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THE EFFECT OF TOPICAL BUPIVACAINE 0.5% ON POST-TONSILLECTOMY PAIN

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ABSTRACT

OBJECTIVE: The aim of the study was to determine the effect of topical Bupivacaine 0.5% on post-tonsillectomy pain.
STUDY DESIGN: This study was double blind interventional experimental.
Place and duration of surgery:
This study was conducted at the Anaesthesia Department of Lyari General Hospital over a period of 6 months (January 2008 to June 2008)
PATIENTS AND METHODS: 100 patients, who presented for tonsillectomy, were randomly allocated to 2 groups; Group A and Group B. After tonsillectomy Group A patients received bupivacaine 0.5 % soaked swabs tightly packed in their tonsillar fossae while the group B received saline-soaked swabs. Visual analogue scale was used to assess the pain which was then recorded on a proforma at 2, 4, 6 and 8 hours post-operatively.
RESULT: 100 patients were included in the study. In both the groups ages were between 10-30 years. Group A included 50 patients out of which 23 were males and 27 females. The mean age for this group was 17.88 years (S.D=4.475). Severity of pain was measured using visual analogue scale(VAS).The mean of the post tonsillectomy pain score at 2 ,4, 6 and 8 hours were recorded with standard deviation and results were found to be 4.5 (S.D=1.265), 3.98 (S.D=0.820), 3.3 (S.D=0.677) and 3.11(S.D=0.65691) respectively. Group B included 50 patients out of which 26 were males and 24 were females. Mean age was 16.6 (S.D=3.95) and the mean pain scores after 2, 4, 6 and 8 hours were 5.93 (S.D=1.02), 5.12 (S.D=0.93), 4.28 (S.D=0.88) and 3.88 (S.D=0.74) respectively.
CONCLUSION: Bupivacaine 0.5 % soaked swabs were effective in reducing pain after tonsillectomy

KEY WORDS: Tonsillectomy, Bupivacaine**,** pain

INTRODUCTION:

Tonsillectomy is one of the most common surgical procedures performed in the world. This surgery is frequently associated with postoperative pain of considerable duration which is usually accompanied by the substantial consumption of both opioid and non-opioid analgesics. Despite the use of different surgical and anaesthetic techniques in the search for safe and effective post-tonsillectomy pain relief, this problem remains a clinical dilemma 1.It often leads to dehydration because of inadequate intake which results in prolonged hospitalization and added morbidity. So there is a need to achieve adequate pain control.

Pain begins with local tissue damage which results in release of inflammatory substances. The tissue in the throat contains many nerves that are highly sensitive. Traditional tonsillectomies usually remove 100% of the tonsil tissue, which totally exposes the underlying throat muscles. A recent theory asserts that this directly relates to the severe pain, slower recovery and higher rate of complications associated with conventional tonsillectomies. The exposed throat muscles are vulnerable to bacteria that release endotoxins which increase the pain and swelling. In addition, the surgeon has to cauterize (burn) the throat muscles directly to stop any bleeding that occurs. This combination of muscle exposure, thermal injury, and bacteria-produced toxins contributes significantly to the severe pain many people experience after a traditional tonsillectomy. Electrical impulses are generated at peripheral receptors which are conducted by A delta and C fibers to the spinal cord. Transmission of electrical impulses can be blocked by local anaesthetics when applied to wound producing analgesia 2. Local anaesthetics have been applied by infiltration, by topical spray and also by placing soaked swabs in tonsillar fossae .There

are also other methods by which we can relieve post tonsillectomy pain for example by using opioids or by using systemic analgesics but these methods may produce undesirable side effects as well. Infiltration with local anaesthetic such as bupivacaine may result in cardiac arrhythmias when injected accidently intravascularly. Visual loss[3], cervical osteomylitis[4] and upper airways obstruction[5] have been reported with infiltration technique. Recently bupivaciane soaked swabs, after tonsillectomy, have been used in various studies with no serious adverse effects.

In this study we placed Bupivacaine soaked swabs in tonsillar fossae, after tonsillectomy, to determine its effect on post-tonsillectomy pain. Our study showed that this method of post-tonsillectomy pain relieve is reliable and efective

PATIENTS AND METHODS:

This double blind study was conducted at the Anaesthesia Department of Lyari General Hospital over a period of 6 months from January 2008 to June 2008. The study was done after approval from ethical committee and informed patient's consent (Table 1).100 patients, who presented for elective tonsillectomy, having age in between 10 to30 years, of either gender, were included in the study .Patients of both ASA I and II physical status were included (Table 1). Uncoperative patients and patients who were allergic to amide group of local anaesthetics were excluded. During preoperative visit patients were assessed and explained about risks and benefits of drug used and instructed about how to assess their postoperative pain by visual analogue scale.

The patients were equally divided into 2 groups. Operations were performed by one surgeon under general anaesthesia employing dissection technique. Patients were preoxygenated with 100 % oxygen for 3 minutes and then were induced with injection Thiopentone sodium 5 milligram/kilogram (mg/kg) and intubation was performed with Succinylcholine 2 mg/kg. Each Patient was intubated with suitable endotracheal tube which was later secured. Anaesthesia was maintained with 50%O_2 : 50%N_2O, Halothane and injection Atracurium 0.5 mg/kg for muscle relaxation. Intravenous fluids were given as per individual requirement. Bleeding was controlled by ligation. At the completion of surgery Group A patients received 0.5% Bupivacaine soaked swabs in both the tonsillar fossae for 5 minutes while Group B patients received 0.9% saline soaked swabs in both the tonsillar fossae for same duration. Swabs were removed after 5 minutes. Pain intensity was measured by visual analogue scale at intervals of 2,4,6,8 hours postoperatively. In Visual analogue scale patient indicates the intensity of his pain by drawing a mark on a line 10 cm long. it is measured from no pain to the point indicated by the patient and then a numerical value is given (0=no pain to 10 cm=point of worst pain .Score above 4cm was the cut off point and additional analgesia was provided when visual analogue scale was above that value.

Statistical Analyses: The data was collected from the proformas and was analyzed by statistical package for social sciences (SPSS) version 10. Mean +/- standard deviation were presented for pain scores of both groups at time intervals of 2, 4, 6 and 8 hours. Pain scores of both the groups were calculated and compared by using "t" test . A p value of <0.05 was considered statistically significant

TABLE 1
DEMOGRAPHIC DATA OF PATIENTS

Characteristics	Group A	Group B
Number of Patients	50	50
Mean Age (in years)	17.88 (S.D=4.475)	16.6 (S.D=3.95)
Mean Weight (in kilograms)	49.6 (SD =9.9)	47 (SD=10)
Sex (M: F)	23 : 27	26 : 24
ASA(I:II)	42 : 08	39 : 11

TABLE 2
PAIN SCORES ON VISUAL ANALOGUE SCALE

Time (hours)	Group A, n=50 Group B, n=50	Mean+/-SD Mean+/-SD	Difference	P value
Pain score at 2 hours	4.5 +/- 1.26	5.93 +/- 1.02	1.43	0.00
Pain score at 4 hours	3.98 +/- 0.82	5.12 +/- 0.93	1.14	0.00
Pain score at 6 hours	3.3 +/- 0.67	4.28 +/- 0.88	0.98	0.00
Pain score at 8 hours	3.11 +/- 0.65	3.88 +/- 0.74	0.77	0.00

RESULTS

100 patients were included in the study. In both the groups ages were in between 10-30 years. Group A included 50 patients out of which 23 were males and 27 females. The mean age for this group was 17.88 years (S.D=4.475).The mean of the post tonsillectomy pain score after 2 hours was 4.5 (S.D=1.265), after 4 hours mean was 3.98 (S.D=0.820) after 6 hours mean post tonsillectomy pain was 3.3 (S.D=0.677) and after 8 hours post tonsillectomy pain was 3.11(S.D=0.65691)

Group B included 50 patients out of which 26 were males and 24 were females and the mean age was 16.6 (S.D=3.95). Mean pain score after 2 hours of tonsillectomy was 5.93 (S.D=1.02), after 4 hours mean was 5.12 (S.D=0.93), after 6 hours mean was 4.28 (S.D=0.88) and after 8 hours mean was 3.88 (S.D=0.74) (Table 2). P values at 2, 4, 6 and 8 hours after tonsillectomy indicate that there is some significant difference in the mean pain scores of the two groups.

DISCUSSION:

Pain management after tonsillectomy needs special attention as reduction in pain will not only provide comfort to the patients but it will also improve oral intake, reduce dehydration and decreases post operative bleeding.

Pain is not just a sensory modality but is an experience. The definition of pain recognizes the interplay between the objective, physiological sensory aspects of pain and its subjective, emotional and psychological components. The response to pain can be highly variable among persons as well as in the same person at different times. Different pain scores have been used to describe pain and visual analog scale is one of them. It is simple, efficient and minimally intrusive method that correlates well with other reliable methods.

Tonsillectomy is usually done on an outpatient basis, with the patient returning home the same day as the surgery. Expect some throat and ear pain in the first days following surgery. Pain after tonsillectomy is of special concern because it can interfere with eating and drinking, and researchers have observed an increase in pain associated with electrocautery. Ice packs can help relieve pain, and sucking on an ice cube or eating ice cream may provide some comfort. In addition, pain-relief medication may be prescribed. During recovery, it is recommended to eat soft, easy-to-swallow food and to drink a lot of cold fluids. After tonsillectomy In order to reduce post tonsillectomy pain a number of methods have been tried using different pharmacological methods [6-12] and surgical approaches [13,14]. Bupivacaine has been used in various ways to reduce post tonsillectomy pain. Several authors have found that pre-incisional injection of Bupivacaine reduces postoperative pain [15-18].In some studies Bupivacaine infiltration was found to be ineffective [19,20,21]

In recent years Bupivacaine soaked packs, which were placed in tonsillar fossae after tonsillectomy, have been used and were found to be very effective in reducing post tonsillectomy pain [2,.22,23]. Bupivacaine is an amide local anaesthetic and has been used very frequently for epidural, spinal and peripheral nerve blocks. It has high protein binding and lipid solubility with upper limit of safe dose of 2 mg/kg. Its systemic side effects include convulsions, paresthesias, arrhythmias and allergic reactions. In order to produce its analgesic effect it needs to be in contact with surgical site for about 10 seconds.

In our study Bupivacaine soaked swabs were used and these were found very effective not only in reducing the post operative pain but these swabs also prevented dehydration by encouraging oral intake. Patients who were included in this study were discharged uneventfully without having any complication related to anaesthesia specially to Bupivacaine.

CONCLUSION:

Bupivacaine when applied topically to the tonsillar fossae after tonsillectomy reduces pain and increases patient comfort but further research in this regard is required to find ideal analgesic agent.

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