THE EFFECT OF DEXAMETHASONE ON POST-OPERATIVE NAUSEA AND VOMITING IN PATIENTS WHO UNDERWENT TONSILLITIS SURGERY AT THE ADESH INSTITUTE OF MEDICAL SCIENCE AND RESEARCH UNIVERSITY
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ABSTRACT: PONV occurs frequently after day case tonsillectomy surgery both 5-HT3 antagonists and dexamethasone are superior to placebo in the prophylaxis of PONV in his setting. Our study has compared the efficacy of ondansetron plus dexamethasone with each anti-emetic alone for the prevention of PONV in patients undergoing day case tonsillectomy surgery. Present study was undertaken on 279 patients in the age group of 10-38yrs. Group 1 received Inj. Dexamethasone 8mg as single dose I V bolus 5 minutes before induction of anaesthesia. Group 2 received Inj. Ondansetron 4mg as single dose I V bolus 5 minutes before induction of anaesthesia. Group 3 received Inj. Ondansetron 4mg with Inj. Dexamethasone 8mg as single dose I V bolus 5 minutes before induction of anaesthesia A standard anaesthetic protocol was used in all the patients. As per our observations, the incidence of PONV in 0 – 4 hours post-operative period was statistically significant. The observations were inconclusive beyond the 4 hour period in combination group as well as either drug group. Combination of Inj. Ondansetron 4mg with Inj. Dexamethasone 8mg proved to be more efficacious over either drug alone.

INTRODUCTION: The research has been done for after procedure of tonsillectomy we have demonstrated that under controlled conditions a single intravenous dose of Dexamethasone (DX) is an effective, safe and inexpensive method of reducing the incidence of postoperative nausea and vomiting (PONV) following tonsillectomy in children. Unfortunately, there is substantial variability across these studies with respect to pattern, surgical method, hemostasis method and age of patients. Grace bhudiraja et al identified a dose-dependent increased rate of post-tonsillectomy hemorrhage following administration of DX. Patients were followed up immediately after surgery, then after 1hr, 4hrs, 12hrs & 24 hrs.

In the follow up following observation were made: Complaints of Nausea episodes of Vomiting: Theses observation was recorded by independent recovery room personnel who did not know which anti-emetic each patient had received. Every complaint of nausea and every episode of vomiting was recorded.

A rescue anti-emetic in the form of Inj. Zoffer 1mg was given if the patient complained of nausea or had an episode of vomiting.

Totally effective anti-emetic response was defined as no vomiting and no request for additional anti-emetic.
Nausea was graded using a 4 point linear VAS (Visual Analogue Scale).

* = No nausea.
N1 = Mild nausea.
N2 = Moderate nausea.
N3 = Severe nausea.

Patients were questioned regarding complaints of headache and dizziness and were assessed for the presence of sedation, hypotension, extra pyramidal reaction and hypersensitivity reactions.

The observations were tabulated and special observations recorded, tabulated and analyzed statistically using and Z test for proportions wherever appropriate.

Steroids also inhibit phospholipase enzyme which blocks the cyclooxygenase and lipooxygenase pathways, and reduce prostaglandin production relieving pain.

MATERIALS AND METHODS:
Place of Study: Dept. of ENT, AIMSR. After approval from the hospital ethics committee a prospective, randomized Study was conducted.

Study Design: Prospective observational study.

Sample Size: Based on data collected on this topic and feasibility in this center, it has been decided to enroll all patients admitted in ENT dept. for operation in last 1 years.

Inclusion Criteria: In this prospective study, 279 patients aged above 15 years undergoing tonsillectomies were enrolled.

Exclusion Criteria: Patients with coagulopathy disorders, diabetes, gastritis, peptic ulcer, hypertension and cardiovascular and renal diseases or on therapy with corticosteroids, anti-emetics, anti-histaminics, aspirin undergoing additional procedure at the same time as tonsillectomy (eg:-Adenoidectomy, uvulo palatopharyngoplasty) were excluded.

| Groups  | Number of patients | Drugs used                      |
|---------|--------------------|---------------------------------|
| Group 1 | 93                 | Inj. dexamethasone              |
| Group 2 | 93                 | Inj. Ondasetrone                |
| Group 3 | 93                 | Both inj. dexa + inj ondasetrone|
| Total   | 279                |                                 |

RESULTS: In our study: the mean age in the 3 groups were found to be Group 1 –18.56, Group 2 – 19.86, Group 3 –19.32 respectively. The mean weight of the patients in the 3 groups were found to be 33.23, 34.22, 35.27 respectively. Therefore the age and the weight distribution was comparable in the 3 groups.
In the first 4 hours, patients are given the injections according to the group made in study. We have given a medicine just after a operation and we observed the nausea and vomiting in first four hours and the patients were closely monitored by residents and the their problems are written over a research analysis chart and table is made according to that. The main thing is that the patients who are having a moderate nausea and vomiting are given injections again and injection tramadol in 100 ml NS so due to narcotic effect of tramadol, the nausea and vomiting is not there in patients while p-value of the study is very much significant.

| Groups            | Mild nausea | Moderate nausea | No nausea       |
|-------------------|-------------|-----------------|-----------------|
| Inj dexa          | 15(11.67),[0.95] | 4(1.33),[5.33]  | 74(80.0),[0.45] |
| Inj onda          | 14(11.67),[0.47] | 0(1.33),[1.33]  | 79(80.0),[0.01] |
| Inj combination   | 6(11.67),[2.75]  | 0(1.33),[1.33]  | 87(80.0),[0.61] |

The chi-square statics, p-value and statement of significance appear beneath the table

The chi-square statics is 13.2464. The p-value is 0.0101321. The result is significance at p<0.05
This table depicts the nausea and vomiting in next 4 to 12 hours and the result shows that in group 3 the incidence of nausea and vomiting is decreased as compared to the other two groups. We found it very good the patients on group 3 have no chief complaint and they don’t feel uncomfortable. The chi-square comes to be 14.2909 and p-value is 0.006422. The result is significant at p<0.05.

| Groups    | Mild nausea | Moderate nausea | No nausea     |
|-----------|-------------|-----------------|---------------|
| Inj dexam | 12(6.00),[6.00] | 2(.67),[2.67] | 79(86.33),[0.62] |
| Inj onda | 4(6.00),[.67]   | 0(.67),[.67] | 89(86.33),[0.08] |
| Inj combo| 2(6.00),[2.67] | 0(.67),[.67] | 91(86.33),[0.25] |

The chi-square statics, p-value and statement of significance appear beneath the table.
In last, we did a study in next 12 to 24 hours and it revealed the no nausea and vomiting in last group so it is very much clear that the combination of dexamethasone and ondasetrone is best over the use of individual drugs. Here the p-value also comes to significant <0.05.

| Side effect     | Dexamethasone | Ondasetron | Combination |
|-----------------|---------------|------------|-------------|
| Drowsiness      | 5             | 0          | 1           |
| Dizziness       | 7             | 0          | 0           |
| Headache        | 0             | 4          | 3           |
| Flushing        | 0             | 0          | 2           |
| Heartburn       | 3             | 0          | 0           |

CONCLUSION: We conclude that a single intravenous dose of 0.5 mg/kg dexamethasone at a maximum of 20 mg, given following induction of anesthesia or at the time of surgery, provided good and prolonged analgesia, reduced nausea and vomiting and resulted in earlier and better quality of oral intake without side effects. In our prospective study, three groups are analyzed and we found that the incidence of POVN is significantly reduced in the group who is given the combination of dexamethasone and inj ondasetron. In comparison of group 3 to group 1, grace et al find that 19 patients in group 1 have POVN symptoms which is characteristically reduced to only 6 patients in group 3 which is given combination of both drugs. This shows a significant good result in favor of our study.

DISCUSSION: The results of our study held in Adesh Institute of Medical Science and Research, Bathinda done by Dr. Grace et al shows that DEX significantly reduces morbidity after tonsillectomy. A single dose of DEX when given prior to the induction of anesthesia reduced the incidence of early and late PONV and improved pain scores on the postoperative days. The results of the present study indicate that the effective dose is significantly influenced by weight even in a pediatric population which compounds comparison with more sophisticated studies. In addition, the results of the few randomized placebo-controlled studies that showed that single dose of DEX is not so much important in reducing the POVN symptoms and they have done it on many number of patients and the results are somewhat conflicting, but some other studies showed a beneficial effect, while others did not. The anti-emetic action of DEX are well established in some studies which we took as reference, but the mechanisms of action is not clear. A direct inhibition of prostaglandins, serotonin, or endorphin production has been postulated. We observed an effect of nausea, vomiting, pain on the preceding hours and days after surgery and have done comparison with controlled groups. This could also explain why some studies failed to observe significant pain reduction with DEX in the immediate postoperative period. Other studies have done observation only on the second day that’s why there results are conflicting otherwise DEX is used in majority of hospitals all over the world to reduce postoperative symptoms.

Another issue is what should be the ideal dosage of DEX as many studies have different dosages used in different age groups. We have used a dose of 8 g of dexamethasone. Gunter
and colleagues (12) compared DEX doses ranging from 0.0625 to 1.0 mg/kg in pediatric tonsillectomy. They did not observe a dose dependent effect on the incidence of PONV and pain. Karaman and colleagues (13) compared the effects of two doses of DEX, 0.2 and 0.7 mg/kg, with a placebo group on PONV after tonsillectomy, and observed a reduction in the incidence of PONV in the groups receiving DEX with no difference between the two doses. Our results are in line with these reports. In most studies, administration of DEX is not associated with significant side-effects in children undergoing tonsillectomy. (13) Also we didn’t encountered by any side effect of this drug. Moreover, a recent study in 2788 children did not observe a dose-dependent elevation of postoperative haemorrhage with perioperative DEX administration (0.5 or 1.0 mg/kg) however our study is small and does not have that much sample size so our view over post-operative bleeding after DEX injections is not confirmative. In our study we observed the total incidence of nausea is decreased after combination of DEX and Ondasetron injections.

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