



A COMPARISON OF EFFECTIVENESS OF ORAL ACETAMINOPHEN AND IBUPROFEN IN POST-OPERATIVE PAIN MANAGEMENT AFTER TONSILLECTOMY.

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INTRODUCTION

Tonsillectomy is a frequently performed surgery.¹ Post tonsillectomy ache relief is an important task to achieve.² Previously, opioids were administered for postoperative pain relief but due to dangerous complications, they are being contraindicated for pain management after surgery.³ Acetaminophen and ibuprofen are among the most commonly prescribed medicines for reduction of pain and fever. Van der Anker in his comparative randomized trials showed that ibuprofen is a more appropriate analgesic as compared to acetaminophen due to its longer duration of action and its less frequent dosage (6-8 hourly for ibuprofen while 4 hourly for acetaminophen).⁴ Mahgoobifard et al. assessed the postoperative pain relief efficacy by oral acetaminophen and ibuprofen administered before adeno-tonsillectomy in children. The mean pain scores at Post Anesthetic Care Unit and ward were significantly lower for acetaminophen (7.05 t 0.63 & 6.77 t 0.64) as compared to ibuprofen

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ABSTRACT... Objectives: To compare the effectiveness of oral acetaminophen and ibuprofen in post-operative pain management after tonsillectomy. **Study Design:** Randomized Control Trial. **Settings:** Department of ENT, PNS Shifa Hospital Karachi. **Period:** 6 months from 10-11-2016 to 09-05-2017. **Material & Methods:** Overall 80 cases (40 in both group) were assessed in this study. Patients randomly allocated in group-A and group-B. Group-A was given syrup acetaminophen (10-15mg/kg body weight PO 6 hourly) and group-B received syrup ibuprofen (4-10 mg/kg body weight PO 8 hourly). **Results:** Mean age was 6.53±2.16 years in group A and 6.68±2.39 years in group-B. We had 22 females (55.0%) in group-A and 23 females (57.5%) in group-B. Mean surgery time was 46.60±5.86 minutes in group-A while 46.60±6.14 minutes in group-B. Mean weight of patients was 20.83±5.20kg in group-A and 21.88±5.07kg in group-B. Mean pain score was significantly less in group-B in comparison to group-A at 6h, 12h, 18h and 24h. Stratification for age, gender, duration of operation and for weight was carried out. **Conclusion:** On the basis of this study, we conclude that ibuprofen is significantly better in pain relief after tonsillectomy as compared to acetaminophen.

Key words:

Oral Ibuprofen, Oral Acetaminophen, Pediatric Tonsillectomy, Post Tonsillectomy Pain, Post Tonsillectomy Complications.

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(8.14 t 0.85 & 7.75 t 0.786), thus they found that administration of 15 mg/kg acetaminophen, half an hour preoperatively reduced CHEOPS score post surgically as compared to 10 mg/kg ibuprofen.⁵ Bailey E et al in his study, found ibuprofen (200-400 mg) was better than acetaminophen (600-1000 mg) for ache relief at 4 hours postoperatively in cases of oro-dental operations.⁶

Post tonsillectomy pain causes dehydration, odynophagia, decreased appetite and loss of weight, which caused greater after operative hospital visits and admissions. Due to limited availability of regional as well as local data, this study will help the surgeons to justify the analgesic requirements in young post tonsillectomy patients.

Visual analogue scale (VAS) was applied to evaluate pain in patients. It ranged from 0 to 10(attached as annexure). Mean pain score was

taken as average of the pain score recorded on 6 hourly basis for 24 hours postoperatively.

MATERIAL & METHODS

Randomized control trial (RCT) was carried out over a period of six months from 10-11-2016 to 09-05-2017 in department of ENT, PNS Shifa Hospital, Karachi. Sample size was calculated by using WHO sample size calculator. Calculations included level of significance – 5%, power of test 80%, pooled standard deviation 0.86,⁵ test value of the population mean 8.14.⁵ Expected populations mean 7.05.⁵ Sample size approximately n=40 patients in each group.

Non-probability, consecutive sampling technique was used.

Inclusion Criteria

- Children undergoing tonsillectomy irrespective of the indication.
- Aged 3 to 12 years

Exclusion Criteria

- Concomitant adenoidectomy or myringotomy.
- Documented allergy to the drugs under study.

Hospital ethical committee approval was taken before start of study. Patients fulfilling inclusion criteria were selected. Informed written consent was taken. Name, age, gender, serial number, hospital record no, address and telephone number of each individual was noted. Patients were randomly allocated a group (A or B) using the random number tables. All surgeries were performed by a Consultant ENT surgeon under general anesthesia. Postoperatively, group A was given syp acetaminophen (10-16 mg / kg body wt PO 6 hourly and group B was given syp ibuprofen (4-10 mg/kg body wt PO 8 hourly). All patients were given an antibiotic coverage of Syp Coamoxiclav 40 mg/kg 8 hourly. All patients were assessed using pain scale, on 6 hourly basis for 24 hrs after surgery by trainee herself/himself. Data was recorded in the proforma.

SPSS version 17 was used for data statistical analysis. The variable included quantitative data like age, weight pain score (at 6,12,18,24 and average) and duration of surgery. Qualitative

data like gender. Mean and standard deviation was calculated for quantitative data, whereas percentage and frequency was calculated for qualitative data like gender. Independent sample t-test was applied to compare the mean pain score between the two groups. P values less than or equal to 0.05 was taken statistically significant. Effect modifiers age, gender, weight, duration of surgery was controlled through stratification. Post-stratification t-test was applied by keeping p value ≤ 0.05 as significant.

RESULTS

A total of 80 cases (40 in both groups) were recruited during the study period of six months from 10-11-2016 to 09-05-2017.

Group-A was given syp acetaminophen and B was given syp ibuprofen.

Patients ranged between 3-12 years of age. Mean age was 6.53 ± 2.16 years in group A and 6.68 ± 2.39 years in group-B. Group-A had 22 males (55.0%) and 18 females (45.0%) and group B had 23 males (57.5%) and 17 females (42.5%). Mean duration of surgery was 46.60 ± 5.86 minutes in group-A while 46.60 ± 6.14 minutes in group-B. Mean weight of patients was 20.83 ± 5.20 kg in group-A and 21.88 ± 5.07 kg in group-B. Mean pain score was significantly less in group-B in comparison to group-A at 6h, 12h, 18h and 24h (Table-I).

Recording time	Group	Pain Score		P-Value
		Mean	S.D	
At 6 h	Group-A	7.23	1.40	P=0.010
	Group-B	6.40	1.37	
At 12 h	Group-A	5.53	1.50	P=0.002
	Group-B	4.60	1.10	
At 18 h	Group-A	4.08	1.50	P=0.007
	Group-B	3.23	1.20	
At 24 h	Group-A	3.23	1.34	P=0.002
	Group-B	2.33	1.18	

Table-I. Comparison of mean pain score.

DISCUSSION

Tonsillectomy a commonly performed surgical procedure has several complications and morbidities. Most probable postoperative

problems include severe pain, odynophagia, nausea, retching and hemorrhage. These happenings can adversely upset patient's recovery and increase the duration of hospital admission.^{1,2,5} Reduced oral intake after the surgery because of postoperative aching causes disturbed sleep and distress. Early start of oral intake, enhances swift recovery and rapid return to normal accomplishments, are benefits of good postoperative pain controlling.

Methods used to reduce the intensity of postoperative pain include pharmacological or non-pharmacological practices e.g. preoperative psycho-educational mediations and postoperative techniques like ketamine or honey administration⁷ and administration of opioids and non-opioids (e.g. Pregabalin).⁸ Different protocols have been devised to cope pain after adeno-tonsillectomy, that include per-operative peritonsillar local anesthetic agent injection, pre-incisional opiate usage and administration of acetaminophen or non-steroidal anti-inflammatory drugs (NSAIDs).⁹

Opiates are seldom prescribed for control of pain after tonsillectomy because of their serious life threatening complications, e.g. nausea, retching, spewing and respiratory depression.^{10,11}

In this randomized control trial we compared postoperative pain score after tonsillectomy in children given oral acetaminophen or oral ibuprofen. Our results showed, the mean pain score was significantly lesser in patients group who were given ibuprofen postoperatively, compared to the acetaminophen group (at 6 h, 12 h, 18 h and 24 h).

However, study by Bird established that no significant difference between acetaminophen and ibuprofen's ache reducing effects was found after separator was placed.¹² Primosch et al. found in their research that if preoperatively acetaminophen or ibuprofen was given, it was statistically not superior to placebo in management of post extraction pain.¹³ In their study, colleagues established that acetaminophen administered (40 mg/kg) resulted in pain respite and CHEOPS < 9

in 87% of pediatric patients.¹⁴ The ethnic variances must also be well-thought-out. The differences in the witnessed effects of these medicines can be due to the variances in their bioavailability. E.g. Van der westhuizen found that Paracetamol exerted more therapeutic plasma concentration when given I/V.¹⁵ Kaluzny and his colleagues concluded that acetaminophen if preoperatively given was effective, suitable, harmless and inexpensive in reducing the ache peri and post operatively, in phacoemulsification executed by using topical anesthesia.¹⁶ Dosage time of these painkillers is another aspect involved in this matter. Both these drugs acetaminophen and ibuprofen are very quickly absorbed in gastro intestinal system when given per orally. Acetaminophen achieves its peak plasma levels within 27 to 60 minutes after absorption while ibuprofen achieves this within 54 to 90 minutes after absorption.¹⁷

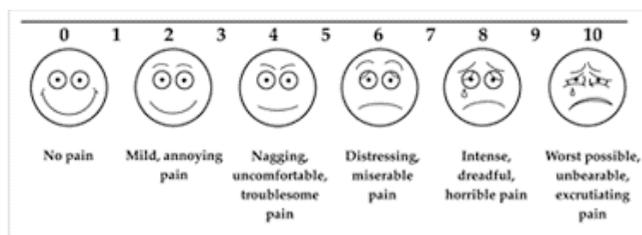
In another randomized control trial which assessed ibuprofen and acetaminophen efficacy in 110 pediatric tonsillectomies concluded there was no statistically significant difference existed between reported pain and reasonable pain reduction, as stated by parents/guardians at postoperative follow-up.¹⁸

CONCLUSION

Established on the basis of results of this research, it is determined that syp ibuprofen (4-10 mg/kg body wt PO 6 hourly) given postoperatively significantly reduces the pain score in pediatric patients compared to syp acetaminophen (10-15 mg/kg body wt PO 6 hourly).

We recommend more studies should be carried out which involve the measurement of these drugs plasma levels and even the effects of higher doses of these Medicines also needs to be further evaluated. Moreover, exploring other ways of administration of these painkillers is an interesting subject for the forthcoming research.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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