hrs intervals. (P value < 0.002 at all three intervals) (Graph I)

There was significant amount of pain in the isotonic saline group as all the patients belonging to this group had to be given Diclofenac Sodium. All the patients have given a score more than 5 at the time of awakening from anaesthesia.

Two patients were excluded from the study because of post-tonsillectomy bleeding one in each group. It is significant to note that two patients, belonging to Bupivacaine group (group A), were (at the time of direct questioning) comfortable in terms of appearance, there was no significant tachycardia or hypertension responded by marking at more than 5 mark.

DISCUSSION

Tonsillectomy produces large areas of exposed muscle in the oropharynx, resulting in considerable pain from muscle, spasm, irritation of nerve endings, excessive dissection and use of cautery-haemostasis may produce even larger amount of inflammation and post-operative pain.

Our results are consistent with the study of A.K. Wong et al¹ and Stuart et al² who found that peritonsillar infiltration of Bupivacaine was moderately useful as a mean of providing post-operative pain relief in children undergoing tonsillectomy. Pain following

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tonsillectomy has been poorly measured, one of the reasons for this poor measurement is that a large number of patients undergoing tonsillectomy are of pediatric age group and due to variety of unequivocal methods available, accurate measurement of pain has been difficult.^{3,4,5}

The results obtained in the study by Jebels et al, showed that pre-incisional infiltration of Bupivacaine resulted in pain relief as long as on tenth post-operative day the reason suggested for the long-term pain relief was the phenomenon of neuroplasticity⁶ which works by eliminating the hyperexcitable state responsible for the maintenance of post - operative pain.

Another interesting finding we found in our study was that despite all the patients receiving opioid pre medication, none of the patients in the controlled group had significant pain relief.

Despite a potential risk of direct injection of the local anesthetic into carotid artery, increased bleeding induced by vasodilatation and post-operative airway difficulties due to inhibition of laryngeal reflex mechanisms, none of the patient has such problems in our study. Similarly local ropivacaine infiltration is a safe and effective method and equivalent to bupivacaine for post-tonsillectomy pain⁷. Another study demonstrates decreased bleeding after peritonsillar infiltration during tonsillectomy⁸ without any significant pain.

Unlike the study by Jebels et al, we did not see any pain relief beyond the normal pharmacological duration of action of Bupivacaine (4 to 6 Hr.)

To summarize, post-tonsillectomy pain remains a problem of considerable clinical importance in pediatric population. This study

demonstrated the pre-incisional peri-tonsillar infiltration of Bupivacaine was superior to placebo in children undergoing tonsillectomy in immediate post-operative period.

In the light of an increasing number of pediatric and adult tonsillectomies being performed as day - care cases, further studies are indicated to establish Bupivacaine as a standard method of providing pre-emptive analgesia.

Table I :

	GROUP A (BUPIVACAINE)	GROUP B (ISOTONIC SALINE)
NUMBER	19	19
Age(years)	10.6 +\ 0.5	10.17 +\ 0.6
Weight(kg)	31.45 +\ 1.9	31.15 +\ 1.5
M:F	12:7	14:5

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