ORIGINAL RESEARCH

A comparative study to evaluate role of gabapentin as a preemptive analgesic in patients undergoing modified radical mastectomy

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ABSTRACT
Background: Over Pre-emptive analgesia 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. The present study was conducted to assess role of gabapentin as a pre-emptive analgesic in modified radical mastectomy. **Materials & Methods:** 70 female patients of carcinoma breast undergoing modified radical mastectomy under general anesthesia were divided into 2 groups of 35 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. Parameters such as sedation score and VAS was recorded and compared in both groups. **Results:** The mean age in group I was 45.2 years and in group II was 47.6 years. The mean weight in group I was 55.4 kgs and 54.1 kgs in group II. Duration of surgery was 1.5 hours in group I and 2.4 hours in group II. Duration of post- op analgesia was 5.3 hours in group I and 1.9 hours in group II. The mean sedation score in group I was 1.3 and in group II was 0.7. The VAS score in group I was 5.7 and in group II was 6.2. Common side effects were nausea/ vomiting seen in 4 in group I and 2 in group II, constipation 2 in group I and 1 in group II, urinary retention in 2 in group I and 1 in group II, headache 1 in group I and 1 in group II and pruritis 0 in group I and 1 in group II. The difference was significant (P< 0.05). **Conclusion:** Anticipatory tab. gabapentin prolongs postoperative analgesia in comparison to the control group.

Key words: Gabapentin, analgesia, postoperative analgesia

INTRODUCTION

Few sensations are as disturbing to the individual as that of pain. Pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue* damage or described in terms of such damage" by the International Association for the study of pain (IASP).The last 20 years have seen significant scientific advancement in our understanding of the psychology, pathophysiology and pharmacology of pain. In conjunction of this knowledge, there has been a resurgence of concept of pre-emptive analgesia and numerous studies have addressed the proposed benefitsof this technique in surgical patient. Pre-emptive analgesia, an evolving clinical concept, involves the introduction of an analgesic regimen beforethe 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.[2]

Gamma amino butyric acid's structural counterpart is gabapentin. Large placebo controlled, double-blind trials supported their efficacy in treating reflex sympathetic dystrophy and neuropathic post-herpetic pain.[3] The pre-emptive analgesic regimens that can prevent nervous system sensitization during the full peri-operative period are the most effective. The only approach to avoid the nociceptive system might be to

block completely any pain signal originating from the surgical wound.[4]
The present study was conducted to assess role of gabapentin as a pre-emptive analgesic in modified radical mastectomy.

MATERIALS & METHODS

The present study comprised of 70 adult female patients of ASA grade I and II of carcinoma breast undergoing 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. Each group comprised of 35 patients. Group I patients received tab. gabapentin 600mg 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. Results were statistically analyzed. P value less than 0.05 was considered significant.

RESULTS

Table I Demographic data

Parameters	Group I	Group II	P value
Age (years)	45.2	47.6	0.62
Weight (Kgs)	55.4	54.1	0.74
Duration of surgery (hours)	1.5	2.4	0.03
Duration of post- op analgesia (hours)	5.3	1.9	0.01

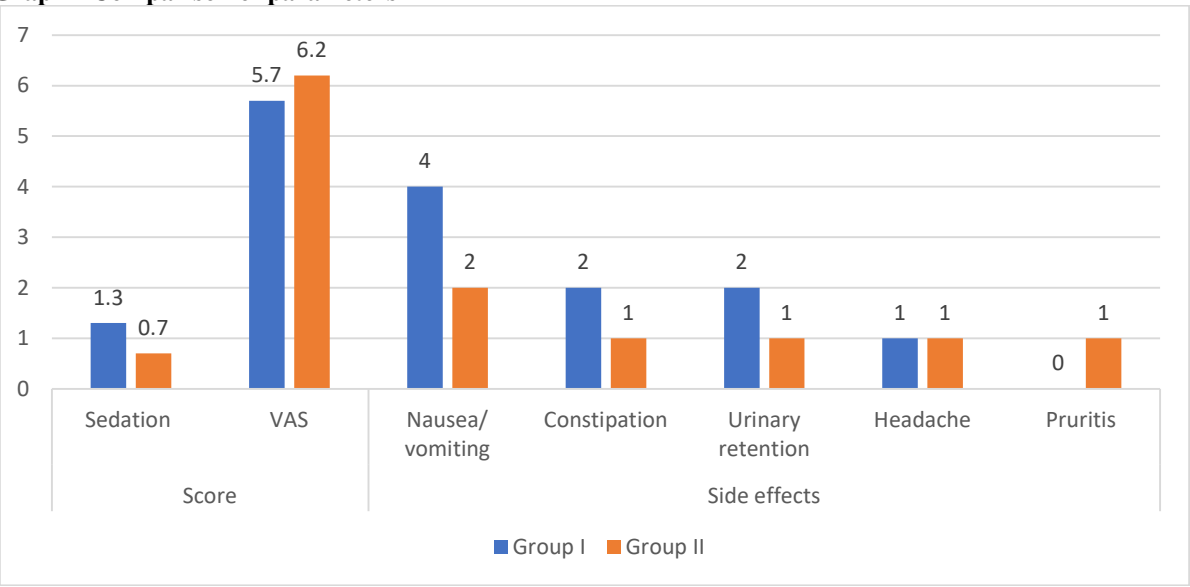
Table I shows that mean age in group I was 45.2 years and in group II was 47.6 years. The mean weight in group I was 55.4 kgs and 54.1 kgs in group II. Duration of surgery was 1.5 hours in group I and 2.4 hours in group II. Duration of post- op analgesia was 5.3 hours in group I and 1.9 hours in group II. The difference was significant (P< 0.05).

Table II Comparison of parameters

Parameters	Variables	Group I	Group II	P value
Score	Sedation	1.3	0.7	0.02
	VAS	5.7	6.2	0.05
Side effects	Nausea/ vomiting	4	2	0.05
	Constipation	2	1	
	Urinary retention	2	1	
	Headache	1	1	
	Pruritis	0	1	

Table II, graph I shows that mean sedation score in group I was 1.3 and in group II was 0.7. The VAS score in group I was 5.7 and in group II was 6.2. Common side effects were nausea/ vomiting seen in 4 in group I and 2 in group II, constipation 2 in group I and 1 in group II, urinary retention in 2 in group I and 1 in group II, headache 1 in group I and 1 in group II and pruritis 0 in group I and 1 in group II. The difference was significant (P< 0.05).

Graph I Comparison of parameters



DISCUSSION

Pre-emptive analgesia, an evolving clinical concept, involves the introduction of an analgesic regimen beforethe 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. Pharmacological interventions, including 'anti -hyperalgesic drugs such as NMDA-receptor antagonistsand Gabapentin, may interfere with the induction and maintenance of sensitization.[8]

The present study was conducted to assess role of gabapentin as a pre-emptive analgesic in modified radical mastectomy.

We found tha tmean age in group I was 45.2 years and in group II was 47.6 years. The mean weight in group I was 55.4 kgs and 54.1 kgs in group II. Duration of surgery was 1.5 hours in group I and 2.4 hours in group II. Duration of post- op analgesia was 5.3 hours in group I and 1.9 hours in group II. Bafnaet al[9] in their study 90 ASA grade I and II patients selected for elective gynecological procedures were divided randomly into three groups (groups A, B, and C, each with 30 patients). The study's chosen blinding medication was administered with a sip of water one hour prior to entering the operating room. Group B received a capsule containing 600 mg of gabapentin, Group C received a capsule containing 150 mg of pregabalin, and Group A received identical placebo capsules. A 25 G spinal needle was used to administer 3.5 ml of 0.5% bupivacaine heavy over the course of 30 seconds during the spinal anesthetic procedure at the L3-L4 interspace. The primary outcomes included the VAS score at the start of the first rescue analgesia, the average time it took for analgesia to start, the level of sensory block at intervals of 5 and 10 minutes, the beginning of motor block, the total duration of analgesia, and the total amount of rescue analgesia used. In comparison to the other groups, group C's mean effective analgesia duration was shown to be much longer. Compared to 151.83 16.21 minutes in group A and 302.00 24.26 minutes in group B, the mean time of effective analgesia in group C was 535.16 32.86 minutes. In the first 24 hours, the average number of doses of rescue analgesia in groups A, B, and C was 4.7 0.65, 4.1 0.66, and 3.9 0.614.

We found that the mean sedation score in group I was 1.3 and in group II was 0.7. The VAS score in group I was 5.7 and in group II was 6.2. Common side effects were nausea/ vomiting seen in 4 in group I and 2 in group II, constipation 2 in group I and 1 in group II, urinary retention in 2 in group I and 1 in group II, headache 1 in group I and 1 in group II and pruritis 0 in group I and 1 in group II. Tank et al[10] included 50 adult female patients with ASA grades I and II were split into two groups at random (n = 25). Study Group: One hour prior to surgery, Group G was administered 600 mg of Tab. Gabapentin orally with sips of water. Group C placebo group is the control group. In Group G, the mean duration of analgesia is statistically extremely significant. At 1, 2and 4 hours following surgery, the mean VAS was statistically extremely significant greater in Group C than in Group G. Sedation, nausea, and vomiting were more common in Group G. The mean rescue analgesic doses during a 24-hour period were 1.44 doses in Group G and 2.52 doses in Group C, with the latter being statistically significantly more significant.

Dirks et al[11] examined how gabapentin affects individuals following radical mastectomy in terms of their need for morphine and level of postoperative discomfort. One dosage of oral gabapentin (1,200 mg) or a placebo was given to 70 patients one hour before to surgery. Patients received 2.5 mg of morphine administered under patient control with a 10minutes lock-out period for the first four hours following surgery. The study was completed by 31 participants in the gabapentin group and 34 participants in the placebo group. Total morphine intake was decreased by gabapentin from a median of 29 mg (interquartile range, 21-33) to 15 mg (10-19) (P- 0.0001). At 2 hours after surgery, pain during movement decreased from 41 (31-59) to 22 (10-38) mm (P- 0.0001), and at 4 hours after surgery, it decreased from 31 (12-40) to 9 (3-34) mm (P- 0.018). No discernible differences between groups were observed with regard to pain at rest or side effects.

CONCLUSION

We concluded that the pre- emptive use of tab gabapentin 600 mg significantly prolong the duration of post operative analgesia and reduced the rescue analgesic In comparison to control group.

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