

Original Article

Pre-Emptive Analgesia with Paracetamol (Acetaminophen) in Postoperative Pain

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Abstract

Objective: To evaluate efficacy and safety of preoperative paracetamol for postoperative pain relief.

Methods: The study population consisted of 40 adult female patients scheduled for tubectomy as an elective surgery who were in ASA class I. Patients were allocated randomly to receive 325mg of acetaminophen orally half an hour before surgery. Pain was assessed by verbal rating scale in three situations (resting, moving and coughing). Data was collection done using the questionnaire and data analysis done using descriptive statistical methods.

Results: The patients who received oral paracetamol experienced moderate and mild pain in 50% of the cases when they were in resting position. Feeling mild and moderate pain with movement was in 40% and 60% respectively. While coughing, 100% of the cases felt only moderate pain and none experienced severe pain.

Conclusion: Administration of a single dose of acetaminophen in preoperative period is effective for acute postoperative pain relief. (Rawal Med J 2007;32:22-24)

Key words: Pre-emptive analgesia, paracetamol, postoperative pain

INTRODUCTION

Development of central sensitization and hyper excitability occurs after surgical incision and results in amplification of postoperative pain. Preventing the establishment of altered central

processing by analgesic treatment may result in short term and long term benefits during convalescence.¹ Pre-emptive analgesia is a concept postulating that pain perception can be decreased through the use of analgesics capable of inhibiting CNS sensitization before the painful stimulus occurs. After surgery, the tissue damage elicits peripheral and central sensitization which

causes a decrease in the pain threshold, hypersensitivity and increased response to pain.² Between one third and a half of all surgical patients experience significant postoperative pain. Adverse effects of uncontrolled postoperative pain lead to delayed postoperative recovery, increased postoperative morbidity, delayed return of normal physiological functions, restriction of mobility, and heightened catecholamine response leading to increased oxygen consumption and post operative delirium.^{3,4} As IV opioids cause nausea, vomiting and respiratory depression postoperatively, it was aim of this study to asses the effects of preemptive paracetamol for relief of postoperative pain.

MATERIALS AND METHODS

This study was performed in Tabriz University of Medical Sciences, Tabriz, Iran. Forty adult female patients scheduled for elective surgery (tubectomy), who were in ASA class I (classification of physical status done by American Society of Anesthesiologists), were included. The institutional ethics committee approved the study and the patients provided written informed consent before inclusion. Patients in this study allocated randomly and all of them monitored during intra and post operative period by non invasive routine monitors. Hospital teaching members taught the study participants about VRS (Verbal Rating Scale) which was used for pain assessment. Patients with signs of infection, liver disease, chronic pain, history of taking analgesics and alcohol dependency were excluded from study.

All study participants were administered one tablet paracetamol (acetaminophen), 325mg half an hour before induction of general anesthesia and skin incision. General anesthesia was

performed by endotracheal intubation using 6mg/kg sodium thiopental, 1mg/kg succinylcholine and 0.5mg of atropine. Intraoperatively, all the patients received Oxygen, N₂O and halothane with low doses of non depolarizing muscle relaxants (atracurium). After the conclusion of surgery, patients were transferred to the Post-Anesthesia Care Unit (PACU). Pain was assessed by VRS one and three hours after the patients became completely conscious. In the ward, pain was evaluated in three different situations; resting, moving and coughing. In operating room and PACU, all patients were monitored closely for signs and symptoms of feeling pain such as tachycardia, hypertension, sweating and hypercarbia. At the end study, a questionnaire was filled by the patients asking if they would like to take pre-emptive analgesia for the surgery in future. Data collection was done using the questionnaire and data was analyzed using descriptive statistical method.

RESULTS

The mean age of the patients was 42±0.1 yr old, and average body weight was 55±0.3kg. Average length of surgeries in minutes was 20-30. Pain assessment showed that, in resting position 50% of the patients felt mild and moderate pain and non of them suffered from severe pain. When the patients improved to move, 40% felt mild pain and 60% reported having moderate pain and none had severe pain. In 100% of the cases coughing led to moderate but not mild or severe pain. No adverse effects such as laryngo or bronchospasm, nausea, vomiting, headaches or dizziness were observed. Fluctuation of vital signs also was not significant. At the end of the study, 90% of the patients preferred to receive pre-emptive analgesia for pain relief for any surgery performed in future.

DISCUSSION

Pre-emptive analgesia is defined as an antinociceptive treatment that prevents establishment of altered central processing of afferent input from sites of injury. The definitions of pre-emptive analgesia have been recently reviewed.⁵ Recently, many authors reviewed the literature assessing various modalities of pain treatments, such as non-opioid analgesics, local anesthetics and NSAIDs.⁶ Oral paracetamol has been used alone⁷ and in combination with codeine for postoperative pain relief.⁸ Barden in 2004 reported use of single dose oral paracetamol which resulted in relief of acute postoperative pain.⁹ In this study, acetaminophen was used as a non opioid analgesic although it has antipyretic properties but little anti – inflammatory effect. It has few side effects and has not adverse effects on stomach.^{6,10} As shown by our data, this drug resulted to feeling mild to moderate pain in both resting and moving situations. The important point in this study was that none of the patients experienced severe pain even when they coughed. Of course, for pain assessment age, sex, degree of obesity, site of operation, are all considered and words translated into language

are important.⁶ "No pain" level was not considered in this study because there was not even a case, free of pain. Vital signs changes from baseline values which could be a result of inappropriate level of anesthesia (light plan) were not seen and usage of this drug did not result in adverse effects. It is noticeable that 10% of the cases who were not satisfied with taking oral preoperative medication for postoperative pain relief pointed to the subject of drinking water and probable vomiting afterwards, and they refused the use of this drug in future.

In conclusion, acetaminophen is a favorable analgesic for relief of post operative pain and rendered most patients relatively pain free, requiring no rescue analgesic on the first post operative period. Its acceptable analgesic efficacy and tolerability profile supports its use as an analgesic for the prevention of postoperative pain. This may help avoiding use of IV opioid analgesics which have adverse effects such as nausea, vomiting and respiratory depression and thus ensure better postoperative pain management.

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