DOI: https://doi.org/10.53350/pjmhs22161608

ORIGINAL ARTICLE

A Comparison of Mean Time to Request for First Analgesia Post-Operatively in Functional Endoscopic Sinus Surgeries (Fess) by Using Pre-Emptive Paracetamol Versus Intraoperative Paracetamol

IMRAN ALI[1], NADIR NAZIR[2], MUHAMMAD ARSHED[3], ALI ASGHER[4], ARIF IFTIKHAR[5], AQIL QAYOOM[6]

[1]Consultant Anesthetist, Sindh Employees Social Security Hospital, Landhi Karachi, Pakistan.

[2]Assistant Professor anesthesia, Jhalwan Medical College Khuzdar, Pakistan.

[3]Senior registrar Anesthesia, Dow International university hospital, Ojha Campus Karachi, Pakistan.

[4]Assistant professor department of anesthesiology & Critical care liaquat national hospital & medical college, Karachi Pakistan.

[5]Assistant professor department of anesthesiology & Critical care liaquat national hospital & medical college, Karachi Pakistan.

[6]Senior Registrar department of anesthesiology & Critical care liaquat national hospital & medical college, Karachi Pakistan.

Corresponding author: Imran Ali, Email: imranali2208@hotmail.com, Cell: 0337-0389839

ABSTRACT

Objective: To compare mean time required to request for first analgesia post-operatively in functional endoscopic sinus surgeries (FESS) by using pre-emptive paracetamol versus intra-operative paracetamol.

Study Design: Comparative Observational Study.

Sampling Technique: Non probable, consecutive sampling

Place & Duartion: This Study was conducted in the Department of Anesthesiology, Sindh employee's social security hospital landhi Karachi, From June, 2018 to January, 2019.

Materials and Methods: In this study 64 patients of both genders included. 36 patients were male and 28 were females. They were aged between 18 and 70 years. This study was conducted from June, 2018 to January, 2019. Patients were distributed into two different groups, Group-1 (pre-emptive paracetamol) and Group-2 paracetamol). 32 patients were included in each group. In Group-1 (pre-emptive paracetamol), patients received 1 Gm. I/V paracetamol, 15 minutes prior to induction of general anesthesia and in Group-2 (intra-operative paracetamol), patients received 1gm. I/V paracetamol just before removal of endotracheal tube. Post-operatively patients were observed in Post-Anesthesia Care Unit (PACU) with standard monitoring. Time for first request for analgesia in minutes was noted.

Result: SPSS 16 version used for statistical analysis. Chi squire test applied. Mean age of in pre-emptive paracetamol group (group-1) was 51.53 + 18.90 years and mean age of patients in intra-operative paracetamol group, was 50.43 + 19.10 years (p-value 0.819). Mean weight of patients in pre-emptive paracetamol was 66.65 + 10.74 kg and mean weight of the patients in intra-operative paracetamol was 67.71 + 10.78 kg. (P-value was ASA status 1 was found in 36 (56.30%) patients and ASA status II was found in 28 (43.80%) patients. Mean time required for first analgesia in pre-emptive paracetamol group was 192.90 + 8.70 minutes and mean time required first analgesia in intra-operative paracetamol group was 163.93 + 13.57 minutes and p-value found < 0.001 (significant).

Conclusion: Significant variance was observed in the mean time required to request for first analgesia post-operatively in functional endoscopic sinus surgeries (FESS) by using pre-emptive paracetamol versus intra-operative paracetamol.

Keywords: pre-emptive versus intraoperative paracetamol, functional endoscopic sinus surgeries, time required to request for first analgesia post-operatively.

INTRODUCTION

Chronic rhino sinusitis is a chronic inflammatory condition of mucus membrane of nose and mucosa of para nasal sinuses associated with stuffy nose, rhinorrhea, dizziness, and headache.

Chronic rhinosinusitis impose negative effects on the patient's quality of life, routine work and extra burden of expenses for health care. Now with endoscope, para nasal sinuses surgery (FESS) success rate of chronic rhinosinusitis surgery has been affectedly decreased. After functional endoscopic sinus surgery, clinician's focus remains on prognosis of chronic rhinosinusitis.[1]

In a study post-surgical pain has been reported in 705 patients, among them 31% reported severe pain and 47% having moderate pain. Due to inadequate pain control management, several complications may occur such as myocardial infarction and impaired wound healing etc.[2]

According to current guide lines acetaminophen (paracetamol) is suggested a balanced peri-operative multimodal analgesic. Traditionally opioid has been used for the management of intra-operative pain and causes trouble in patients. Now a days acetaminophen (paracetamol) is being used as an adjuvant analgesic for the effective controls of pain with the advantage of reducing opioid related side effects. Intravenous acetaminophen have favorable pharmacokinetic and higher bioavailability, does not involved in first-pass hepatic metabolism and production of higher cerebral spinal fluid (CSF) level as compared with oral acetaminophen.[3]

Pre-emptive analgesia is considering upcoming tool for pain management. Paracetamol is most widely used drug for the management of pain and fever. It is used with different route like peri-operatively (I/V), oral, rectal and parenteral. Paracetamol has great efficacy, safety, lack of drug interaction and lack of adverse effects.[4]

Pre-emptive analgesia is also known as pre-operative analgesia. This is the way for reducing and preventing production of those mediators which are responsible for nervous stimulation. Various methods available for pre-emptive analgesia like penetration of long acting local anesthetic agents, nerve block, epidural block, intra-venous analgesic and anti-inflammatory drugs etc.[5]

Paracetamol is a non-opioid drug which effective primarily on the central nervous system (CNS) through cyclooxygenase (cox) inhibition.[6]

American Society of Anesthesiologist (ASA) suggested to minimize or avoid opioids drugs during intra-operative and post-operative pain management.[7]

Management of post-operative pain is challenging for anesthesiologist and clinician, although very inspiring drugs and techniques are available. One important factor for influencing of patient's safety, patient`s comfort and early discharge from hospital is due to effective post-operative pain management.[8]

It is trend for over recent many years of combination of NSAID (non-steroidal anti-inflammatory drug) with paracetamol for the management of post-operative acute pain but superiority of combination remains controversial.[9]

Paracetamol is a safe analgesic drug. It is reported that intra venous (I/V) paracetamol is effective and safe among children for post-operative pain management.[10]

MATERIALS AND METHODS

This Study was conducted in the Department of Anesthesiology, Sindh employee's social security hospital landhi Karachi after the approval of ethical committee from June, 2018 to January, 2019. Sample size was 64 patients of both gender. Age ranges between 18 -70 years. Patients included in this research according to America Society of Anesthesiologist physical status (ASA -I and ASA -II) elective enrolled for FESS. Patients excluded who were not willing in participation of research, below 18 years of age, above 70 years of age, hypersensitive with paracetamol, chronic Liver disease, renal compromised and who have been using analgesic drugs for long time. Study designed was comparative observational study. Sampling technique was non probability consecutive sampling. Made two groups, Group-1 and Group-2. In each group 32 patients were participated. In Group-1(pre-emptive paracetamol), 1 gram paracetamol I/V given 15 minutes before induction of general anesthesia. In Group-2 (intra-operative paracetamol), 1 gram paracetamol I/V given at the end of surgery just before removal of endo-tracheal tube. In the operating room standard monitoring was established with ECG, non-invasive blood pressure, pulse oximetry, capnography and base line measurement were recorded. Post-operatively patients were observed in Post Anesthesia Care Unit (PACU) with standard monitoring. Time for first request for analgesia in minutes was noted.

RESULTS

Data collected via pro-forma. Data analysis done by using software SPSS version 16. Mean age of patients in Group-1 was 51.53 + 18.90 years and in Group-2, it was 50.43 + 19.10 years. Males patients were 36 and 28 were females patients. ASA status-I patients were 36 and ASA-II patients were 28. Mean time required for first analgesia in Group-1 was 192.90 + 8.70 minutes and in Group-2 was 163.93 + 13.57 minutes representing the difference and superiority of analgesic effect in pre-emptive paracetamol group.

Figure 1: Represent gender of the patients. Male patients were 36 (56.25%) and female patients were 28(43.75%) in both groups.

Figure 2: Represent ASA Status in pre-emptive paracetamol and intra-operative paracetamol groups. In pre-emptive paracetamol (Group-1), ASA-I patients were 19 (59.37%) and in intra operative paracetamol (Group-2) ASA-I patients were 17 (53.12%) and ASA-II patients were13 (40.62%) in Group-1 and 15 (46.87%) in Group-2.

Table 1: patient`s age with respect to pre-emptive and intra-operative paracetamol groups. n=64

Patient`s age (in years)	(Groups)	(n)	(Mean age + Standard Deviation)	(p-value)	(95 % C.I.)
	Pre-emptive paracetamol (Group-1)	32	51.53 + 18.90	0.819	-8.40 to 10.59
	Intra-operative paracetamol (Group-2)	32	50.43 + 19.10		

Table 2: Time required for first analgesia in pre-emptive and intra-operative paracetamol groups. n=64

Time required for first analgesia (in minutes)	(Groups)	(n)	(Mean time + Standard Deviation)	(p-value)	(95 % C.I.)
	Pre-emptive paracetamol (Group-1)	32	192.90 + 8.70	0.001	23.26 to 34.66
	Intra-operative paracetamol (Group-2)	32	163.93 + 13.57		

Figure-3: Represent gender of the patients with respect to groups. In pre-emptive group, male patients were 21(65.62%) and in intraoperative paracetamol group, male patients were 15(46.87%) and female patients were 11(34.40%) in pre-emptive paracetamol group and 17 (53.12%) in intraoperative paracetamol group.

Table 1: Represent the age of the patients with respect to group. Total number of the patients were 64 and 32 patients in each group. Mean age of the patients in pre-emptive paracetamol (Group-1) was 51.53 + 18.90 years and mean age of the patients in intra-operative paracetamol (Group-2) was 50.43 +19.10 years. P-value was 0.819 and Confidence Interval was -8.1 to 10.59.

Table 2: Represent mean time required for first analgesia in pre-emptive and intra-operative paracetamol groups. Total patients were 64 and in each group 32 patients. Mean time required for first analgesia in pre-emptive paracetamol (Group-1) was 192.90 + 8.70 minutes and in intra-operative paracetamol (Group-2) was163.93 + 13.57 minutes. It means patients were more comfortable and pain free in pre-emptive paracetamol (Group-1) as compared with intra-operative paracetamol (Group-2). P-value was found 0.001 which is significant. Confidence Interval was 23.26 to 34.66.

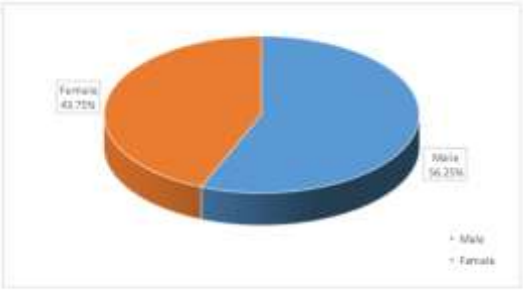

Figure 1: Gender of the patients.

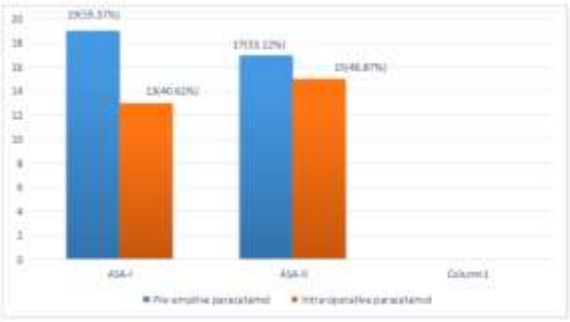

Figure 2: ASA Status with respect to pre-emptive and intra-operative paracetamol groups.

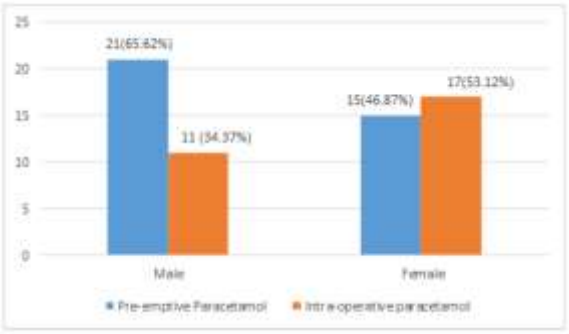

Figure 3: Gender with respect to group.

DISCUSSION

A study showed post-operatively time of the first request for analgesia drug in the study was significantly higher as compared with control group (36 + 3.6 vs 2.3 + 3.1 respectively. P-value was 0.030.[11]

Pre-emptive paracetamol group had higher time duration for first (next) analgesic demand and have lower post-operative side effects.[12]

Time to first request for analgesia was higher in group-1 (pre-emptive paracetamol group) as compared with group-II (intra-operative paracetamol group) and placebo group.[13]

A study demonstrated the effectiveness of analgesia as pre-emptive I/V paracetamol for post-operative pain control in head and neck cancer surgeries and a reason for earlier discharge from hospital.[14]

Post-operative cumulative fentanyl consumption was significantly higher within 24 hours (752.25 + 112.665 micro g) and in pre-emptive paracetamol group (761.10 + 226.625 micro gm.). P- Value was 0.001.[15]

Mean VAS score in Group-A (I/V paracetamol) was 6.3 + 0.99 as compared with 6.20 + 1.30 in Group-B (I/V tramadol) showing no significant difference between both groups. At all the other time intervals, Group-A had mean VAS scores lower than Group-B.[16]

Patients in normal saline group had more pain in recovery room (VAS 7.0 + 1.24 vs 6.15 + 2.27) and p value was 0.041 and required more Fentanyl intra-operatively (150 micro gm. vs 87.7 + 75) p value< 0.01.[17]

The behavioral observation pain score (BOPS) of acetaminophen I/V group were significantly lower than those of the placebo group.[18]

Mean values of VRS scores in recoded intervals showing a lower pain severity in pre-emptive and preventive group with comparison to placebo group. This difference was statistically significant. VRS scores values of this variable in placebo group were significantly lower than pre-emptive and preventive group (6 + 2.0 minutes, 12 + 3 minutes and 13 + 4 minutes respectively).[19]

Patients who received I/V paracetamol compared with acetaminophen suppository had the lowest pain score during the first hour after surgery.[20]

CONCLUSION

Mean time required for first analgesia is prolong while using pre-emptive I/V paracetamol as compared with intra-operative I/V paracetamol.

REFERENCES

1 Juan F, Ayiheng Q, Yuqin F, Hua Z, Jun Y, Bin H. Risk factors of chronic rhinosinusitis after functional endoscopic sinus surgery. Medical science monitor: international medical journal of experimental and clinical research. 2017;23:1064.

2 O'Neal JB. The utility of intravenous acetaminophen in the perioperative period. Frontiers in public health. 2013 Aug 6;1:25.

3 Bhoja R, Ryan MW, Klein K, et al. Intravenous vs oral acetaminophen in sinus surgery: A randomized clinical trial. Laryngoscope Investigative Otolaryngology. 2020;1–6. https://doi.org/10.1002/lio2.375

4 Rastogi B, Singh VP, Gupta K, Jain M, Singh M, Singh I. Postoperative analgesia after laparoscopic cholecystectomy by preemptive use of intravenous paracetamol or ketorolac: A comparative study. Indian J Pain 2016;30:29-33

5 Thenarasu V, Gurunathan D, Selvarasu K. Comparison of Efficacy of Diclofenac and Paracetamol as Preemptive Analgesic Agent. Biomedical and Pharmacology Journal. 2018 Sep 21;11(3):1699-706.

6 Bilir S, Yurtlu BS, Hanci V, Okyay RD, Erdogan Kayhan G, Ayoglu HP, Ozkocak Turan I. Effects of peroperative intravenous paracetamol and lornoxicam for lumbar disc surgery on postoperative pain and opioid consumption: A randomized, prospective, placebo-controlled study. Agri. 2016 Apr 1;28(2):98-105.

7 Ciftci B, Ekinci M, Celik EC, Kaciroglu A, Karakaya MA, Demiraran Y, Ozdenkaya Y. Comparison of intravenous ibuprofen and paracetamol for postoperative pain management after laparoscopic sleeve gastrectomy. a randomized controlled study. Obesity surgery. 2019 Mar 15;29(3):765-70.

8 Ekici NY, Alagöz S. The effectiveness of endoscopic sphenopalatine ganglion block in management of

postoperative pain after septal surgery. InInternational forum of allergy & rhinology 2019 Dec (Vol. 9, No. 12, pp. 1521-1525).

9 Aksoy M, İnce İ, Ahiskalioglu A, Keles S, Doymus O. Effect of intravenous preoperative versus postoperative paracetamol on postoperative nausea and vomiting in patients undergoing strabismus surgery: A prospective randomized study. Agri. 2018 Jan 1;30(1):1-7.

10 Juan F, Ayiheng Q, Yuqin F, Hua Z, Jun Y, Bin H. Risk factors of chronic rhinosinusitis after functional endoscopic sinus surgery. Medical science monitor: international medical journal of experimental and clinical research. 2017;23:1064.

11 Atashkhoei S, Nikan F, Kardan R, Pourfathi H. Effect of Different Doses of Paracetamol on Postoperative Pain After Gynecologic Laparoscopy. surgery. 2018 Jul 1;1:2.

12 Hassan HI. Perioperative analgesic effects of intravenous paracetamol: Preemptive versus preventive analgesia in elective cesarean section. Anesthesia, essays and researches. 2014 Sep;8(3):339.

13 Arslan M, Celep B, Ciçek R, Kalender HÜ, Yılmaz H. Comparing the efficacy of preemptive intravenous paracetamol on the reducing effect of opioid usage in cholecystectomy. J Res Med Sci. 2013 Mar;18(3):172-7. PMID: 23930110; PMCID: PMC3732894.

14 Majumdar S, Das A, Kundu R, Mukherjee D, Hazra B, Mitra T. Intravenous paracetamol infusion: Superior pain management and earlier discharge from hospital in patients undergoing palliative head-neck cancer surgery. Perspect Clin Res. 2014 Oct;5(4):172-7. doi: 10.4103/2229-3485.140557. PMID: 25276627; PMCID: PMC4170535.

15 Unal SS, Aksoy M, Ahiskalioglu A, Erdem AF, Adanur S. The effect of intravenous preemptive paracetamol on postoperative fentanyl consumption in patients undergoing open nephrectomy: A prospective randomized study. Niger J Clin Pract 2015;18:68-74.

16 Bandey S, Singh V. Comparison between IV Paracetamol and Tramadol for Postoperative Analgesia in Patients Undergoing Laparoscopic Cholecystectomy. J Clin Diagn Res. 2016 Aug;10(8):UC05-9. doi: 10.7860/JCDR/2016/21021.8274. Epub 2016 Aug 1. PMID: 27656532; PMCID: PMC5028584.

17 Soltani G, Molkizadeh A, Amini S. Effect of Intravenous Acetaminophen (Paracetamol) on Hemodynamic Parameters Following Endotracheal Tube Intubation and Postoperative Pain in Caesarian Section Surgeries. Anesth Pain Med. 2015 Dec 5;5(6):e30062. doi: 10.5812/aapm.30062. PMID: 26705524; PMCID: PMC4688817.

18 Kuroki S, Nagamine Y, Kodama Y, Kadota Y, Kouroki S, Maruta T, Kanemaru S, Amano M, Tsuneyoshi I. Intraoperative Single-Dose Intravenous Acetaminophen for Postoperative Analgesia After Skin Laser Irradiation Surgery in Paediatric Patients: A Small Prospective Study. Turk J Anaesthesiol Reanim. 2019 Jun;47(3):192-198. doi: 10.5152/TJAR.2019.10476. Epub 2019 Feb 19. PMID: 31183465; PMCID: PMC6537955.

19 Jafari, Alireza, Kamranmanesh, Mohammadreza, Aghamohammadi, Homayoun, Gharaei, Babak, Noori Khorramabadian, Mehranoosh, Narouie, Behzad, Sarmadi, Payam, Valipour, Reza, AND Vali, Abbas. "Effects of Preemptive and Preventive intravenous Paracetamol on postoperative pain and opioid consumption in patients undergoing laparoscopic nephrectomy" Journal of Cellular & Molecular Anesthesia [Online], Volume 3 Number 2 (2 September 2018).