

Original Research

Role of gabapentin as a pre-emptive analgesic in modified radical mastectomy

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ABSTRACT:

Background: The relief of post-operative pain is a subject, which has been receiving an increasing amount of attention in the past few years. The present study was conducted to evaluate role of gabapentin as a pre-emptive analgesic in modified radical mastectomy. **Materials & Methods:** 60 adult female patients of ASA grade I and II diagnosed of Carcinoma Breast and posted for Modified Radical Mastectomy under general anesthesia were divided into 2 groups of 30 each. Group I patients received tab. Gabapentin 600mg orally with sips of water 1 hour before surgery and group II did not receive any drug before surgery. All the surgeries were done routine general anaesthesia with endotracheal intubation. Parameters such as sedation score and VAS was recorded and compared in both groups. **Results:** The mean age in group I was 47.2 years and in group II was 48.6 years. Mean weight in group I was 52.4 kgs and 53.1 kgs in group II. Duration of surgery was 1.8 hours in group I and 2.7 hours in group II. Duration of post-op analgesia was 5.2 hours in group I and 1.7 hours in group II. The mean VAS core in group I was 5.09 and in group II was 6.8. Mean sedation score in group I was 1.2 and in group II was 0.4. Common side effects was nausea/ vomiting seen in 6 in group I and 2 in group II, pruritis 1 in group I, headache 2 in group I and 1 in group II, constipation 1 in group I and urinary retention in 1 in group II. The difference was significant ($P < 0.05$). **Conclusion:** Pre-emptive tab. Gabapentin prolongs postoperative analgesia as compare to control group.

Key words: Gabapentin, analgesia, Pain

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Corresponding author: Dr Rahul Singh, Assistant Professor, Department of Anaesthesia, School of Medicine & Research, Greater Noida, India**This article may be cited as:** Singh R. Role of gabapentin as a pre-emptive analgesic in modified radical mastectomy. J Adv Med Dent Scie Res 2019;7(8):321-324.**INTRODUCTION**

The relief of post-operative pain is a subject, which has been receiving an increasing amount of attention in the past few years. Modified radical mastectomy appeals to many surgeons because it is an effective operation for breast cancer, provides staging information through removal of axillary lymph nodes, and is cosmetically acceptable. Breast reconstruction can be performed at a later time if the patient desires it.¹

Various drugs such as local anesthetics, opioids, non-steroidal anti-inflammatory drug, cyclooxygenase-2 inhibitor, gabapentin, pregabalin, clonidine and dexmedetomidine have been used as pre-emptive analgesics.² Pre-emptive analgesia, an evolving clinical concept, involves the introduction of an analgesic regimen before the onset of noxious stimuli, with the goal of preventing sensitization of the nervous system to subsequent stimuli that could amplify pain. Surgery offers the most promising

setting for pre-emptive analgesia because the timing of noxious stimuli is known. Surgical trauma induces nociceptive sensitization leading to amplification and prolongation of post-operative pain.³

Gabapentin is a structural analog of gamma amino butyric acid. Large placebo controlled, double-blind trials confirmed their effectiveness in relieving neuropathic post-herpetic pain and reflex sympathetic dystrophy.⁴ The most effective pre-emptive analgesic regimens are those, which are capable of limiting sensitization of the nervous system throughout the entire peri-operative period. The only way to prevent sensitization of the nociceptive system might be to block completely any pain signal, originating from the surgical wound from the time of incision until final wound healing.⁵ The present study was conducted to evaluate role of gabapentin as a pre-emptive analgesic in modified radical mastectomy.

MATERIALS & METHODS

The present study comprised of 60 adult female patients of ASA grade I and II diagnosed of Carcinoma Breast and posted for Modified Radical Mastectomy under general anesthesia. All were informed regarding the study and their written consent was obtained.

Data such as name, age, etc. was recorded. Patients were divided into 2 groups of 30 each. Group I patients received tab. Gabapentin 600mg orally with

sips of water 1 hour before surgery and group II did not receive any drug before surgery. All the surgeries were done routine general anaesthesia with endotracheal intubation. All patients were given analgesia in form of Inj. Fentanyl 100mcg & Inj. Diclofenac Sodium 75mg IV intra-operatively. Parameters such as sedation score and VAS was recorded and compared in both groups. Results were studied statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Demographic data

Parameters	Group I	Group II	P value
Mean age (years)	47.2	48.6	0.12
Mean weight (Kgs)	52.4	53.1	0.24
Duration of surgery (hours)	1.8	2.7	0.05
Duration of post- op analgesia (hours)	5.2	1.7	0.01

Table I shows that mean age in group I was 47.2 years and in group II was 48.6 years. Mean weight in group I was 52.4 kgs and 53.1 kgs in group II. Duration of surgery was 1.8 hours in group I and 2.7 hours in group II. Duration of post- op analgesia was 5.2 hours in group I and 1.7 hours in group II. The difference was significant ($P < 0.05$).

Table II Comparison of score

Parameters	Group I	Group II	P value
VAS	5.9	6.8	0.08
Sedation score	1.2	0.4	0.01

Table II, graph I shows that mean VAS core in group I was 5.09 and in group II was 6.8. Mean sedation score in group I was 1.2 and in group II was 0.4. The difference was significant ($P < 0.05$).

Graph I Comparison of score

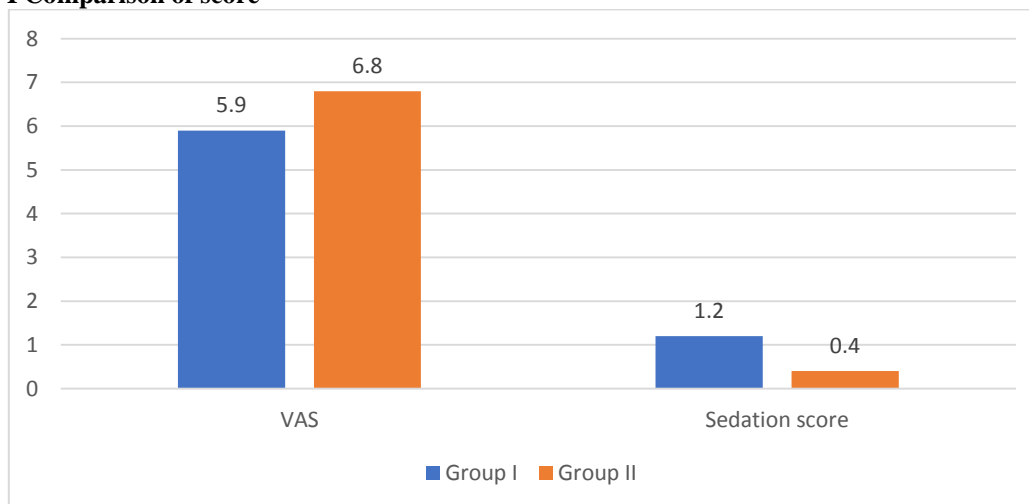


Table III Side effects

Side effects	Group I	Group II	P value
Nausea/ vomiting	6	2	0.01
Pruritis	1	0	0.05
Headache	2	1	0.05
Constipation	1	0	0.05
Urinary retention	0	1	0.05

Table III shows that common side effects was nausea/ vomiting seen in 6 in group I and 2 in group II, pruritis 1 in group I, headache 2 in group I and 1 in group II, constipation 1 in group I and urinary retention in 1 in group II. The difference was significant ($P < 0.05$).

DISCUSSION

Pain is defined by International Association for Study of Pain (IASP) as an unpleasant sensory and emotional experience associated with actual or potential tissue damage.⁶ Pre-emptive analgesia, an evolving clinical concept, involves the introduction of an analgesic regimen before the onset of noxious stimuli, with the goal of preventing sensitization of the nervous system to subsequent stimuli that could amplify pain. Surgery offers the most promising setting for pre-emptive analgesia because the timing of noxious stimuli is known.⁷ Surgical trauma induces nociceptive sensitization leading to amplification and prolongation of post-operative pain. Pharmacological interventions, including 'anti-hyperalgesic drugs and Gabapentin, may interfere with the induction and maintenance of sensitization.⁸ The present study was conducted to evaluate role of gabapentin as a pre-emptive analgesic in modified radical mastectomy.

In present study, mean age in group I was 47.2 years and in group II was 48.6 years. Mean weight in group I was 52.4 kgs and 53.1 kgs in group II. Duration of surgery was 1.8 hours in group I and 2.7 hours in group II. Duration of post- op analgesia was 5.2 hours in group I and 1.7 hours in group II. Tank et al⁹ 50 adult female patients of ASA grade I and II were divided randomly in to 2 groups (n=25). Study Group: Group G received Tab. Gabapentin 600mg orally with sips of water 1 hour before surgery. Control Group: Group C Placebo group. Mean Duration of analgesia is statistically highly significant in Group G. (p <0.0001). Mean VAS was higher in Group C compared to Group G(p<0.0001) statistically highly significant at 1, 2, 4hr post-operatively. Incidence of Sedation, Nausea and vomiting-Higher in Group G. The mean rescue analgesic doses during 24 hrs in Group G was 1.44 doses and in Group C was 2.52 doses which statistically highly significant in Group C.

We found that mean VAS core in group I was 5.09 and in group II was 6.8. Mean sedation score in group I was 1.2 and in group II was 0.4. The common side effects was nausea/ vomiting seen in 6 in group I and 2 in group II, pruritis 1 in group I, headache 2 in group I and 1 in group II, constipation 1 in group I and urinary retention in 1 in group II. VK Verma et al¹⁰ in their study a single dose of preoperative gabapentin for pain reduction and requirement of morphine after total mastectomy and axillary dissection concluded that single low dose of 600 mg gabapentin administered 1 h prior to surgery produced effective and significant postoperative analgesia after total mastectomy and axillary dissection without significant side effects.

Bafna et al¹¹ a total of 90 ASA grade I and II patients posted for elective gynecological surgeries were randomized into 3 groups (group A, B and C of 30 patients each). One hour before entering into the operation theatre the blinded drug selected for the study was given with a sip of water. Group A-

received identical placebo capsule, Group B- received 600mg of gabapentin capsule and Group C received 150 mg of pregabalin capsule. Spinal anesthesia was performed at L3-L4 interspace and a volume of 3.5 ml of 0.5% bupivacaine heavy injected over 30sec through a 25 G spinal needle. VAS score at first rescue analgesia, mean time of onset of analgesia, level of sensory block at 5min and 10 min interval, onset of motor block, total duration of analgesia and total requirement of rescue analgesia were observed as primary outcome. A significantly longer mean duration of effective analgesia in group C was observed compared with other groups ($P < 0.001$). The mean duration of effective analgesia in group C was 535.16 ± 32.86 min versus 151.83 ± 16.21 minutes in group A and 302.00 ± 24.26 minutes in group B. The mean numbers of doses of rescue analgesia in the first 24 hours in group A, B and C was 4.7 ± 0.65 , 4.1 ± 0.66 and 3.9 ± 0.614 . (P value <0.001).

CONCLUSION

Authors fund that Pre-emptive tab. Gabapentin prolongs postoperative analgesia as compare to control group.

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