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Original Article

Gabapentin as a pre-emptive analgesic in modified radical mastectomy- A clinical study

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ABSTRACT:

Background: 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 assessed the role of gabapentin as a pre-emptive analgesic in modified radical mastectomy. **Materials & Methods:** 80 female patients of ASA grade I and II of carcinoma breast posted for modified radical mastectomy under general anesthesia were divided into 2 groups. Each group comprised of 40 patients. Group I patients received tab. 600 mg Gabapentin orally before surgery and group II did not receive any drug before surgery. Parameters such as sedation score, VAS and side effects was recorded. **Results:** The mean age in group I was 46.4 years and in group II was 48.2 years. The mean weight in group I was 52.8 kgs and 53.1 kgs in group II. Duration of surgery was 1.9 hours in group I and 2.8 hours in group II. Duration of post- op analgesia was 5.1 hours in group I and 1.9 hours in group II. The difference was significant ($P< 0.05$). The mean VAS score in group I was 5.4 and in group II was 6.7. The mean sedation score in group I was 1.7 and in group II was 0.5. Common side effects was nausea/ vomiting seen in 7 in group I and 3 in group II, pruritis 1 in group I, urinary retention in 1 in group I and 2 in group II, headache 3 in group I and 2 in group II, constipation 1 in group I. The difference was significant ($P< 0.05$). **Conclusion:** Gabapentin prolongs postoperative analgesia as compare to control group.

Key words: Analgesia, Gabapentin, Surgery

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INTRODUCTION

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.[1] 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]

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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.[5] 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.[6] The present study assessed the role of gabapentin as a pre-emptive analgesic in modified radical mastectomy.

MATERIALS & METHODS

The present study comprised of 80 female patients of ASA grade I and II of carcinoma breast 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. Each group comprised of 40 patients. Group I patients received tab. 600 mg Gabapentin orally before surgery and group II did not receive any drug before surgery. All the surgeries were done in routine general anaesthesia with endotracheal intubation. All patients were given analgesia in form of Inj. Fentanyl 100 mcg & Inj. Diclofenac Sodium 75 mg IV intra-operatively. Parameters such as sedation score and VAS was

recorded. Results were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Demographic data

Parameters	Group I	Group II	P value
Age (years)	46.4	48.2	0.12
Weight (kgs)	52.8	53.1	0.24
Duration of surgery (hours)	1.9	2.8	0.05
Duration of post- op analgesia (hours)	5.1	1.9	0.01

Table I, graph I shows that mean age in group I was 46.4 years and in group II was 48.2 years. The mean weight in group I was 52.8 kgs and 53.1 kgs in group II. Duration of surgery was 1.9 hours in group I and 2.8 hours in group II. Duration of post- op analgesia was 5.1 hours in group I and 1.9 hours in group II. The difference was significant (P< 0.05).

Graph I Demographic data

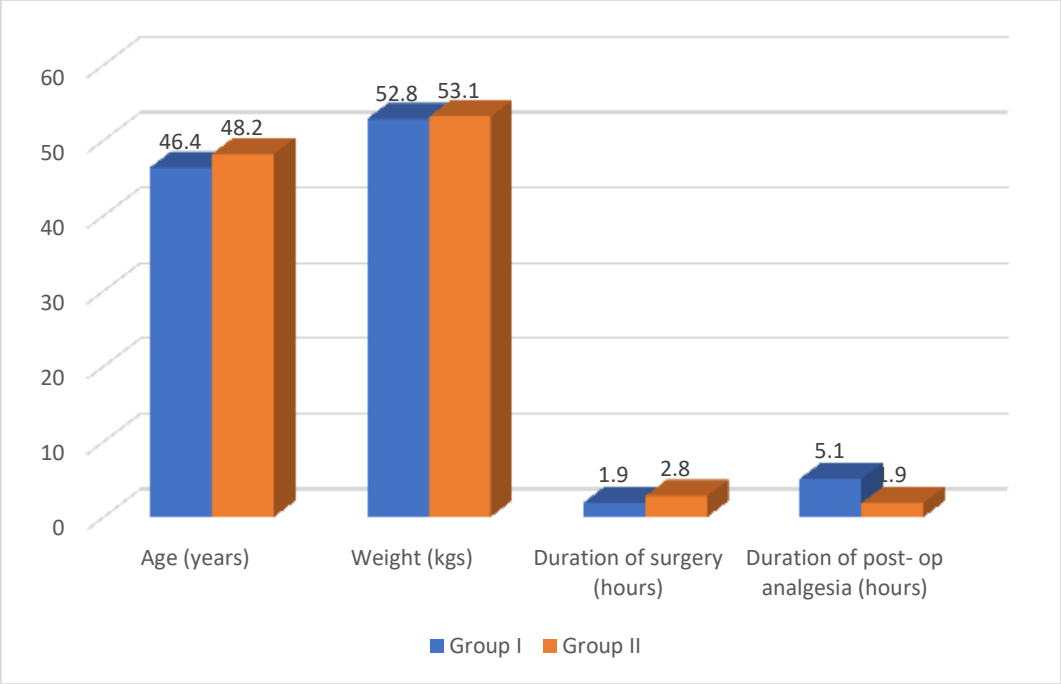
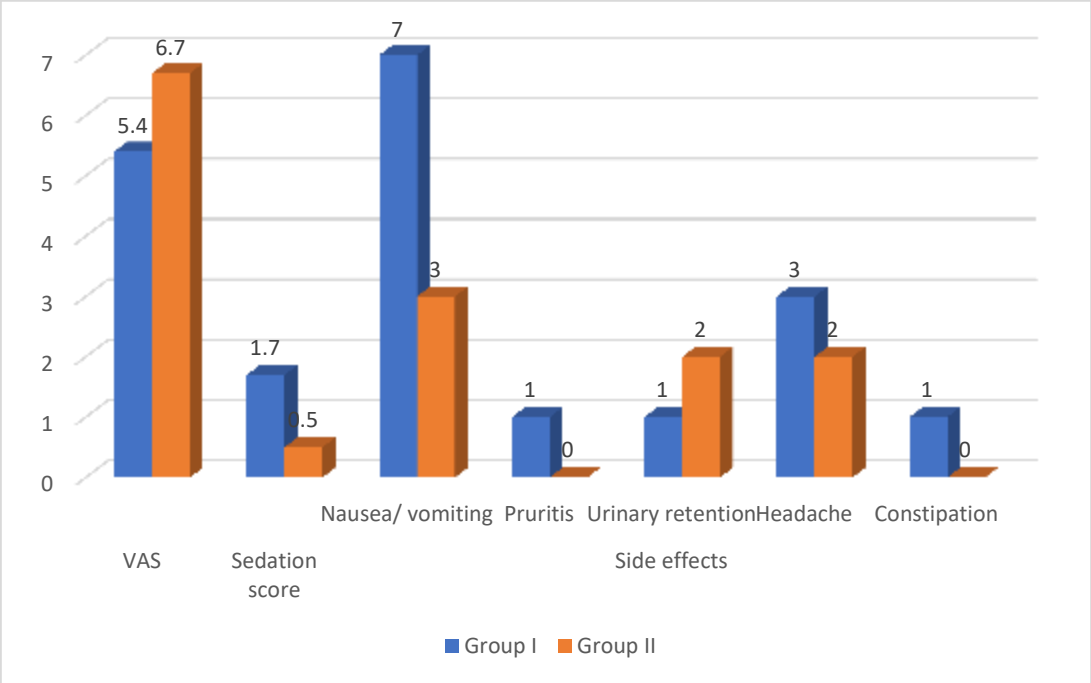


Table II Comparison of parameters

Parameters	Variables	Group I	Group II	P value
VAS		5.4	6.7	0.08
Sedation score		1.7	0.5	0.01
Side effects	Nausea/ vomiting	7	3	0.05
	Pruritis	1	0	
	Urinary retention	1	2	
	Headache	3	2	
	Constipation	1	0	

Table II, graph II shows that mean VAS score in group I was 5.4 and in group II was 6.7. The mean sedation score in group I was 1.7 and in group II was 0.5. Common side effects was nausea/ vomiting seen in 7 in group I and 3 in group II, pruritis 1 in group I, urinary retention in 1 in group I and 2 in group II, headache 3 in group I and 2 in group II, constipation 1 in group I. The difference was significant (P< 0.05).

Graph II Comparison of parameters



DISCUSSION

The relief of post- operative pain is a subject, which has been receiving an increasing amount of attention in the past few years.[7,8] 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.[9]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.[10,11]The present study assessed the role of gabapentin as a pre-emptive analgesic in modified radical mastectomy.

In present study, mean age in group I was 46.4 years and in group II was 48.2 years. The mean weight in group I was 52.8 kgs and 53.1 kgs in group II. Duration of surgery was 1.9 hours in group I and 2.8 hours in group II. Duration of post- op analgesia was 5.1 hours in group I and 1.9 hours in group II. We found that mean VAS score in group I was 5.4 and in group II was 6.7. The mean sedation score in group I was 1.7 and in group II was 0.5. Common side effects was nausea/ vomiting seen in 7 in group I and 3 in group II, pruritis 1 in group I, urinary retention in 1 in group I and 2 in group II, headache 3 in group I and 2 in group II, constipation 1 in group I. VK Verma et al[12] 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 hours prior to surgery produced effective and significant postoperative analgesia after total mastectomy and axillary dissection without significant side effects.

Dirks et al[13] in their study concluded that single dose of 1,200 mg oral gabapentin resulted in a substantial reduction in postoperative morphine consumption and movement-related pain after radical mastectomy, without significant side effects. Amr et al[14] investigated the analgesic efficacy of Venlafaxine and gabapentin on acute and chronic pain associated with cancer breast surgery. The study was carried out on 150 patients scheduled for either partial or radical mastectomy with axillary dissection. They were randomized in a double-blinded manner to receive, extended release Venlafaxine 37.5 mg/d, gabapentin 300 mg/d, or placebo for 10 days starting the night before operation. Pain scores were recorded at rest and movement (visual analog scale) at 4, 12, and 24 hours on the first day postoperatively, daily from the second to tenth day postoperatively and visual analog scale in addition to pain character 6 months later. Analgesic requirements were compared between the 3 groups. Pain after movement was reduced by gabapentin from the second to tenth postoperative day and venlafaxine group in the last 3 days but no difference was found between the groups regarding pain during rest. Gabapentin reduced morphine consumed in the first 24 hours postoperatively. The analgesic requirements from the second to tenth days for codeine and paracetamol were reduced in venlafaxine and gabapentin groups compared to the control group. Six months later, the incidence of chronic pain, its intensity, and need for analgesics were reduced in venlafaxine compared to gabapentin and the placebo group. However, burning pain was more frequent in the control groups than in the gabapentin.

CONCLUSION

Authors found that gabapentin prolongs postoperative analgesia as compare to control group.

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