

Pre-Emptive Oral Gabapentin for Postoperative Laproscopic Shoulder Pain Relief in Patients Undergoing Elective Abdominal Laproscopic Surgeries

Rahul Chaudhary¹, Niraj Rathod², Chaitri Shah³

¹3rd year resident ²Assistant Professor ³Professor, Department of Anesthesia, Smt. B.K. Shah Medical Institute and Research Center, Pipariya, Vagodiya, Baroda, Gujrat 391760, India.

Abstract

Background: In laparoscopic surgery acute postoperative shoulder tip pain is common entity despite of the use of new drugs and novel drug delivery modalities, studies have shown that acute post-operative pain continues to be under managed. We tried to evaluate efficacy of oral gabapentin for the relief of postoperative pain after laparoscopic surgery. **Objective:** To evaluate the effect of oral Gabapentin on post operative shoulder pain after abdominal laparoscopy. **Method:** a prospective, randomized, clinical controlled study was conducted on 60 ASA grade I & grade II patients of either sex, aged between 18 to 65 years, planned for laparoscopic abdominal surgery under general anaesthesia. Group G: 30 patients would receive 600 mg oral gabapentin 1 hour prior to surgery. Group M: 30 patients would receive tab multivitamin 1 hour prior to surgery. After that presence of post operative shoulder pain and its severity was assessed by Visual Analog Scale (VAS) in the beginning of surgery and 0, 2, 4, 8, 12, 18, 24 hours after the surgery. **Results:** VAS score was lower in Group G when compared to Group M throughout the different time interval during first 24 hours. The incidence of post operative laproscopic shoulder pain in group M was 21 compared to group G where it was 12 in first 24 hours post operatively.

Keywords: Postoperative Laproscopic Shoulder Pain; Gabapentin; VAS Score; Analgesic.

How to cite this article:

Rahul chaudhary, Niraj Rathod, Chaitri Shah. Pre-Emptive Oral Gabapentin for Postoperative Laproscopic Shoulder Pain Relief in Patients Undergoing Elective Abdominal Laproscopic Surgeries. Indian J Anesth Analg. 2019;6(1):87-90.

Introduction

Pain is subjective unpleasant experience with psychosomatic problems. In spite of the use of new drugs and novel drug delivery modalities, studies have shown that acute post-operative pain continues to be undermanaged. Shoulder pain is a frequent problem following laparoscopic procedure [1,2]. Many patients may feel much more discomfort from their shoulder pain than incision pain [3]. Gabapentin is a structural analogue of γ -amino-butyric acid and

is safe and effective for the treatment of neuropathic pain syndrome, as well as for the prevention of postoperative pain [4]. Gabapentin inhibits C-fibre responses to noxious stimuli by modulating both central and peripheral nociceptive responses [5,6].

Aim of Study

To evaluate the effect of oral Gabapentin on post operative laproscopic shoulder pain.

Objectives of Study observe: 1. Postoperative analgesic requirement in first 24 hours. 2. Intra and

Corresponding Author: Niraj Rathod, Assistant Professor, Department of Anesthesia, Smt. B.K. Shah Medical Institute and Research Center, Pipariya, Vagodiya, Baroda, Gujrat 391760, India.

E-mail: drnmrathod@gmail.com

Received on 13.12.2018, **Accepted on** 24.12.2018



This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0.

post operative hemodynamic changes. 3. Adverse effects and complications, if any.

Materials and Methods

Inclusion criteria: Patients with the informed written consent. Age group of 18 to 55 years. ASA grades I and grade II. Patients with no known history of allergy, sensitivity or other form of reaction to the drugs to be used.

Exclusion criteria Patient refusal. History of drug allergy to gabapentin. Pregnant and lactating mothers. Patient with neurological, renal, hepatic, chronic respiratory diseases. Patient with endocrinologic disease (e.g. obesity, diabetes mellitus). After obtaining informed written consent, patients were randomly allocated into 2 groups *Group G:* Gabapentin group (30 patients) *Group M:* Placebo group (30 patients). Pre anaesthetic checkup: Detailed history, Airway examination, Systemic examination, Routine investigations were done, Nil by mouth for at least 8 hours prior to surgery. Tab. Alprazolam 0.25 mg was given the night before the surgery. On the day of surgery 1 hour prior to induction of anaesthesia Oral tablet gabapentin in dose of 600 mg was given with sips of water and in other group tab multivitamin (supradyn) with sips of water was given. In operation theatre, following Multipara monitor attached Base line vital parameters were recorded (HR, BP, SPO₂, ECG, 20G vein flow secured and Inj. RL started.)

Premedication: Patients were premeditated with: Inj. Glycopyrrolate 0.04 mg/kg i/v, Inj Ondansetron 0.1 mg/kg i/v, Inj. Midazolam 1 mg i/v, Inj. Tramadol 1 mg/kg i/v.

Induction & Intubation - Pre-oxygenation with 100% oxygen for 3 minutes.

Induced by Inj. Propofol 1.5-2.5 mg/kg/I.V. Endotracheal intubation was facilitated by Inj. Succinylcholine 1-2 mg/kg I/V by using appropriate sized cuffed endotracheal tube following direct laryngoscopy.

Maintenance O₂ 50% + N₂O 50% + Isoflurane dial flow concentration of (0.2% to 2%) + Inj. Atracurium. Intravenous fluid was calculated according to body weight and intra operative needs.

Reversal: Inj Neostigmine (0.05 mg/kg/I.V) + Inj Glycopyrrolate (0.008mg/kg/I.V)

Extubation: After fulfilling extubation criteria. Post Operatively Following Parameters were observed:-

1. Hemodynamic parameter and SpO₂.

2. Pain was assessed by VAS score at 0, 2, 4, 8, 12, 18 and 24 hours. If VAS >3 then Inj. Diclofenac 75 mg was given. (Vas scale - No Pain - 0 to 3 Moderate Pain - 4 to 8, worst pain 9 to 10) Sedation was assessed by Modified Ramsay Sedation Score.

Results

Statistical tools: Data were entered and analysed with the Graph Pad.com. Statistical tests used for comparison is Student's t-test. Results are presented as mean (SD) and number (%) of cases as appropriate. The level of significance was set at p < 0.05, and 95% confidence intervals were calculated for the main outcome measures.

Table 1: Demographic Data

Serial no.	Variable	Group M	Group G
		Mean±SD	Mean±SD
1	Age	32±11 years	31±8.5 years
2	Weight	56.7±9.93 Kgs	54.9±6.87 Kgs
3	Gender	Male	14
		Female	16
4	ASA	Grade 1	20
		Grade 2	10

In study both groups were similar & comparable in respect to demographic data. Group G age is mean±SD 31±8.5 years, weight 54.9±6.87 kgs, Group M age mean±SD 32±11 years, weight 56.7±9.93 Kgs.

Table 2: Incidence of Post-operative Laproscopic Shoulder Pain (PLSP)

Groups	Group G	Group M	p value
Incidence of PLSP	12	21	<0.001

In Table 2 the incidence of post operative laproscopic shoulder pain in group M was 21 compared to Group G it was 12 in first 24 hours post operative (p value = 0.001)

Table 3: Analgesic Requirement

Groups	Group G	Group M	P value
Diclofenac Requirement (mean ± SD)	190±27.54	128.33±31.30	<0.001

In the study it was observed that the mean post operative Diclofenac requirement in group P was 190±27.54 mg compared to group G where it was 128.33±31.30 mg in first 24 hours post operatively. This analysis was found to be statistically significant (p- value =0.001).

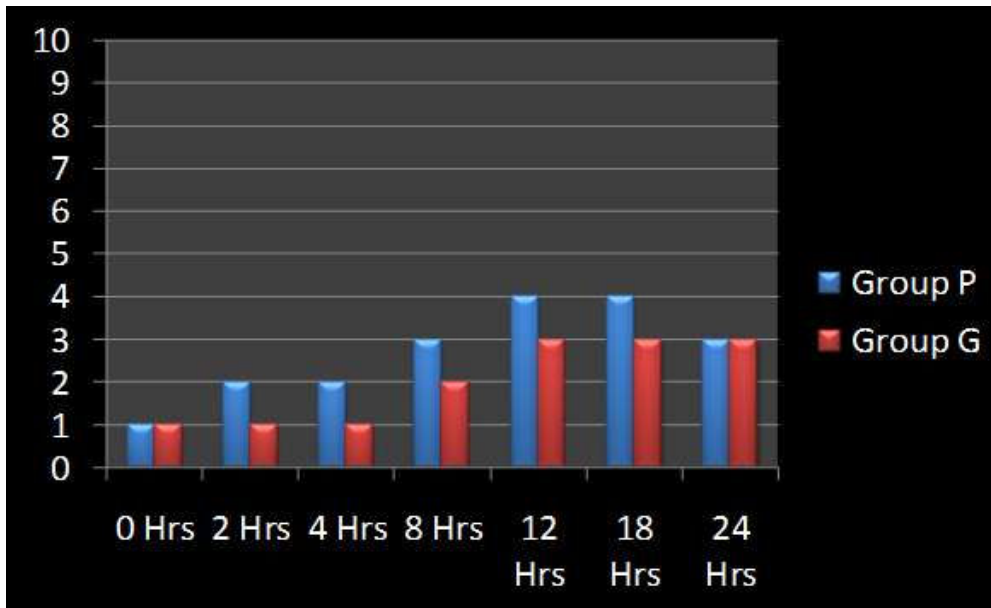


Fig. 1: Showing that VAS Score lower in Group G as compared to Group Placebo (Group P or M) throughout the different time interval during first 24 hrs.

Discussion

Shoulder pain is a frequent problem following laparoscopic procedure with overall incidence of 75%-80% [1,2]. Many patients may feel much more discomfort from their shoulder pain than incision pain [3]. PLSP is caused by irritation and/or injury of the diaphragm and phrenic nerve by local acidosis and irritative effect of CO₂ during pneumoperitoneum or distention forces on the diaphragm [7,8,9,10].

In the study it was observed that the mean post operative Diclofenac requirement in group P was 190±27.54 mg compared to group G where it was 128.33±31.30 mg in first 24 hours post operatively. Use of Gabapentin resulted in 33% reduction in consumption of postoperative Inj. Diclofenac.

The choice to give gabapentin 2 hour before the induction appears rational in order to attain maximal plasma concentration at the time of surgical stimuli. Gabapentin also possesses antihyperalgesic and antiallodynic properties, which is beneficial in acute postoperative pain [11,12].

It may also reduce hypersensitivity induced by nerve injury, inflammation and postoperative pain [12]. The incidence of nausea and vomiting was less in gabapentin group with lesser number of patients requiring ondansetron.

Conclusion

Pre-emptive administration of 600 mg of gabapentin results in statistically significant reduction in incidence and severity of postoperative laparoscopic pain in immediate post operative period (p value = 0.001).

References

1. Wills VL, Hunt DR. Pain after laparoscopic cholecystectomy. *Br J Surg.* 2000;87(3):273-84.
2. Cason CL, Seidel SL, Bushmiaer M. Recovery from laparoscopic cholecystectomy procedures. *AORN J.* 1996;63(6):1106-8.
3. Phelps P, Cakmakkaya OS, Apfel CC, Radke OC. A simple clinical maneuver to reduce laparoscopy-induced shoulder pain: a randomized controlled trial. *Obstet Gynecol.* 2008;111(5):1155-60.
4. Gilron I, Bailey JM, Tu D. Morphine, gabapentin, or their combination for neuropathic pain. *N Engl J Med* 2005;352:1324-34.
5. Singh L, Field MJ, Ferris P. The antiepileptic agent gabapentin (neurontin) possesses anxiolytic-like and antinociceptive actions that are reversed by D-serine. *Psychopharmacology* 1996;127:1-9.
6. Carlton SM, Zhou S. Attenuation of formalin-induced nociceptive behaviours following local peripheral injection of gabapentin. *Pain.* 1998;76:201-7.

7. Nyerges A. Pain Mechanisms in Laparoscopic Surgery. *Semin Laparosc Surg.* 1994;1(4):215-8. doi: 10.1053/SLAS00100215. [PubMed: 10401061].
 8. Berberoglu M, Dilek ON, Ercan F, Kati I, Ozmen M. The effect of CO2 insufflation rate on the post laparoscopic shoulder pain. *J Laparoendosc Adv Surg Tech A.* 1998;8(5):273-7.
 9. Sarli L, Costi R, Sansebastiano G, Trivelli M, Roncoroni L. Prospective randomized trial of low-pressure pneumoperitoneum for reduction of shoulder-tip pain following laparoscopy. *Br J Surg.* 2000;87(9):1161-5.
 10. Mouton WG, Bessell JR, Otten KT, Maddern GJ. Pain after laparoscopy. *Surg Endosc.* 1999;13(5):445-8.
 11. Seib RK, Panl JE. Preoperative gabapentin for postoperative analgesia: a meta-analysis. *Can J Anesth.* 2006; 53:461-469.
 12. Dirks J, Peterson KL, Rowbotham MC, Dahl JB. Gabapentin suppresses cutaneous hyperalgesia following heat- capsaicin sensitization. *Anaesthesiology.* 2002; 97:102-107.
-