

Research Article

Is intravenous paracetamol a useful adjunct for intraoperative pain?

Ali MA, Siddiqui S

Department of Anaesthesia, Aga Khan University, Karachi, Pakistan

Correspondence

Muhammad Ali Asghar
Department of Anaesthesia,
Aga Khan University, Karachi,
Pakistan

E-mail:

asghar.ashraf@aku.edu

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Abstract

Background: Paracetamol is a safe and cost effective intravenous (IV) analgesic. This survey was conducted to assess the satisfaction of anesthetists with the intra-operative use of IV paracetamol as an adjunct for intra-operative pain relief.

Methods: This cross-sectional survey was conducted for 3 months in a tertiary care university hospital in Karachi, Pakistan. All patients admitted for surgery and received IV paracetamol were enrolled. Data was collected by administering a pre-coded questionnaire to anesthetists about the patient and response to the IV paracetamol.

Results: In total 270 patients were enrolled. Of all, most were young males (59%) with American Society of Anaesthesiology (ASA) II status. In addition to paracetamol, pethidine was most often used. There was a 94% satisfaction rate and most anesthetists felt that the cost was justified. Heart rate was the variable most affected (60%).

Conclusion: Most anesthetists were satisfied with the use of IV paracetamol as an adjunct to intra-operative analgesia.

Introduction

Intravenous (IV) paracetamol is a safe and cost effective non opioid analgesic that has recently been added in armamentarium for intra operative pain management.¹ We wished to carry out a cross sectional survey to see its effects and satisfaction among the end users, the anesthetists. Traditionally narcotics and non steroidal anti inflammatory drugs (NSAIDS) are used for relief of pre-operative pain. However, with the advent of IV paracetamol, the ceiling effect of these agents and unjustified side effects may be by passed for a nominal amount of money.² IV paracetamol rapidly passes the blood-brain barrier, reaches a high concentration in the cerebrospinal fluid and has an antinociceptive effect mediated by the central nervous system.³ IV paracetamol provides onset of pain relief within 5 to 10 minutes following administration. The peak analgesic effect is achieved in one hour and the duration of this effect lasts 4 to 6 hours.⁴ It has been used both intra-operatively as well as for preemptive analgesia. Intravenous paracetamol has been shown to reduce PCA morphine requirements after spinal surgery⁵ and hip arthroplasty.⁶

The objective of this study was to assess the satisfaction with IV paracetamol as an adjunct for intra-operative pain relief amongst the

anesthetists in the operating rooms of the tertiary care hospital.

Methods

We administered a pre-coded questionnaire (July-September 2010) to assess the point prevalence with 95% confidence interval (CI) of the variables for satisfaction with use of IV paracetamol. The survey was conducted in the operating rooms of Aga Khan University Hospital, Karachi, Pakistan. All anesthesia caregivers (residents or consultants) to filled questionnaire per case where IV paracetamol was used. Data collection forms were available in all operating rooms and were collected after completion. The study was approved by the Department Research Committee and written informed consent was obtained from all adult patients who received 1g IV paracetamol intra-operatively and were included in this survey.

All variables were entered into SPSS version 17 and after calculating the response rate, analyzed for frequencies, point prevalence with 95% CI and relevant associations.

Results

A total of 270 patients were enrolled. The average age was 42 years (SD: 16.0) and the majority were males (59%) and American Soci-

Table 1: Effect of IV paracetamol on physiological variables

Variable	Frequency (%)	95% CI
Heart rate	161 (60)	0.53-0.65
Blood pressure	56 (21)	0.16-1.26
Respiratory rate	2 (0.7)	0.002-0.026
Post-operative pain score	47 (17)	0.13-0.22

iety of Anaesthesiology (ASA) status II (57%). Other analgesics used in adjunct to IV paracetamol during the surgery include, Pethidine, Fentanyl, Morphine, Nalbuphine, Ketorolac, and Epidural (Fig. 1). Majority of the respondents (75%) were residents (trainees) of which, 86% used IV paracetamol as pre-emptive analgesia and 94% were satisfied with the response (95% CI; 0.90-0.96). More than half (67%) rated it as having the same effect as other drugs and 24% rated it as better. There were no side effects and 88% thought that the cost was justified. 69% used it because they preferred to use it rather than it being freely available or used routinely. Physiological variables which responded most satisfactorily with its use are mentioned in table 1.

Discussion

The present study shows that there was overall satisfaction with the adjunctive use of IV paracetamol in routine surgery for intra operative analgesia. Opioids are associated with respiratory depression and prolong the time to readiness for discharge.^{7,8} Non-opioids are not associated with this side effects. Paracetamol, a non-opioid centrally acting analgesic, is widely prescribed. Paracetamol (1g/100ml) is an injectable paracetamol solution in a unit dose form, ready for infusion. It was introduced into clinical practice in 2002. IV administration of paracetamol has already demonstrated its analgesic efficiency in patients with postoperative pain following gynecologic surgery,^{9,10} retinal surgery,¹¹ dental surgery,^{12,13} hand surgery,¹⁴ spinal fusion surgery¹⁵ and orthopedic surgery.^{8,16}

Previous studies have shown meperidine to be an effective postoperative analgesia following cesarean surgery¹⁷ and orthopedic surgery.¹⁸ In this randomized and double-blinded postoperative study, parenteral paracetamol showed significantly superior analgesic effects compared with meperidine.

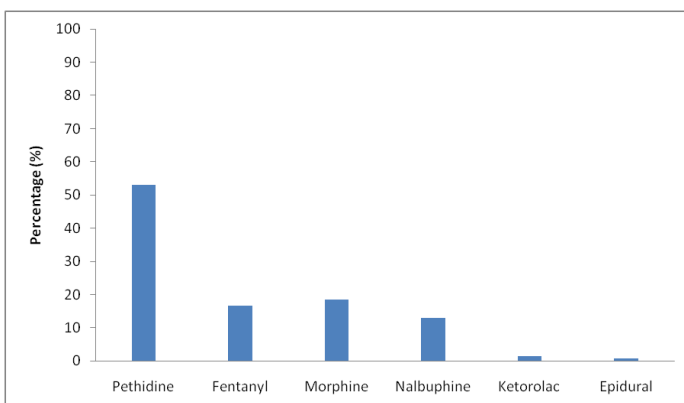


Figure 1: Adjunct analgesics used during surgery

Another study that compared morphine and propacetamol after dental surgery made by Aken et al¹⁶ found that there was no difference between morphine and paracetamol. Adverse effects were significantly larger in the morphine group. Gin et al.¹⁷ compared intramuscular ketorolac and meperidine for analgesia after caesarean section. They showed that there were no difference between the two agents.

There were no side effects reported and since the cost and pharmacokinetic profile of the paracetamol is favourable, we can recommend its use safely for all surgeries unless specifically contraindicated.^{19,20} It may also be useful as adjunct when other agents such as opioids or NSAIDs may be contraindicated.^{21,22}

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