Post Tonsillectomy Analgesia in Children with Paracetamol

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Abstract:
Background: Pain, regardless of site can affect nearly every organ functions, and adversely influences postoperative morbidity and mortality. This study designed to compare the analgesic effect of paracetamol suppositories and intravenous formulas, theoretically delayed absorption and sub therapeutic plasma concentration can be avoided by giving drugs (Paracetamol) intravenously.
Patients and methods: Prospective study, was done on 120 children aged between 6-10 years (73 females and 47 males), ASA class 1 and 2. All were subject to elective tonsillectomy. Patients were classified randomly into 2 groups. Group (A): They received paracetamol intravenously 15 mg/kg after induction of anesthesia. Group B: They received paracetamol suppositories 30 mg/kg after induction of anesthesia. In all standard anaesthesia were used. Postoperatively pain scale using the visual analogue scale assessed for each patient, the incidence of using opioids and the incidence of nausea and vomiting were measured.
Results: Patients in group A were in slightly better analgesia in the first few hours postoperatively than those in group B and this supported by the statistical significant results ($P<0.05$) .Furthermore, The incidence of using rescue opioids and the incidence of nausea and vomiting are higher in group B than that in group A. However, they are not statistically significant ($P>0.05$).
Conclusion: Intravenous paracetamol is more effective in post tonsillectomy pain management in paediatric than the suppositories.

Key Words: Paracetamol, visual analogue scale, tonsillectomy, opioids, nausea and vomiting.

Introduction:
Treating postoperative pain is needed for humane reasons, and reduces the magnitude of surgery related stress. Pain regardless of site can affect nearly every organ function, and adversely influence postoperative morbidity and mortality. Assessment of pain severity can be by simple five point scale, simple numerical rating scale or visual analogue scale. However, in infants and patients who cannot communicate assessment of pain it might be difficult in such circumstances. Pain can be assessed with picture scales, using facial expression or by clinical observation, for example, groaning, sweating and inability to move.
Postoperative pain can be managed using local anesthesia, opioids,[1] nonsteriodal anti-inflammatory drugs and paracetamol. [2,3]

Paracetamol is the safest because:
A- Local anesthetic can attenuate the pharyngeal reflexes and carry high risk of systemic toxicity as tonsillar bed is highly vascular. **B-** Opioids can cause respiratory depression[4,5] (many patients who come for tonsillectomy they had obstructive sleep apnea). Moreover opioids increase the incidence of nausea and vomiting which increases the risk of bleeding post tonsillectomy. C- Non steroidal anti-inflammatory drugs work by inhibition of cyclo-oxygenase enzyme by both centrally and peripherally.
This causes many side effects especially, when we are concerned with the effect on platelets function and increasing the bleeding time.[6] Furthermore, Aspirin has association with Reye's syndrome and should not be used to produce analgesia in children under the age of 12 years. Paracetamol can be given orally, rectally[7] and intravenously. Giving drugs through the best route to attain the most effective results will improve clinical practice. Theoretically delayed absorption and sub therapeutic plasma concentration can be avoided by giving drugs (paracetamol) intravenously. The aim of this prospective study is to determine the optimal way of giving paracetamol to relieve post tonsillectomy pain in children.

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Patients and Methods:
Prospective study was approved by the Tripoli Central Hospital administration. Totally 120 children 73 females and 47 males aged between 6-10 years classified as ASA I-II they were included in the study all of them were subjected to elective tonsillectomy. The patients were randomly chosen by envelop method. They allocated among two groups.
GroupA: Include 60 children 26 male and 34 female. They received paracetamol intravenously 15 mg / kg after induction of anaesthesia.
Group B: Included 60 children 21 male and 39 female. They received paracetamol suppositories 30 mg / kg after induction of anaesthesia. In all of the patients, standard anesthesia was conducted using inhalational induction (halothane / nitrous oxide), fentanyl 1 microg / kg and scoline 1 mg / kg to facilitate intubation. Metoclopromide 0, 25 mg/kg given after induction of anaesthesia. The patients postoperatively monitored for the following points:
1- Pain scale on the fourth postoperative hour using the visual analogue scale (VAS) (fig. 1). We gave opioids (morphine IM 0, 1 mg\kg) in case the VAS is = or > 5 and we always give the clinical judgment big opportunity (nurses and parents). 2- The incidence of using opioids to control pain in the first 24 hours postoperatively. 3- The incidence of nausea and vomiting in the first 24 hours postoperatively. A T-test was applied for the drug comparison, the statistical significance was accepted at probability value of less than 0.05.

Figure 1. The visual analogue scale

No pain ——————————— Pain as bad as it can be

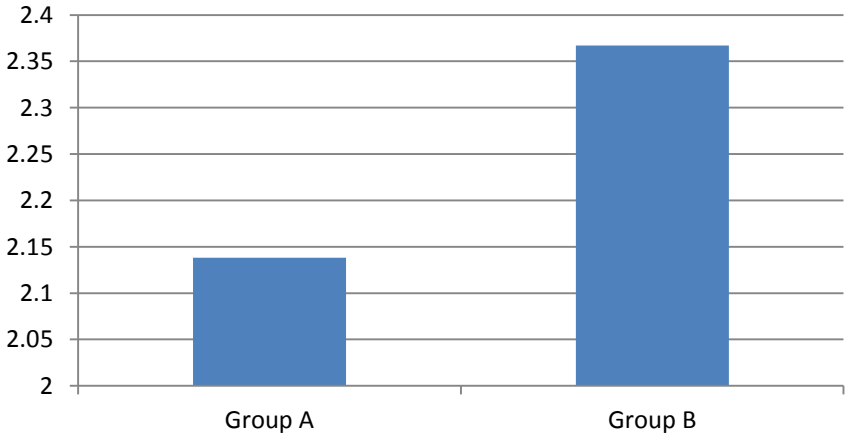
The visual analogue scale was ten-centimeter line marked having no pain at one side and pain as bad as it can be on the other side.
The patient marked it according to the degree of pain he felt, then the pain assessed by measuring the distance in centimeters from the no pain end to the marked point by the patient .

Results:
In group A: The mean of VAS on the fourth postoperative hour 2.138 (+/- 0, 34). The incidence of using rescue opioids 6.6% .The incidence of postoperative nausea and vomiting 36.6%.
However, in group B: The mean of VAS on the fourth postoperative hour 2.367 (+/- 0, 47) (figure 2).The incidence of using rescue opioids 11.6%. The incidence of postoperative nausea and vomiting 43.3%.

Table 1:

	Group A	Group B
The mean of VAS (SD)	2.138 (+/ - 0, 34).	2.367 (+/- 0, 47)
The incidence of using opioids postoperatively	6.6%	11.6%
The incidence of postoperative nausea and vomiting	36.6%	43.3%

Figure 2



For the statistical analysis we used the T-test .
In comparing the VAS results between group A and B we found it was statistically significant (P < 0, 05).
About the incidence of nausea and vomiting we did not reject the null hypothesis. We conclude that there wass no statistically significant difference between group A and B (P > 0, 05). Furthermore, the statistical analysis of incidence of using opioids between group A and B was not significant (P > 0, 05).

Discussion:
Pain regardless of site can affect nearly every organ function, and adversely influence postoperative morbidity and mortality Paracetamol can be given orally, rectally and intravenously. Giving drugs through the best route to attain the most effective results will improve clinical practice. Theoretically delayed absorption and sub therapeutic plasma concentration can be avoided by giving drugs intravenously.

The above presented results showed that. Patients in group A were in slightly better analgesia in the first few hours postoperatively than those in group B and this supported by the statistical significant results (P<0.05) so giving paracetamol intravenously to relieve post tonsillectomy pain in children will produce better analgesia.

The incidence of using rescue opioids and the incidence of nausea and vomiting are higher in group B than that in group A. However, they are not statistically significant (P>0.05), it cannot be applied to the population.

Conclusion:
Intravenous paracetamol is more effective in post tonsillectomy pain management in paediatric than paracetamol suppositories in early postoperative hours. As delayed absorption and sub therapeutic plasma concentration can be avoided by giving drugs intravenously.

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