EUROPEAN ACADEMIC RESEARCH
Vol. XI, Issue 6/ September 2023

Impact Factor: 3.4546 (UIF)
DRJI Value: 5.9 (B+)

ISSN 2286-4822
www.euacademic.org

Comparison between IV paracetamol and tramadol for post operative analgesia in patients undergoing laparoscopic cholecystectomy

Dr. BIBI ZEHRA
Resident General Surgery, CMH, Quetta, (sanizahra26@yahoo.com)
Dr. MUHAMMAD SAEED AWAN
Consultant Surgeon, CMH, Bahawalpur (saeedawan1@gmail.com)
Dr. SOHAIL ILYAS
Consultant Surgeon, CMH, Quetta (sohailyas@gmail.com)
Dr. RUKHSAR ANWAR
Resident General Surgery, SPH, Quetta (drrukhsar1793@gmail.com)
Dr. FAHIM LIAQAT
Resident General Surgery, CMH, Quetta (ravian.libral@gmail.com)
Dr. MUHAMMAD ABDULLAH
Resident General Surgery, CMH, Quetta (abdullahzahoor.707@gmail.com)

Abstract

OBJECTIVE: *To compare intravenous paracetamol and tramadol for post-operative analgesia in patients undergoing laparoscopic cholecystectomy.*

STUDY DESIGN: *Comparative cross-sectional study.*

SETTING AND DURATION OF STUDY: *Combined Military Hospital Quetta, from February 2022 to June 2022.*

PATIENTS AND METHODS: *Three hundred and fifty patients who underwent laparoscopic cholecystectomy were enrolled in this analysis. Patients were randomized into two groups. Group A received the intravenous Paracetamol while group B received the intravenous Tramadol. Pain of surgical site was recorded on visual analogue scale (VAS), 08 hours and 24 hours after the surgical procedure. Difference in significant post-operative pain and common adverse effects were compared in both groups via chi-square test.*

RESULTS: *Out of 350 patients included in the study, 171 (48.8%) got intravenous paracetamol for analgesia while 179 (51.2%) got tramadol after laparoscopic cholecystectomy.167 (47.8%) were male while 183 (52.2%) were female. Mean age of patients put who underwent laparoscopic surgery in our study was42.36 ±4.55 years. Statistically significantly more patients managed with paracetamol had no significant pain after 08 and 24 hours of surgery as compared to patients managed with Tramadol (p-value<0.05). Nausea and vomiting were seen significantly more in patients who received Tramadol (p-value<0.05).*

CONCLUSION: *Intravenous Paracetamol emerged as a better option for analgesia after laparoscopic cholecystectomy as compared to intravenous Tramadol. Not only pain relief was better at 8 and 24 hours but nausea and vomiting were also significantly less in patients receiving intravenous paracetamol after the surgery.*

Keywords: Analgesia; Laparoscopy; Paracetamol; Tramadol

INTRODUCTION

Surgeries involving liver and biliary tract are commonly performed in almost all the surgical centers of the world.[1]Minimally invasive methods of surgery like laparoscopy have revolutionized the surgeries related to gall bladder and they are now performed with limited risks of complications.[2]Hepatobiliary surgeries done via laparoscopic methods have excellent results across various centers of the world especially when done by trained professionals.[3]

Laparoscopic procedures though have lesser number of complications and recovery remains smoother than conventional procedures, still post-operative pain is commonly encountered complain in most settings.[4,5] Similar data was generated in our population where pain remained one of the commonest complication of laparoscopic cholecystectomy affecting health related quality of life of surgical patients. This study was published in Pakistan Armred Forces Medical Journal in 2014.[6]

Various pain killer agents have been tried and compared for post-operative analgesia in various settings in last few years. Ragupathy et al. in 2022 published an interesting article regarding opioid-free anaesthesia for laparoscopic surgeries. They did a non-randomised trial and revealed that newer agents and blocks can reduce or substitute the requirement for opioid-analgesia in patients undergoing laparoscopic surgeires.[7]Paracetamol and Pethidine were compared for poat operative analgesia in patients undergoing laparoscopic cholecystectomy by Ahmed et al. in 2020. It was concluded that paracetamol was more effective and safe for the said purpose as compared to Pethidine.[8]Dexmedetomidin and intravenous paracetamol were compared to look for quality and duration of analgesia in a study performed in India in 2017. They concluded that Dexmedetomidin provided better post-operative analgesia and adverse effects were not statistically significantly different in both groups.[9]Due to variety of choices and routes available for post-operative pain relief, it is usually joint decision of patient and treating team to choose the most suitable option for this purpose.

Pain medicine is a separate specialty but for surgical cases usually surgical and anesthetist team decides about the type and route of pain relief after the procedure. This choice depends upon number of factors which may be patient related, underlying health condition or procedure related and availability of medications related. A local study published by Manan et al. in 2019 studied use of intraperitoneal Bupivacaine for post laparoscopic cholecystectomy analgesia and found it an effective option.[10] Tramadol and Paracetamol both have been in use in our surgical departments for post-operative analgesia but limited data has been available regarding comparison of their effectiveness and safety. We deigned this study with the rationale to compare intravenous paracetamol and tramadol for post-operative analgesia in patients undergoing laparoscopic cholecystectomy.

PATIENTS AND METHODS

This comparative cross sectional was conducted at the surgical department of combined military hospital Quetta from February 2021 to June 2020.Sample size was calculated by WHO Sample Size Calculator by using population prevalence proportion of use of opioid analgesic for post-operative pain relief as 29.3%.[11]Non probability Consecutive sampling technique was used to gather the sample and then all the patients were randomized into two groups via lottery method. Inclusion criteria: All patients between

the age of 18 and 65years who underwent laparoscopic cholecystectomy for any reason were included in the study.

Exclusion criteria: Patients with less than eighteen year of age or those with uncontrolled diabetes or hypertension or any other physical illness. Patients with history of illicit substance or opioid use or those using any types of analgesics for any type of painful conditions were excluded from the study. Patients using any psychotropic or neurotropic medications were excluded as well.

After ethical approval from the ethical review board committee (IREB Letter no: XXX) and written informed consent from potential participants, patients who were undergoing laparoscopic removal of gallbladderat surgical unit of CMHQuettafulfilling the above mentioned inclusion and exclusion criteria were included in the study. Laparoscopic cholecystectomy was carried out by consultant surgeon and routine antibioticcover was given to each patient as per the hospital protocol and condition of the patient.[12] Patients were randomly divided into two groups via lottery method. One group of patients received intravenous Tramadol while other group received intravenous paracetamol. VAS score (0-10) was applied to assess the post-operative pain at 08 and24 hours after the surgery in both the groups.For the purpose of blinding the health professional who assessed the pain and the person who assessed the data did not know regarding the group of the patient and details that which mode was used for the patient they have been assessing for the pain score. Patients also did not know about this information. VAS score>6 was considered as significant pain. They were also assessed for common adverse effects during the first twenty-four hours of surgery.

Paracetamol was given via intravenous route by the staff nurse on prescription of consultant surgeon in a dose of 15mg/kg.[13]Tramadol was also given to patients intravenously by staff nurse as per same protocol in a dose of 50mg.[14] They were given at 6 hours and 18 hours after the surgical procedure. Side effects were recorded by consultant surgeon or his team members at regular intervals.

All statistical analysis was performed by using the Statistics Package for Social Sciences version24.0 (SPSS-24.0).Frequency and percentages for gender and the type of medications used were calculated. Pearson chi-square test was used to analyze the difference in postoperative pain ant 8 and 24 hours of surgery and side effects like nausea and vomiting. The p-value less than or equal to 0.05 was considered as significant to establish the statistically significant difference in both the groups.

RESULTS

A total of three hundred and fifty patients undergoing laparoscopic cholecystectomy and admitted in our ward after the surgery were recruited for the analysis. Out of 350 patients included, 171 (48.8%) got intravenous paracetamol for analgesia while 179 (51.2%) got tramadol after laparoscopic cholecystectomy. 167 (47.8%) were male while 183 (52.2%) were female. Baseline sociodemographic and clinical data of patients has been summarized in Table-I. Mean age of patients put who underwent laparoscopic surgery in our study was 42.36 ±4.55 years.

Table-II summarized the results of chi-square analysis.Statistically significantly more patients managed with paracetamol had no significant pain after 08 and 24 hours of surgery as compared to patients managed with Tramadol (p-value<0.05). Nausea and vomiting were seen significantly more in patients who received Tramadol (p-value<0.05).

DISCUSSION

Surgical and anesthesia team work together to smoothen the process of surgery and post-surgical recovery. Post-operative analgesia is an important component of whole surgical procedure and sometimes become difficult for treating team due to number of individual and underlying disease or procedure related factors. Anesthetists have certain blocks and infiltration techniques which give adequate pain relief for some time after the surgery. After few hours usually surgical team manage the post-operative pain with options available in hand. Minimally invasive surgeries like laparoscopic cholecystectomy have lesser complications as compared to conventional surgeries but still post-operative pain relief remains an important area of concern. We conducted this study with aim to compare intravenous paracetamol and tramadol for post-operative analgesia in patients undergoing laparoscopic cholecystectomy.

Bandey et al. in 2016 performed a study exactly similar to ours and compared analgesic effect of paracetamol and tramadol in patients undergoing laparoscopic cholecystectomies. They came up with the findings that paracetamol was more safe and effective when compared to Tramadol for post-operative analgesia among patients undergoing laparoscopic cholecystectomies.[15]Our results were not very different from that of Bnadey et al. and paracetamol was better of two agents from both effectiveness and safety point of view.

Caliskan et al. in 2018 published a double blind trial which was randomized as well regarding comparison of intravenous Dexketoprofen Trometamol versus Paracetamol on postoperative analgesia. They concluded that requirement of opioid analgesia was less in Dexketoprofen Trometamol group as compared to paracetamol group in early post-operative period but cumulative difference was not significant in both the groups.[16]Our study was slightly different as we compared Tramadol with paracetamol and found that paracetamol was better of two for post-operative analgesia in patients undergoing laparoscopic cholecystectomy.

Reza et al. in 2020 studied use of Tramadol from another route i-e intraperitoneal instillation after the surgery and found out that this was a safe and effective route for providing analgesia after the laparoscopic surgery.[17]It had analgesic effects in our study via intravenous route as well but not better than intravenous paracetamol rather paracetamol emerged as better option in our study participants.

Comparison was done between intravenous Paracetamol plus Fentanyl and intravenous Fentanyl alone for postoperative analgesia during laparoscopic cholecystectomy by Choudury et al. and it was concluded that addition of intravenous paracetamol was not only beneficial for analgesia but also decreased the intravenous opioid requirement.[18]Our study could be considered as s step ahead of Choudury et al. as we compared Paracetamol alone with Tramadol and found out that intravenous Paracetamol was as a better option for analgesia after laparoscopic cholecystectomy as compared to intravenous Tramadol. Not only pain relief was better at 8 and 24 hours but nausea and vomiting were also significantly less in patients receiving intravenous paracetamol after the surgery.

Study limitations

Pain is a multidimensional phenomenon which could be affected by number of physiological, psychological, social and environmental factors. Analgesic effects of pain killer used should be studied in holistic manner and controlling of confounding factors

is usually the key factor in this. Long term follow-up for at least a week for effectiveness and adverse effects could give us a better picture of comparison between the two analgesic agents.

CONCLUSION

Intravenous Paracetamol emerged as a better option for analgesia after laparoscopic cholecystectomy as compared to intravenous Tramadol. Not only pain relief was better at 8 and 24 hours but nausea and vomiting were also significantly less in patients receiving intravenous paracetamol after the surgery.

REFERENCES

1. Vitale A, Lai Q. New trends and perspectives in hepatobiliary surgery: preface. *Transl Gastroenterol Hepatol*. 2018;3:99. Published 2018 Nov 30. doi:10.21037/tgh.2018.11.06
2. Artifon EL, Loureiro JF, Baron TH, Fernandes K, Kahaleh M, Marson FP. Surgery or EUS-guided choledochoduodenostomy for malignant distal biliary obstruction after ERCP failure. *Endosc Ultrasound*. 2015;4(3):235-43.
3. Hong KS, Noh KT, Min SK, Lee HK. Selection of surgical treatment types for intrahepatic duct stones. *Korean J Hepatobiliary Pancreat Surg*. 2011;15(3):139-45.
4. Radunovic M, Lazovic R, Popovic N, et al. Complications of Laparoscopic Cholecystectomy: Our Experience from a Retrospective Analysis. *Open Access Maced J Med Sci*. 2016;4(4):641-646.
5. Taki-Eldin A, Badawy AE. OUTCOME OF LAPAROSCOPIC CHOLECYSTECTOMY IN PATIENTS WITH GALLSTONE DISEASE AT A SECONDARY LEVEL CARE HOSPITAL. *Arq Bras Cir Dig*. 2018;31(1):e1347. doi:10.1590/0102-672020180001e1347
6. Afzal M, Rehman S, Butt MQ. Complications of laparoscopic Cholecystectomy: An analysis of 400 consecutive cases. Pak Armed Forces Med J.2014; *64*(4), 546-50.
7. Ragupathy R, Prabhu SCG, Thiyagarajan D, Anto V. Opioid-free anaesthesia for laparoscopic surgeries - A prospective non-randomised study in a tertiary care hospital. Indian J Anaesth. 2022;66(3):207-212. doi:10.4103/ija.ija_785_21
8. Ahmed R, Shaheen MSA, Uddin MJ, Abbasi MM, Alam MNA. Comparative Study between IV Paracetamol and IM Pethidine for Post-Operative Analgesia in Laparoscopic Cholecystectomy. Anwer Khan Mod Med Coll J. 2020; 11(1): 46-53.
9. Sharma R, Gupta R, Choudhary R, Singh Bajwa SJ. Postoperative Analgesia with Intravenous Paracetamol and Dexmedetomidine in Laparoscopic Cholecystectomy Surgeries: A Prospective Randomized Comparative Study. Int J Appl Basic Med Res. 2017;7(4):218-222. doi:10.4103/ijabmr.IJABMR_25_17
10. Manan A, Khan AA, Ahmad I, Usman M, Jamil T, Sajid MA. Intraperitoneal Bupivacaine as Post-laparoscopic Cholecystectomy Analgesia. J Coll Physicians Surg Pak. 2020;30(1):9-12. doi:10.29271/jcpsp.2020.01.09
11. Ure BM, Troidl H, Spangenberger W, Dietrich A, Lefering R, Neugebauer E. Pain after laparoscopic cholecystectomy. Intensity and localization of pain and analysis of predictors in preoperative symptoms and intraoperative events. Surg Endosc. 1994;8(2):90-96. doi:10.1007/BF00316616
12. Nip L, Tong KS, Borg CM. Three-port versus four-port technique for laparoscopic cholecystectomy: systematic review and meta-analysis. BJS Open. 2022;6(2):zrac013. doi:10.1093/bjsopen/zrac013
13. Puntillo F, Giglio M, Varrassi G. The Routes of Administration for Acute Postoperative Pain Medication. Pain Ther. 2021;10(2):909-925. doi:10.1007/s40122-021-00286-5
14. Nešković N, Marczi S, Mandić D, Mraovic V, Skilijic S, Kristek G et al. Anelgesic effect of Tramadol is not alteredby post-operative systemic inflammationafter major abdominal surgery. Acta Clin Croat. 2021;60(2):268-275. doi:10.20471/acc.2021.60.02.13
15. Bandey S, Singh V. Comparison between IV Paracetamol and Tramadol for Postoperative Analgesia in Patients Undergoing Laparoscopic Cholecystectomy. J Clin Diagn Res. 2016;10(8):UC05-UC9. doi:10.7860/JCDR/2016/21021.8274
16. E C, M S, M K, I Y, A A. Comparison of the effects of intravenous Dexketoprofen Trometamol versus Paracetamol on postoperative analgesia in patients undergoing Septoplasty: A randomised double-blind clinical trial. Pak J Med Sci. 2018;34(3):546-552. doi:10.12669/pjms.343.13804
17. Reza E, Bhuiyan K, Emon RI, et al. Efficacy of Intra-peritoneal Tramadol Instillation for Postoperative Pain Management after Laparoscopic Cholecystectomy. Mymensingh Med J. 2020;29(2):303-310.

18. Choudhuri AH, Uppal R. A comparison between intravenous paracetamol plus fentanyl and intravenous fentanyl alone for postoperative analgesia during laparoscopic cholecystectomy. Anesth Essays Res. 2011;5(2):196-200. doi:10.4103/0259-1162.94777

Table-I: Characteristics of study participants

Study parameters	n (%)
Age (years)	
Mean + SD	42.36 ±4.55 years
Range (min-max)	21 years - 59 years
Gender	
Male	167 (47.8%)
Female	183 (52.2%)
Type of analgesic used	
Paracetamol	171 (48.8%)
Tramadol	179 (51.2%)
Significant pain at 08 hours	
No	316 (90.2%)
Yes	34 (8.8%)
Significant pain at 24 hours	
No	275 (78.5%)
Yes	75(21.5%)
Adverse effects	
Nausea	45 (12.8%)
Vomiting	25 (7.1%)
Others	4 (1.1%)

Table-II: Difference in presence of significant postoperative pain and common adverse effects in both the groups: Chi-square test

Parameters	Paracetamol		Tramadol		p-value
Significant pain at 08 hours					
No	162	(94.7%)	154	(86.1%)	0.005
Yes	09	(5.3%)	25	(13.9%)	
Significant pain at 24 hours					
No	145	(84.7%)	130	(72.6%)	0.005
Yes	26	(15.3%)	49	(27.4%)	
Nausea					
No	159	(92.9%)	146	(81.5%)	0.001
Yes	12	(7.1%)	33	(18.5%)	
Vomiting					
No	165	(96.4%)	160	(89.3%)	0.008
Yes	06	(3.6%)	19	(10.7%)	