

# Comparative Analysis between Intravenous Ondansetron and Granisetron in Attenuation of Hypotension during Spinal Anaesthesia in Patients Undergoing Caesarean Section

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## Abstract

**Background:** The aim was to evaluate the Ondansetron and Granisetron to avert hypotension and bradycardia induced by spinal anesthesia within subjects that required to undergo cesarean sections. **Subjects and Methods:** One Hundred and five patients were incorporated in the research. Subjects were separated into 3 groups group A (n=35) consist subjects that acknowledged intravenous 4 mg Ondansetron that was diluted in normal saline, Group B consist subjects that got intravenous 1 mg Granisetron that was diluted in normal saline and group C (n=35) got 10 ml intravenous normal saline 5 minutes earlier to subarachnoid Block. **Results:** All groups were statistically analogous to baseline systolic blood pressure (SBP). It was considerably fewer in Granisetron group as contrast to Ondansetron group 5 minutes. Diastolic blood pressure was statistically analogous amid all groups at baseline. The mean blood pressure was statistically similar amid the 3 groups at baseline. **Conclusion:** Intravenous Ondansetron 4 mg administrations earlier to spinal anaesthesia reduce the events of hypotension, bradycardia and vasopressor necessity in LSCS Subjects. Granisetron had no consequence on haemodynamic factors. There were considerably fewer occurrences of postoperative Nausea and Vomiting in Ondansetron and Granisetron group.

**Keywords:** Hypotension, Granisetron, Haemodynamic parameters, Ondansetron.

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## Introduction

The main aim of the anaesthesia is to decrease ache through and following surgeries.<sup>[1]</sup> Favoured technique for anesthesia for gynecological and obstetric surgeries is the subarachnoid block. Subarachnoid block is easy to carry out, bears elevated effectiveness, engages fewer drug doses, inexpensive, quick onset, consistency, small failure rate, abridged incidents of nausea and vomiting which evades consequences of multiple drugs utilized in general anaesthesia, maintaining the woman aware to observe her baby immediately following birth.<sup>[2]</sup> Hypotension grounds by SAB are physiologically remunerated by an enhance in heart rate. Nevertheless, if vagus nerve mediated cardiodepressor reflex like Bezold Jarisch reflex gets enthused, after that cardiac autonomic equilibrium acquires transfered towards the parasympathetic nervous system important to bradycardia, doing additional rushed hypotension.<sup>[3]</sup>

Numerous investigators have advocated utilization of diverse strategies like preloading, coload of intravenous fluids, fluid boluses vasopressors, and compression tool with changeable achievement rate in counteracting spinal anaesthesia induced hypotension.<sup>[4,5,6]</sup> Ephedrine is chosen

lest of bradycardia, subjects by conciliation cardiac function and utero-placental deficiency. Commencement of BJR receptors grounds augments parasympathetic nervous system action and restrains sympathetic action guide to drop in blood pressure and heart rate connected with apnea.<sup>[7]</sup> Aim of current research was to evaluate the Ondansetron and Granisetron to avert spinal induced hypotension and bradycardia following spinal anesthesia in subjects experience LSCS.

## Subjects and Methods

One Hundred and five patients fit in to ASA class-I and II, aged 19-41 years, and period of surgery as regards 1 hour were incorporated in the present research. Subjects fit in to age group 18 to 60 years age group, American society of anaesthesiologists, physical status 1 or 2 planned for optional infraumbilical non-obstetric surgery under spinal anaesthesia were monitor for the research. Patient's refusal, general contraindication to spinal anaesthesia, patients on medications known to alter cardiac rate and contractility, known allergic reaction to study drugs and bupivacaine. One Hundred and five Subjects full filling the inclusion criteria were incorporated for the research after acquired

written informed consent. Randomization succession into one of the three groups was complete prior to beginning of research by computer generated arbitrary number table and sealed opaque envelop technique. Subjects were separated into 3 groups group A (n=35) established intravenous 4 mg Ondansetron diluted in normal saline, group B (n=35) established intravenous 1 mg Granisetron diluted in normal saline and group C (n=35) established 10 ml intravenous normal saline 5 minutes prior to subarachnoid Block.

A pre-anesthetic checkup was completed. Five mins prior to spinal anaesthesia research solution was infused intravenously. Following in every aseptic circumstances lumbar puncture was completed in lateral decubitus location at L3-L4 or L4-L5 inter-space in midline approach via 25G Quincke needle. Following free flow of CSF 10mg (2ml) 0.5% hyperbaric bupivacaine was injected intrathecally. Oxygen at 4.0 L/min was prearranged by ventury mask to subjects. Upper level of block was checked by pin-prick technique from caudal to rostral route following 5 minutes and following each 2 minutes till sufficient level of block (T) was accomplished.

**Statistical analysis**

The recorded data exported to data editor page of SPSS version 15. For all tests, confidence level and level of significance were set at 95% and 5% respectively.

**Results**

Mean age of the Subjects, body weight of Subjects and mean period of surgery in every 3 groups were statistically analogous. Baseline Clinical Variables those were statistically analogous in every groups. [Table 2]

SBP was considerably fewer in Granisetron group as contrast to Ondansetron group 5 minutes. DBP was statistically similar amid all groups at baseline. DBP was considerably fewer in Group A as compared to Group B. It was appreciably inferior in Group A and C as contrast to Group B at majority of times following drug management. The MBP was statistically similar amongst all groups at baseline (P>0.05). MAP reduced in every groups following direction of individual drug, except MAP was considerably lesser in Group A and C as contrast to Group B at every period till 60 minutes record.

Shivering was observed in 5 patients in Group A and Group B and 9 patients in Group C. All 3 groups also did not vary considerably in sight of pain and bradycardia. Nausea and vomiting was extensively additional Group C as compared to Group A and B.

**Table 1: Demographic variables**

| Variable                 | Ondansetron Group (Mean±SD) | Granisetron Group (Mean±SD) | Normal saline Group (Mean±SD) | P value |
|--------------------------|-----------------------------|-----------------------------|-------------------------------|---------|
| Age (Years)              | 30.14±5.2                   | 28.4±4.14                   | 28.01±5.24                    | 0.5     |
| Weight (Kg)              | 62.02±8.4                   | 64.17±9.2                   | 64.67±10.2                    | 0.09    |
| Duration of Surgery (kg) | 60.03±2.4                   | 60.01±3.10                  | 59.90±4.65                    | 0.2     |

Statistically significant at p≤0.05

**Table 2: Baseline Clinical Variables**

| Variable     | Ondansetron Group (Mean±SD) | Granisetron Group (Mean±SD) | Normal saline Group (Mean±SD) | P value |
|--------------|-----------------------------|-----------------------------|-------------------------------|---------|
| Heart Rate   | 95.02±10.4                  | 98.4±13.4                   | 95.02±5.26                    | 0.6     |
| Systolic BP  | 128.47±14.9                 | 127.9±10.4                  | 130.23±10.7                   | 0.1     |
| Diastolic BP | 80.4±2.2                    | 81.10±9.2                   | 79.7±8.12                     | 0.30    |
| MAP          | 95.99±10.7                  | 96.12±11.2                  | 96.02±10.4                    | 0.08    |

Statistically significant at p≤0.05

**Discussion**

Maternal hypotension is chief perioperative obstacle subsequent spinal anaesthesia. Present research is based on 2 drugs Ondansetron and Granisetron, which can diminish occurrence of maternal hypotension following spinal anaesthesia.

In current research the mean age of subjects in Group A, Group B and Group C were 30.14±5.2, 28.4±4.14 and 28.01±5.24 years correspondingly which were similar among groups. Period of surgery of subjects in all groups was 60.03±2.4 min, 60.01±3.10 min and 59.90±4.65 min correspondingly which was akin between the groups. Present research result are not in accordance with various studies encompassing of non-obstetric patients who received 6-12 mg of ondansetron IV along with 15-20 mg of plain bupivacaine.<sup>[8,9]</sup>

Findings demonstrate that baseline parameters were similar statistically in all 3 groups. SBP, DBP and MBP were considerably inferior in Group A and Group C as contrast to Group B group. MAP reduces in all groups after organization of particular drug.

In the present research shivering was observed in 5 of patients in Group A and Group B and 9 patients in Group C. Nausea and vomiting was observed in statistically extra patients in Group C as contrast to Group A and B. The current research is in agreement with Terkawi AS et al., who utilized bupivacaine plus opioid intrathecal regimen like us next to with 8 mg IV ondansetron but did not monitor any valuable consequence of ondansetron on spinal anaesthesia induced haemodynamic changes.<sup>[10]</sup> Terkawi AS et al afterward carry out a meta-analysis of 14 randomised control trial and their subgroup analysis exposed that ondansetron has insignificant consequence on reduction of spinal anaesthesia induced hypotension and bradycardia in non-obstetric group 11 Terkawi As et al established no statistically noteworthy dissimilarity in mean ABP among normal Group B and Group C.<sup>[11,12]</sup>

**Conclusion**

Ondansetron 4 mg administration earlier to spinal anaesthesia decreases the incidents of hypotension, bradycardia and vasopressor condition in LSCS patients. Granisetron had no consequence on haemodynamic factors.

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