

PER-OPERATIVE EFFICACY OF SINGLE INTRAVENOUS BOLUS DOSE OF DEXAMETHASONE IN REDUCING POST TONSILLECTOMY PAIN IN ADULTS

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ABSTRACT

Objective: To determine the efficacy of per-operative single intravenous bolus dose of Dexamethasone in reducing post-tonsillectomy pain.

Material and Methods: This was a Quasi experimental study conducted at the ENT Department, Hayatabad Medical Complex, (HMC), Peshawar from March 2010 to March 2011. A total of 108 patients included in this study were divided in to two groups, group A receiving Intraoperative dexamethasone (8mg) and group B not receiving dexamethasone. Post tonsillectomy pain was measured by using visual analogue scale and graded as no pain, mild pain, moderate pain and severe pain.

Results: A total of 108 patients were included with age ranging from 16 to 38 years with a mean age of 23.52 ± 6.01 years. On the first postoperative day, 3 patients in group A were pain free while none was pain free in group B with significant difference ($p=0.016$) between the two groups. Similarly 20.4% vs none on second postoperative day and 57.4% vs 24.1% on 3rd post operative day showed significant difference ($p=0.0001$) between the two groups.

Conclusion: Per-operative Intravenous dexamethasone during tonsillectomy is useful in combating postoperative pain.

Key Words: Dexamethasone, Tonsillectomy, Post-tonsillectomy, pain.

INTRODUCTION

Tonsillectomy remains one of the most common procedures performed in hospitals throughout the world^{1,2}. Pain, nausea, vomiting, edema and poor oral intake are the most common morbidities following tonsillectomy^{3,4}. Different modalities of treatment have been tried to reduce post tonsillectomy pain. Dexamethasone reduces postoperative pain after adult tonsillectomy⁵. Previous studies on analgesic effect of single bolus intravenous administration of dexamethasone are inconspicuous^{6,7}. Despite improvements in anesthetic and surgical techniques, post-tonsillectomy pain, discomfort and poor oral intake continues to be a significant clinical concern for the patients and their families⁸. Prophylactic dexamethasone during tonsillectomy decreases post-tonsillectomy pain at rest and during swallowing subsequently increasing oral intake and earlier tolerance to soft and regular diet^{5,9}. It is also safe and cost effective¹⁰. Additionally it is found to have maximum beneficial effects when combined with cold dissection technique¹¹.

Limited studies are available at national and international level to recommend the use of intraoperative dexamethasone during adult tonsillectomy. Aim of this study was to ascertain the role of single bolus intravenous administration of steroids (dexamethasone) in reducing morbidity after tonsillectomy in adults.

MATERIAL AND METHODS

A Quasi experimental study was conducted at the ENT Department, Hayatabad Medical Complex (HMC), Peshawar from March 2010 to March 2011. Informed consent was obtained from all patients prior to surgery as a part of ethical practice. The inclusion criteria was patients of either sex, adults with history of chronic tonsillitis and selected for tonsillectomy. Patients with tonsillar malignancy, pre-established hypertension, diabetes mellitus and neuropsychiatric illness and patients with known bleeding disorders were excluded from study.

The registered subjects were divided into two groups, group A receiving dexamethasone and group B not receiving dexamethasone. The sample size was 108 by using 95% confidence co-efficient, 23% prevalence and 8% margin of error which was divided equally and randomly by lottery method in to two groups, 54 patients in each.

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Demographic information like name, age and gender were obtained. Baseline investigations like viral profile, Hb, bleeding time and clotting time were done in all patients. All patients underwent tonsillectomy by cold knife dissection method. Intravenous dexamethasone 8 mg as a single bolus was given during induction of anesthesia only in group A. Any intraoperative complications were noted in all subjects as well. All patients were given intramuscular diclofenac sodium 50 mg post operatively in two equal divided doses during hospitalization. Post-operative pain was assessed on day 1, day 2 and day 3 using Visual Analog Scale; 0 being 'no pain' and 10 being 'the worst possible pain'. Patients were discharged on day 3. Data was collected using the approved proforma designed for the purpose. The data was analyzed using SPSS version 11.

RESULTS

A total of 108 patients were included in this study over a period of one year from March 2010 to March 2011. The age of patients varied from 16 to 38 years with a mean of 23.52 ± 6.01 years. The two groups did not differ statistically with respect to age distribution with P-value=0.588. Out of the 108 patients there were 64(59.3%) males and 44 (40.7%) females. Male to female ratio was 1.5:1.

On the first post operative day, 3 patients in group A were pain free while none was pain free in group B. Severe pain was more common in group B as compared to group A (16 vs 5 patients) with significant difference between ($p=0.016$)the two groups as shown in Table 1. On the second post operative day, 11 patients in group A were pain free while none in group B with significant difference ($p=0.0001$) between the two groups as shown in Table 1.

At 3rd postoperative day, those receiving dexamethasone showed significant relief of postoperative pain (57.4%) as compared to group not receiving dexamethasone (24.1%) [31 vs 13 patients] with significant difference ($p=0.0001$) between two groups as shown in Table 1. Severe pain was absent on 3rd postoperative day in group A patients.

DISCUSSION

Tonsillectomy is one of the most common procedures performed in hospitals throughout the world. Many studies have attempted to use various interventions to reduce postoperative pain. Dexamethasone is one of the drugs used to reduce postoperative pain in various operations^{1,12}. Statically there is significant relative decrease (23%, $p = 0.016$) in postoperative pain scores of patients receiving dexamethasone.

Our study found that the dexamethasone group had lowered pain scores at follow-up postoperatively ($P=0.0001$). Our results are in agreement with the findings of Mckean et al that 10 mg intravenous dexamethasone at induction reduced mean pain scores after tonsillectomy¹³. Our surgical technique i.e. cold dissection and the dose of dexamethasone was almost the same. Thomas S et al used the same dose of 8 mg intravenous dexamethasone as we used in our study in 124 patients undergoing tonsillectomy and concluded the reduced incidence of post operative sore throat in patients receiving postoperative dexamethasone¹⁴. Carr MM et al found a single intraoperative dose of intravenous dexamethasone slightly reduces pain over 10 days after surgery in a small study population¹⁵. Malde AD et al studied the effectiveness of a single intravenous dose of dexamethasone (0.15 mg/kg) in patients aged > 3 years undergoing sharp dissection method tonsillectomy finding that dexamethasone provided significant analgesia, reduced edema and improved quality of oral intake¹⁶. Al-Shehri et al in a study of 30 adult tonsillectomies showed that perioperative dexamethasone significantly experienced less pain, nausea and vomiting, better healing and less slough and granulations with no adverse effects reported⁷. These finding are consistent with our study. Statistically significant difference was found in two groups in our study on all three days ($P=0.016$ on day 1, $P=0.0001$ on day 2 and $P=0.0001$ on day 3).

In a meta-analysis by Steward et al of eight double-blinded, randomized, placebo controlled studies, the use of single intravenous dose of

Table 1: Comparison of Post Operative pain in both groups on day 1, day 2 and day 3

| Postoperative Pain | Day 1 | | Day 2 | | Day 3 | |
|--------------------|-------|----|--------|----|--------|----|
| | A | B | A | B | A | B |
| No pain | 3 | 0 | 11 | 0 | 31 | 13 |
| Mild Pain | 20 | 13 | 27 | 24 | 20 | 23 |
| Moderate Pain | 26 | 25 | 16 | 21 | 3 | 15 |
| Severe Pain | 5 | 16 | 0 | 9 | 0 | 3 |
| P- Value | 0.016 | | 0.0001 | | 0.0001 | |

dexamethasone is recommended keeping its efficacy, safety and cost effectiveness¹⁷.

This study demonstrates that dexamethasone has potent anti inflammatory effect by decreasing postoperative pain and it can be used as an adjuvant therapy intravenously along with routine analgesics in reducing post tonsillectomy pain. It is recommended that the results of our study cannot be generalized because of limited study population. However studies with larger population are required to optimize the beneficial effects of preoperative dexamethasone during tonsillectomy.

CONCLUSION

A single 8 mg dose of dexamethasone given intravenously after induction of anesthesia in adult patients undergoing sharp dissection snare tonsillectomy resulted in statistically significant decrease in the postoperative pain.

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