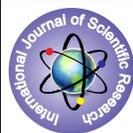


Efficacy of Intravenous Paracetamol for Post Operative Analgesia



Medical Science

KEYWORDS : IV paracetamol, VAS score-visual analog scale score, Rescue medication, Side effects.

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ABSTRACT

BACKGROUND & OBJECTIVES:

Post operative pain is considered as a form of acute pain owing to surgical trauma with an inflammatory reaction, Sub-optimal Postoperative pain management has known to cause increased expenditure, morbidity and mortality. IV paracetamol has shown to be effective in mild to moderate pain in various studies. Thyroid surgery post operative pain, has been a model for mild to moderate pain. Hence this study is to know the efficacy of IV paracetamol as a post operative analgesia in thyroid surgeries.

METHODS:

This is an observational study involving adult human patients posted for thyroid surgical procedures. All patients were either ASA-I or ASA-II, 60 patients were given IV paracetamol 15mg/kg 30 minutes before surgery. All patients received 15mg/kg of IV paracetamol every 6 hours for 24 hours. Post operative pain was analysed by visual analog score at time intervals 1st, 3rd, 6th and 24th hour

RESULTS:

The mean vas scores at first hour after surgery was 28.98±8.36. The mean vas scores became less at 3rd, 6th and 12th hour. Most of the patient rated their vas score after surgery as moderate that is vas scores between 20 to 40mm. Out of 60 patients only 12 patients required rescue medication. I.V. paracetamol given pre-emptively was able to keep the VAS score <40mm in 88.3% of patients.

INTERPRETATION & CONCLUSION

IV Paracetamol 15mg/kg is an effective analgesic for thyroid surgeries when it is used as a pre-emptive analgesia. Very few patients required rescue medication mostly during the 1st hour after surgery

INTRODUCTION

A revolution in the management of acute postoperative pain has occurred during the past three decades¹. Post operative pain is considered as a form of acute pain owing to surgical trauma with an inflammatory reaction.

Post operative pain is an unpleasant sensory, emotional and mental experience and often is associated with autonomic, endocrine-metabolic, psychological and behavioural response.

Postoperative pain can have significant effect on patient recovery. Studies have

revealed that postoperative pain is experienced by 75% patients after surgery.²

Sub-optimal postoperative pain management could result in abnormal consequences, which include deep vein thrombosis,

pulmonary embolism, myocardial infarction, pneumonia, poor wound healing and insomnia³

Various treatment modalities are now available for controlling postoperative pain, which includes intravenous opioids, patient-controlled analgesia, regional catheters, and adjuvant Non steroidal anti inflammatory drugs(NSAIDS)).

NSAIDS are one of the widely used drug class for the relief of pain and inflammation. The benefits of NSAIDS are derived from its anti-inflammatory and analgesic action, however the use of these drugs have been limited, concerning its increased risk of gastrointestinal and cardiovascular side effects.

The introduction of an IV formulation of paracetamol is most appropriate and advantageous in postoperative period⁴.

IV paracetamol is fast acting analgesic and results in rapid on-

set of pain relief, reduced time of maximal pain relief compared to oral formulation.

Many patients require acute pain control during the first day after thyroid surgery performed under general anaesthesia. Thyroid surgery is rated as being moderately painful. Therefore we hypothesized IV paracetamol having better safety profile, and effective in treatment of post thyroidectomy pain⁶

AIMS AND OBJECTIVES OF THE STUDY:

1. To determine the efficacy and quality of post-operative analgesia achieved with IV Paracetamol in patients undergoing thyroid surgeries.
2. To determine the number of patients requiring rescue medications in case of insufficient analgesia.
3. To determine the side effects and disadvantages of intravenous administration of IV Paracetamol.

MATERIALS AND METHODS

Source of data

Patients undergoing elective thyroid surgery under General Anaesthesia.

Inclusion criteria:

1. Patients in ASA grade I and II.
2. Patients aged between 18-60 years.

Exclusion criteria:

1. Patients with known hypersensitivity to paracetamol or morphine.
2. Patients with hepatic and renal disorders.
3. Patients with deranged coagulation profile.

Study design:

An observation study, was undertaken to know the efficacy of postoperative

pain relief based on VAS score and Complications. 60 patients were given iv Paracetamol 15mg/kg ,30 minutes before surgery and every 6th hourly till 24 hours. Rescue medication was given (morphine 0.2mg/kg iv in incremental dose) when visual analogue scale was more than 40mm, at time intervals 1st hour, 3rdhour,6th hour ,12th hour, 24th hour ,post surgery.

Method of collection of data

After obtaining institutional Ethical clearance patients posted for thyroid surgeries and confirming to inclusion and exclusion criteria underwent preanesthetic check-up.

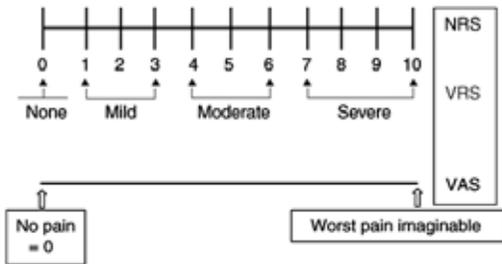
A written informed consent was obtained from the patients.

Patient was given 15mg/kg of iv paracetamol 30minutes before surgery.

Patients were premedicated with 0.2 mg of Glycopyrrolate and 4 mg of Ondansetron I.V. Induction of anesthesia was done with intravenous Fentanyl 2µg/ kg and intravenous thiopental sodium 5 mg/kg. Vecuronium was used as the neuromuscular blocker in dose of 0.05 mg/ kg given intravenous. After endotracheal intubation, anaesthesia was maintained with a mixture of Isoflurane, Nitrous oxide and Oxygen with intermittent doses of vecuronium. Intraoperative analgesia was maintained with intravenous Fentanyl titrated to hemodynamic stability. Intraoperative monitoring consisted of NIBP,ECG, EtCO2 and SpO2.

All patients received 15mg/kg of paracetamol every 6 hours for 24 hours.

Analgesia was assessed for by VAS at 1st hour ,3rd hour ,6th hour,12th hour and 24th hour.when the patients visual analogue score > 40mm then rescue medication was given by (morphine 0.2mg/kg)in incremental doses.



VISUAL ANALOG SCALE(VAS)

Statistical Methods:

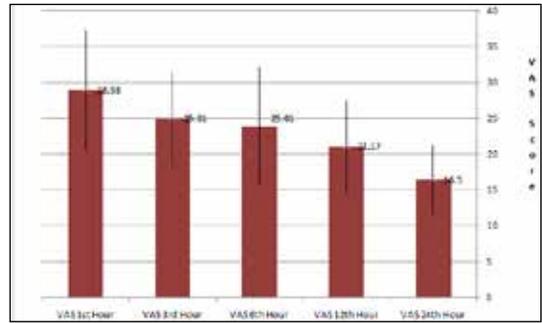
Descriptive and inferential statistical analysis has been carried out in the present study.Student t test has been used to find the significance of study parameters on continuous scale between two groups

OBSERVATIONS AND RESULTS :

Observations made during the study are presented here in the form of tables and graphs.

60 patients were given iv paracetamol 15mg/kg 30 minutes before surgery and every 6 hour till 24 hours This study shows the mean age of the cases was 38.25±6.76 yrs There were 55 women (91.7%) and 5(8.3 %) men in the study .52 (86.7%) patients were classified as ASA-I and 8 patients(13.3%) belonged to ASA- II .

DISTRIBUTION OF MEAN VAS SCORE IN PATIENTS STUDIED



The mean Visual analogue scale score at first hour after surgery was 28.98±8.36.Hence, VAS score at first hour is less than 30mm.

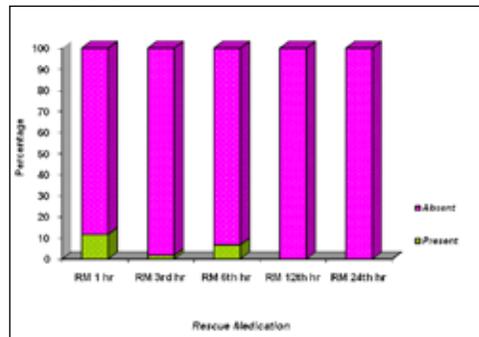
VAS score at 3rd hour is less than that at 1st hour, that is 25+6.51.

VAS score at 6th hour and 12th hour have become progressively less than that at 1st hour.

After 12th hour most of the patient had VAS score < 20mm.

Most of the patient rated postoperative pain after thyroid surgery as moderate pain as indicated by mean VAS score 28.98+ 8.36, after IV paracetamol was given as pre-emptive analgesia.

DISTRIBUTION OF RESCUE MEDICATION GIVEN IN PATIENTS STUDIED



Out of 60 patients only 12 patients required rescue medication.

12 patients had VAS score >40mm and were given morphine 10mg.

At 1st hour after surgery 88.3% did not require rescue medication.

I.V. paracetamol given pre-emptively was able to keep the VAS score <40mm in 88.3%.

At 3 rd hour after surgery, 98.7% did not require rescue medication indicating that rescue medication was able to reduce the pain in those patient in whom VAS score was >40mm.

Side effects

90% of patients did have any side effects. 8.3% of patient had nausea and vomiting. Only one patient complained of pruritis. None of the patients had respiratory depression.

DISCUSSION

Efficacy of paracetamol as pre-emptive analgesia has been established in various studies.(2)(3) Similarly in our study, IV paracetamol was used as preemptive analgesia.

Thyroid surgery is a model of moderate post-operative pain and hence after administrating iv paracetamol, small doses of supplemental analgesia with morphine maybe adequate to obtund this pain. Hence, the number of patients receiving rescue analgesic assumes a greater importance. The time of administration of first dose of rescue analgesic is an indirect indication of the time up to which a particular analgesic is effective in curbing surgical pain.

The early pain after thyroidectomy is complex. Besides the surgical pain itself, it may be caused by postoperative cervical hyperextension with muscular pain as well as postoperative irritation and discomfort of intraoperatively placed endotracheal tube and wound drains.

The mean VAS scores at first hour were found to be less than 30mm, thus categorizing as moderate pain. This score is much less compared to other studies. This may be due to the pre-emptive effect of IV paracetamol. The subsequent mean VAS scores at 3rd, 6th, 12th, 24th hour were significantly less compared to mean VAS score at 1st hour. This is mainly because most of the patients whose VAS score >40 mm at 1st hour had received rescue medication with morphine.

The number of patients who required rescue medication was 12 out of 60 patients i.e. 21%, which is less when compared to other studies which reported the requirement of rescue medication in 33% (1/3 rd) of patients. This difference is may be due to use of IV Paracetamol as pre-emptive analgesic in this study.

Out of 12 patients who required rescue medication 7 of patients required rescue medication in 1st hour. The need for rescue medication decreased subsequently at 3rd and 6th hour. This is because most of patients who received rescue medication had improved analgesia. None of the patients required rescue medication after 12th hour.

Out of 60 patients, adverse effects were present in 6 patients.

Nausea and vomiting was seen in 5 patients and pruritis in one patient. None of the patients had respiratory depression.

They may also be due to side effects of post operative opioids. Despite demonstrating reduction in opioids consumption with IV paracetamol, the adverse effects of opioids did not reduce.

Some studies have shown higher incidence in nausea and vomiting in thyroid surgery but in our study the incidence of nausea and vomiting was less comparatively.

Paracetamol has been established to be an effective analgesic in various studies. The dose of 1 gm. of IV Paracetamol has been found to provide effective analgesia. (8) Hence, we choose the same for this study.

Gitte I. Juhlet al in their placebo controlled study found IV Paracetamol to be better than placebo in providing analgesia after third molar surgery. Similarly, Moller et al found IV Paracetamol significantly better than placebo and comparable to IV Propacetamol (prodrug of Paracetamol) in their study in patients undergoing third molar surgery. (10) In orthopedic surgeries also IV Paracetamol and IV Propacetamol were found to provide effective analgesia in a placebo controlled study done by Sinatra et al. (9)

Thyroid surgery is a model for moderate

post-operative pain. This pain is amenable to relief by NSAIDs or IV Paracetamol and does not warrant a highly potent analgesic like opioids. Since the incidence of postoperative nausea and vomiting is found to be higher in thyroid surgeries, the analgesic of choice would be an agent which doesn't contribute to nausea and vomiting. It is also preferable to administer an analgesic which doesn't contribute to respiratory depression. Hence the choice of drug in our study was IV Paracetamol.

In this study, we noticed that there was improved in the quality of analgesia with Paracetamol alone, as reflected by lower VAS scores and fewer patients needing rescue analgesic

CONCLUSION :

Thus it appears in our study that the pre-emptive IV Paracetamol provides adequate post-operative analgesia in patients undergoing Thyroid surgeries, with reduced requirement of rescue medication and less incidence of side effects like nausea and vomiting

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