

Post Operative Analgesia after Vaginal Hysterectomy under Spinal Anaesthesia: A comparative study between Gabapentin and Pregabalin

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ABSTRACT

Introduction: Failure to provide postoperative pain relief is morally and ethically unacceptable. The aim of present study was to evaluate post-operative analgesic benefit in patients administered pregabalin or gabapentin as premedication for surgery under spinal anaesthesia for vaginal hysterectomy and to compare their postoperative efficacy with respect to duration of analgesia, total post-operative requirements of analgesics and to study the side effects and complications attributable to these drugs.

Material and Methods: This prospective randomized study was conducted after ethical clearance where single dose of Gabapentin (900mg) was compared with Pregabalin (300mg) given to patients preoperatively. In this study 60 patients were scheduled for vaginal hysterectomy with 30 patient in each group ranging from 30-60 years in grade I and II of American Society of Anaesthesiologist's (ASA) classification. Time from Spinal to rescue analgesia (in minutes), rescue analgesic consumption and complications was recorded in 24 hours post operatively. Data were analysed using SPSS ® 16.0 (software version, USA). Two sample paired T-Test was used to find out significance between two samples. Data was reported as mean value \pm S.D. A P-value of < 0.05 was considered statistically significant.

Results: The group G and group P were comparable with respect to demographic characteristics like age, weight, ASA physical status and duration of surgery. The total postoperative analgesic duration i.e. time from spinal analgesia to first dose of analgesic was 245.46 ± 7.42 mins in Group G whereas 366.1 ± 9.11 mins in Group P, which was highly significant ($P < 0.00$). Mean dose of analgesic given in first 24 hrs was lower in group P 102.96 ± 5.32 mg as against 176.26 ± 19.31 mg in group G which was statistically significant ($P < 0.00$).

Conclusion: Gabapentin and pregabalin had significant effect in relieving postoperative pain when given preemptively. Pregabalin has superior efficacy with respect to quality and duration of analgesia when compared with gabapentin.

Keywords: Vaginal Hysterectomy, Postoperative pain, Pregabalin, Gabapentin

as nonsteroidal anti-inflammatory drugs, local anesthetic drugs, gabapentinoids, clonidine, and dexmedetomidine has been used to decrease the post operative pain via different mechanism.

In our study preemptive use of gabapentin and pregabalin was compared for postoperative analgesic benefits in patients for vaginal hysterectomy.

Pregabalin is a structural analogue of gammaamino butyric acid, which shares some characteristics with its predecessor, gabapentin. However the pharmacokinetics of pregabalin is superior to gabapentin.⁴ Pregabalin and gabapentin both reduces the preoperative anxiety and induce sedation without producing much undesirable side effects.⁵ Various studies has shown usefulness of pregabalin and gabapentin in acute postoperative pain^{6,7} and preventing the acute nociceptive pain of surgery. Both these drugs have been found to decrease postoperative opioid requirement.^{8,9}

The aim of present study was to evaluate post-operative analgesic benefit in patients administered pregabalin or gabapentin as premedication for surgery under spinal anaesthesia for vaginal hysterectomy and to compare their postoperative efficacy with respect to duration of analgesia, total post-operative requirements of analgesics and to study the side effects and complications attributable to these drugs.

MATERIAL AND METHODS

This prospective randomized study was conducted in Krishna hospital and research centre in department of Anaesthesiology where single dose of Gabapentin was compared with Pregabalin given to patients preoperatively. In this study 60 patients were scheduled for vaginal hysterectomy with 30 patient in each group ranging from 30-60 years in grade I and II of American Society of Anaesthesiologist's (ASA) classification. Patients in Group G were given single dose of the gabapentin 900 mg whereas in Group P single dose of pregabalin 300 mg per oral 1 hour prior to administration of spinal anaesthesia in patients undergoing vaginal hysterectomy. Patient refusal, patients on anti epileptics, analgesics, anti platelets or on anticoagulants, known allergy to the trial drugs, ASA grade III or more, any contraindication to

INTRODUCTION

Postoperative pain relief is basic human right. Pain occurring after surgery is due to tissue damage. Although pain is a predictable part of the postoperative experience, inadequate management of pain is common and can result in clinical and psychological changes that increase morbidity and mortality as well as costs and that decrease quality of life.^{1,2} Reduction in the length of the hospital stay and prevention of development of chronic pain depends on appropriate management of post operative pain³ Opioids are being used since long time for postoperative pain relief but have their own limitations. Various other drugs such

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Demographic data	Group G	Group P	P value
Age (Years)	54.43±3.73	54.0±3.91	0.384 (NS)
Weight (Kg)	55.9±5.67	56.46±4.87	0.602 (NS)
Duration of Surgery (Mins)	100.80±7.20	100.00±6.61	0.497 (NS)
Physical status			
ASA I	25 (83.%)	23 (76.7%)	0.519 (NS)
ASA II	5 (16.7%)	7 (23.3%)	0.621 (NS)

Table-1: Demographic Characteristic, physical status and duration of surgery.

	Group G	Group P	P value
Time to rescue analgesia (mins)	245.46± 7.42	366.1± 9.11	0.00 (S)
Total dose of Analgesic (mg)	176.26±19.31	102.96± 5.32	0.00 (S)

Table-2: Time from Spinal to Rescue Analgesia (in minutes) and Rescue analgesic consumption

Complications	Group G	Group P	P value
Nausea/ vomiting	4(13.3%)	1(3.33%)	0.083 (NS)
Dizziness	4(13.3%)	3(13.3%)	0.326(NS)
Somnolence	7(23.3%)	8(26.6%)	0.326(NS)
Vertigo	0	0	-
Ataxia	0	0	-
Urinary retention	0	0	-

Table-3: Comparison of post operative side effects

spinal anesthesia, impaired kidney or liver functions, history of chronic pain or daily intake of analgesics, uncontrolled diabetes mellitus and hypertension, history of intake of non steroidal anti-inflammatory drugs within 24 h before surgery were excluded from the study. After ethical committee clearance the patients were randomly allocated into two equal groups and analysed the data statistically. All the patients undergone pre anaesthetic evaluation, routine blood and radiological investigation. Written informed consent was obtained from all of the patients.

All the patients were preloaded with Inj. Ringer Lactate 10ml/kg body weight. Spinal anaesthesia was administered with 3 ml of 0.5% bupivacaine (15mg). No other premedication, analgesic or sedative drugs were given before or during the surgery. Intra operative monitoring for pulse rate, blood pressure, SpO₂, ECG and any complications were done. Preoperatively patients were educated about visual analogue scale. Visual analogue scale consists of numbering from 1 to 10 in a scale where below 4 is considered as no pain whereas above 7 is considered as worst pain. Pain was assessed by visual analogue scale immediate postoperatively and every 2 hrly thereafter. Any patient with the visual analogue scale score more than 3 was given Inj. diclofenac 1mg/kg IM. Time since spinal anaesthesia to the first dose of analgesic and total dose of analgesic in first 24 hours was recorded. After the spinal block HR, RR, NIBP, MAP and SpO₂ were measured every 5 mins. intraoperatively and then every 15 mins. in postoperative period. Any complications like dizziness, somnolence, Nausea, vomiting, confusion, vertigo, Ataxia, visual disturbances and urinary retention were recorded in first 24 hrs.

STATISTICAL ANALYSIS

Data were collected and analysed using SPSS ® 16.0 (software version, USA). Two sample paired T-Test was used to find out significance between two samples. Data was reported as mean value ±S.D. A P-value of < 0.05 was considered statistically significant.

RESULTS

The groups G and P were comparable with respect to demographic characteristics like age, weight, ASA physical status and duration of surgery (Table 1).

The intraoperative hemodynamic values i.e. mean blood pressure, heart rate and SpO₂ were similar. The total postoperative analgesic duration i.e. time from spinal analgesia to first dose of analgesic was 245.46± 7.42 mins in Group G whereas 366.1± 9.11mins in Group P, which was highly significant (P < 0.00). Mean dose of analgesic given in first 24 hrs was lower in group P 102.96 ±5.32 mg as against 176.26±19.31 mg in group G which was statistically significant (P<0.00).

Table 3 shows comparison of complications in Group G and group P. Nausea and vomiting was observed in 4 patients of group G while only one patient in Group P had nausea and vomiting. Dizziness and somnolence were comparable in both groups. No other side effects such as ataxia, vertigo, visual disturbances and headache were observed in either group.

DISCUSSION

Preemptive or preincisional analgesia is found very effective in reducing postoperative pain. Histamine and other inflammatory mediators and neurotransmitters released during surgery activate peripheral nociceptors causing pain.¹⁰ A number of drugs like opioids, NSAIDs, ketamine, gabapentinoids have been used in multimodal approaches to achieve postoperative analgesia.¹¹⁻¹³ Gabapentin and pregabalin have antihyperalgesic and antiallodynic properties useful for treating neuropathic pain and may also be beneficial in acute postoperative pain. Gabapentin and Pregabalin has been shown to be effective in reducing postoperative pain, prolongation of analgesia and decreasing analgesic requirement and side effects in several studies.¹⁴⁻¹⁷ Pregabalin in doses of 300mg was found to have better pain relief and better decrease in pain intensity in studies conducted by Hill, et al. Wichai, et al. and R. Jokela, et al.¹⁸⁻²⁰ Gabapentin in doses of 1200 mg has been used in many studies.²¹ In our study 900mg of Gabapentin was used so as to find its efficacy in post operative pain with reduced side effects.

In our study it was found that in vaginal hysterectomies under spinal anaesthesia without the use of any opioids or NSAIDs, when gabapentin and pregabalin is given preemptively can increase the analgesic effects of spinal anaesthesia. The analgesic effects of pregabalin was 366.1± 9.11 mins which was significantly higher than gabapentin i.e. 245.46± 7.42mins. Our findings was comparable with the study of Kumar S²² where

preemptive pregabalin and gabapentin were compared for postoperative analgesia in hip surgeries.

Total doses of analgesics in pregabalin group was also significantly lower as compared to gabapentin group which was also comparable to Kumar S study.²²

The side effects like nausea vomiting, somnolence and dizziness though present in both groups but were not disabling. Pregabalin in our study has superior efficacy in respect to quality and duration of analgesia as compared to gabapentin but its long term effectiveness in chronic pain syndrome following postoperative pain has not been established.

CONCLUSION

Both Gabapentin (900mg) and Pregabalin (300mg) are effective for post operative analgesia when given preoperatively in short duration surgeries under spinal anaesthesia. Pregabalin has superior efficacy in respect to quality and duration of analgesia when compared with gabapentin. Both Gabapentin and Pregabalin didn't provide long term pain relief.

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