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STUDY ON EFFECT OF INTRATHECAL INJECTION MIDAZOLAM ON VOMITING IN WOMEN UNDERGOING ELECTIVE CAESAREAN DELIVERY UNDER SPINAL ANESTHESIA

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ABSTRACT

Nausea and vomiting are the most common side effects in the post anaesthetic care unit. But post operative nausea and vomiting have received less attention, though there are extensive literature, data are frequently difficult to interpret and compare. There are many different modes of interventions to prevent Nausea and Vomiting. Antiemetic drugs play an important role in therapy of Nausea and Vomiting. Though many drugs have been tried as prophylaxis and treatment of Nausea and Vomiting, no drug has been proved significantly effective and a search for a better The present study is conducted to findout astounding efficacy of intrathecal midazolam for prevention of nausea and vomiting during surgery drug continues. In a randomized single blind manner, 50 women (ASA Grade I and II) undergoing elective caesarean delivery were enrolled for the study with 0.5% hyperbaric bupivacaine 2ml (10mg) spinal. Emetic episodes were recorded during anesthesia and in the initial period after caesarean delivery (0 – 6hrs). The incidence of patients who were emesis – free in the intraoperative and postoperative period was 49 (98%) with intrathecal midazolam. No clinically important adverse events were observed. We conclude that use of intrathecal midazolam (2mg) is more effective for preventing nausea and vomiting in women undergoing caesarean delivery under spinal anesthesia with bupivacaine (0.5%) hyperbaric.

Key Words: Nausea, Vomiting, Caesarean delivery, Antiemetics, Midazolam, Spinal anesthesia.

INTRODUCTION

The problem of nausea and vomiting is a very old but a less thought of problem. Before any specific anti-emetic agents became available, various techniques, including olive oil and insulin glucose infusions were reported to be effective in reducing the incidence of post operative nausea and vomiting. Today the antiemetic drugs are the mainstay of therapy for PONV. Gastrointestinal prokinetic drugs with anti-dopaminergic actions are metoclopramide and domperidone. Phenothiazines (eg, Prochlorperazine, Perphenazine) and butyrphenones (eg, Droperidol) have anti-emetic properties resulting from anti dopaminergic actions. Midazolam has been studied in the last 15-20 years both for prevention and, less frequently, for treatment of established and persistent PONV. In a study with 393 children undergoing strabismus surgery significantly reduces Nausea and Vomiting with IV Midazolam without any side effects [1]. In a randomized study comprising 52 patients scheduled for elective caesarean section under spinal anesthesia showed that intrathecal midazolam is safe and free of side effects and also effective in post operative analgesia and in the control of post operative nausea and vomiting [2]. The previous study provides an updated review of the physiology of vomiting, factors associated with PONV and therapeutic measures available for the prevention and management of established PONV. He describes PONV as “big little problem” the “final therapeutic challenge” for our specialty and the “big, big problem of ambulatory surgery [3].

A study comprising 40 women posted for elective caesarean delivery, showed that intrathecal

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midazolam 2mg provides adequate postoperative analgesia and prevents nausea and vomiting as an added advantage [4]. The following observation was found in a double blind study on 45 patients undergoing haemorrhoidectomy under spinal anesthesia, that intrathecal midazolam effectively reduced the incidence of Nausea and Vomiting [5]. In a review the recent work in terms of risk factors and indices, as well as the efficacy of available drugs, with a focus towards the ability to provide evaluation, risk stratification, and a plan for management during the preoperative assessment process [6].

A study was conducted on 100 children aged 10 – 12 years undergoing lower abdominal and perineal surgeries under General Anesthesia gave a conclusion that IV midazolam is effective antiemetic in reduction of intraoperative and postoperative nausea and vomiting [7]. A double blind randomized study in elective caesarean delivery under spinal anesthesia, conclude that intrathecal midazolam 2mg is safe and excellent compared to intravenous metaclopramide 10mg in prevention of emetic episodes [8]. In a randomized double blind study Intrathecal midazolam 2mg as an antiemetic agent showed that it is most effective in prevention of Nausea and Vomiting during intraoperative and early post operative period in caesarean delivery under spinal anesthesia [9].

A cohort study was conducted in 1100 patients with intrathecal midazolam in 547 patients. They gave a conclusion that 0.03mg/kg intrathecal midazolam is safe without adverse effects [10]. A prospective randomized double bind clinical study was performed in 200 patients undergoing elective coronary artery bypass grafting using continuous infusion of Midazolam 0.02mg/kg/hr as antiemetic and conclude that Midazolam is an effective and superior antiemetic compared to other antiemetic [11]. In a special article they stated that intrathecal midazolam in humans reduces post operative nausea and vomiting, increases analgesic efficacy of other intrathecal drugs and no side effects such as hypotension and bradycardia and is a safe intrathecal adjuvant [12]. A comparative study was conducted on 453 patients scheduled for elective gynecological and abdominal surgeries conclude that IV midazolam 1 and 2mg were effective antiemetic in treating PONV without untoward effects [13]. A double blind study was carried out in 53 patients to compare the effect of intrathecal midazolam bupivacaine combination on post operative analgesia and conclude that midazolam provides longer duration of analgesia and effectively reduces Nausea and Vomiting [14]. The present study is conducted to find out the effect of Midazolam on Nausea and Vomiting in women undergoing elective caesarean delivery under spinal anesthesia.

MATERIALS AND METHODS

The present clinical study was conducted in 50 women undergoing elective LSCS under spinal anesthesia in Bapuji Hospital, Chigateri General Hospital and Women and Children Hospital attached to J.J.M.Medical College, Davanagere. The Women aged between 19 – 30 years. Women belonging to ASA I and II grade scheduled for elective LSCS under spinal anesthesia.

All patients received premedication with ranitidine 150mg orally and remain nil orally after 10pm the night before surgery. When the patient was brought to the operation theatre, her pulse rate, BP, respiratory rate and SpO_2 were recorded. An IV access with 18G cannula was obtained. Each patient preloaded with 20 ml/kg of ringer lactate solution before the spinal anesthesia to prevent hypotension. 50 patients were received injection Midazolam 2mg intrathecally along with Bupivacaine H 0.5% during subarachnoid block. The different parameters were noted and recorded in tabular form.

RESULTS

The level of anesthesia was considered sufficient for the surgical procedure as an adequate sensory block up to T_6 was documented in all the patients. During intraoperative and postoperative period only one woman (2%) out of 50 women who had received intrathecal midazolam experienced nausea and vomiting and rest 49 women (98%) were emesis free. The results of different parameters as follows.

Table 1. Maternal demographics

Patients	Midazolam 2 mg Intrathecal (n = 50)
Age (years)	24.18 ± 3.08
Weight (kg)	60.41 ± 6.93
Gestational age (week)	38 ± 0.60
Multiparous (n)	8
Baseline blood pressure (mm Hg) Systole Diastole	 125 ± 7.21 80 ± 6.01
Pulse rate / min.	85.5 ± 8.73
Respiratory rate / min	15 ± 1

Values are mean ± SD or number of patients

Table 2. Operative management

Patients	Intrathecal Midazolam 2mg (Group II) (n = 50)
Duration of surgery (min)	57.5 ± 15.10
Duration of exteriorization of uterus (min)	17.5 ± 4.86
Hypotension	3 (6%)
Apgar score At 1 min At 5min	 8 ± 0.64 10

Values are mean ± SD or number of patients

Table 3. Emesis (Episodes)

Time	Midazolam
1st hour	1
2nd hour	1
3rd hour	0
4th hour	0
6th hour	0

Table 4. Nausea grades

Time	Midazolam
1st hour	05
2nd hour	02
3rd hour	00
4th hour	00
6th hour	00

Incidence of nausea was more common in 1st hour and decreases with time

Table 5. Number of patients free of emetic episodes and with emetic episodes from 0 – 6 hours after spinal anesthesia

Treatment	Vomiting Absent	Vomiting Present
Intravenous metoclopramide 10mg (Group I) (n = 50)	39 (78%)	11 (22%)

DISCUSSION

Postoperative nausea and vomiting is the most distressing and unpleasant experience for a patient undergoing anesthesia and surgery. Furthermore, severe postoperative emesis may lead to dehydration, electrolyte imbalance, which in turn may alter the overall outcome of the entire surgical procedure. Postoperative vomiting may though rarely, lead to a life threatening complication like aspiration pneumonitis. The incidence of nausea and vomiting during spinal anesthesia for caesarean delivery is relatively high when no prophylactic antiemetic was given. Factors attributed are younger age, surgical skill, peritoneal traction, and exteriorization of the uterus, fundal pressure during difficult delivery, anaesthetic management and prevention of hypotension in women undergoing caesarean delivery with spinal anesthesia. However in our study, most of these factors were well controlled, so that any difference in emesis – free episodes during spinal anesthesia for caesarean delivery can be attributed to the study drugs. Midazolam hydrochloride is a potent imidazobenzodiazepine presented as an aqueous solution.

Midazolam acts through GABA receptors which are abundantly present in the dorsal horn of the spinal cord with the highest density of these receptors found within lamina II of dorsal horn ganglia. Administration of exogenous benzodiazepines into the CSF around spinal cord reached GABA receptors in high concentration and could have a pronounced effect on local GABA activity. Therefore benzodiazepines can gain access to analgesic system mediated by GABA. GABA is synthesized from glutamate in the presynaptic nerve ending and is generally inhibitory in effect.

GABA on binding with $GABA_A$ receptors opens Ligand gate chloride channels. Chloride conductance is increased, leading to hyperpolarisation and presynaptic inhibition of afferent terminals in spinal cord. This results in less central propagation of action potential carrying nociceptive stimuli information. Intrathecal midazolam has

been used in man have been described to provide pain relief without any side effects. In the current study we have demonstrated that the number of emesis – free women were 49 (98%) was higher with intrathecal midazolam than in those who had received intravenous metoclopramide were 39 (78%).

CONCLUSION

It has been observed in the present study that the addition of preservative free midazolam 2mg to 0.5%hyperbaric bupivacaine for spinal anesthesia significantly reduced the incidence of nausea and vomiting, no side effects were observed in our study and added advantage is significant increase in duration and quality of anesthesia.

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CONFLICT OF INTEREST: NIL

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