e - ISSN - 2348 - 2168
Print ISSN - 2348 - 215X

Acta Biomedica Scientia

Journal homepage: www.mcmed.us/journal/abs

STUDY ON EFFECT OF METOCLOPRAMIDE IV ON NAUSEA AND VOMITING IN WOMEN UNDERGOING ELECTIVE CAESAREAN DELIVERY UNDER SPINAL ANAESTHESIA

Henjarappa KS [1], Gowda VB[2], Pavan P Havaldar[3], Shaik Hussain Saheb*[4]

[1]Assistant professor, Department of Anesthesia, Kidwai Memorial Institute of Oncology, Bangalore, Karnataka, India.
[2]Associate professor, Department of Anesthesia, Kidwai Memorial Institute of Oncology, Bangalore, Karnataka, India.
[3]Associate Professor, Department of Anatomy, Gadag Institute of Medical Sciences, Gadag, Karnataka, India.
[4]Assistant Professor of Anatomy, JJM medical College, Davangere, Karnataka, India.

Article Info

Received 29/07/2015
Revised 16/08/2015
Accepted 19/08/2015

Keywords :-
Nausea, Vomiting, Caesarean delivery, Antiemetics, Midazolam, Spinal anaesthesia.

ABSTRACT

The common and distressing symptoms which follow anaesthesia and surgery are pain, nausea and vomiting. Nausea and vomiting have been associated for many years with the use of general anaesthetics for surgical procedures. In spite of the advances like using less emetic anaesthetic agents, improved pre and post operative technique and identification of patient predictive factors, nausea and vomiting still occur with unacceptable frequency in association with surgery and anaesthesia, and is described as "the big little problem". Antiemetic drugs play an important role in therapy of Nausea and Vomiting. This present study is conducted to find out the antiemetic effect of Metoclopramide. 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 anaesthesia. Emetic episodes were recorded during anaesthesia 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 39 (78%) with intravenous metoclopramide. No clinically important adverse events were observed. We conclude that use intravenous metoclopramide (10mg) effective for preventing nausea and vomiting in women undergoing caesarean delivery under spinal anaesthesia with bupivacaine (0.5%) hyperbaric.

INTRODUCTION

The common and distressing symptoms which follow anaesthesia and surgery are pain, nausea and vomiting. 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.

Corresponding Author

Shaik Hussain Saheb
Email: - anatomyshs@gmail.com

Nausea and vomiting have been associated for many years with the use of general anaesthetics for surgical procedures. First extensive description was given by John Snow, published in 1848. PONV may be associated with wound dehiscence, pulmonary aspiration of gastric contents, bleeding, and dehydration and electrolytes disturbances. Hence vomiting can potentially delay hospital discharge or lead to unexpected hospital admissions and increased hospital cost and can result in serious medical and surgical complications. Metoclopramide is in use as antiemetic for many years but intrathecal midazolam as antiemetic is being used recently.

Pharmacology of Metoclopramide - Metoclopramide hydrochloride is a dopamine receptor antagonist and a potent prokinetic drug which stimulates motility of the upper gastrointestinal tract leading to rapid gastric emptying and is used in the management of some form of nausea and vomiting and in gastro esophageal reflux and stasis. Metoclopramide hydrochloride is a white, odorless, crystalline powder. Metoclopramide hydrochloride 10.5 is equivalent to 10mg anhydrous substance and 8.9mg of anhydrous base. It is soluble in water. 10% solution in water has a pH of 4.5 – 6. It is stored in airtight container and is protected from sunlight. It is compatible with cephalathin sodium chloramphenical and sodium bicarbonate.

Mechanism of action: It stimulates motility of upper GIT leading to accelerated gastric emptying. Duodenal peristalsis is also increased which decreases intestinal transit time. The resting tone of lower gastro oesophageal sphincter is increased. Relaxes pyloric sphincter and duodenum during contraction of stomach. It possesses parasympathomimetic activity as well as being a dopamine receptor antagonist with a direct effect on chemoreceptor zone.

Pharmacokinetics: It is rapidly and almost completely absorbed from gut. Peak plasma concentrations occur at about 2 – 3 hours, it undergoes hepatic first pass metabolism its bioavailability is about 85%. It is widely distributed in body with apparent volume of distribution of about 3.5L/ kg. It readily crosses blood brain barrier and placenta. It also secreted in breast milk. Its elimination is biphasic with terminal elimination half life of about 4 – 6 hours although it may be prolonged in renal failure. It is excreted in the urine. About 85% is eliminated in 72 hours 20 – 30 % unchanged and remainder as sulphate or glucuronide conjugate. 5% is excreted in feaces via bile.

Adverse effects: It may cause extra pyramidal syndrome, Parkinsonism and tardive dyskinesia. Prolactin secretion, drowsiness, dizziness, headache and bowel upsets are common side effects. Other side effects are hypertension, depression, blood disorders, hypersensitivity reaction, neuroleptic malignant syndrome and urinary incontinence. It may prolong succinic choline block. Antimuscarinic agents and opioids antagonize its effects. Absorption of other drugs may be affected[1,2,3].

The Clinical uses of metoclopramide include - Preoperative decrease of gastric fluid volume, Production of antiemetic effect, Treatment of gastroparesis and Symptomatic treatment of gastroesophageal reflux. The present Is conducted to find out the effect of metoclopramide IV on Nausea and Vomiting in women undergoing elective caesarean delivery under spinal anaesthesia.

MATERIALS AND METHODS

The present clinical study was conducted in 50 women undergoing elective LSCS under spinal anaesthesia in Bapuji Hospital, Chigateri General Hospital and Women and Children Hospital attached to J.J.M.Medical College, Davanagere. 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 anaesthesia to prevent hypotension. 50 patients were received injection Metoclopramide 10mg IV, 3 – 5min before subarachnoid block. The parameters were recorded in tabular form.

RESULTS

The level of anaesthesia was considered sufficient for the surgical procedure as an adequate sensory block up to T_6 was documented in all the patients. Emetic episodes did not occur in 39 of 50 women (78%) and 11 woman (22%) had emetic episodes who had received intravenous metoclopramide. The results of different parameters as follows.

Table 1. Maternal demographics

Patients	Metoclopramide 10mg IV (Group I) (n = 50)
Age (years)	23.66 ± 3.13
Weight (kg)	62.10 ± 7.63
Gestational age (week)	38.± 1.77
Multiparous (n)	8
Baseline blood pressure (mm Hg) Systole Diastole	 115 ± 11.18 80 ± 8.16
Pulse rate / min.	88.8 ± 12.03
Respiratory rate / min	15 ± 1

Values are mean ± SD or number of patients.

Table 2. Operative management

Operative management	Intravenous Metoclopramide 10 mg (Group I) (n = 50)
Duration of surgery (min)	54 ± 17.21
Duration of exteriorization of uterus (min)	18.75 ± 5
Hypotension	9 (18%)
Apgar score At 1 min At 5min	 8 ± 0.64 10

Values are mean ± SD or number of patients

Table 3. Emesis (Episodes)

Time	Metoclopramide
1st hour	8
2nd hour	5
3rd hour	3
4th hour	2
6th hour	0

Table 4. Nausea grades

Time	Metoclopramide
1st hour	17
2nd hour	15
3rd hour	06
4th hour	05
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 anaesthesia

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

DISCUSSION AND CONCLUSION

Nausea and vomiting in post-operative period is not just an unpleasant and distressing experience, but may be a major factor in upsetting post-operative convalescence. It is common after spinal anaesthesia for caesarean section with reported incidence as high as 66%. Availability of a large number of agents which prevent the emesis, and continued research for newer drugs to treat emesis indicate the magnitude of the problems and lack of satisfactory results. Metoclopramide, and also other drugs were used in management of PONV with their advantages and disadvantages. Nausea and vomiting during regional anaesthesia for caesarean section is relatively high without prophylactic antiemetic[4,5]. The aetiology of emetic symptoms in women undergoing spinal anaesthesia for caesarean section is complex and depends on a variety of factors. Including maternal demographics, operative procedure and anaesthetic techniques, peritoneal traction and exteriorization of uterus[6,7]. Maternal hypotension after induction of spinal anaesthesia is related to an increased incidence of intraoperative and post-delivery emetic episodes. This hypotension may trigger the vomiting centre to induce emesis due to hypoxia. In these clinical trials, pre-loading, left uterine displacement, supplementation of oxygen and administration of incremental doses of ephedrine were performed for the prevention and early treatment of this hypotension. Metoclopramide has central and peripheral antiemetic action. Centrally it blocks dopamine receptors and peripherally it increases lower oesophageal tone. Its half life is approximately 3-4 hrs, but side effects of the agent are not desirable[8]. In the current study we have demonstrated that the number of emesis – free women were 39 (78%) with metoclopramide and concludes that metoclopramide is good effective drug in preventing nausea and vomiting in postoperative anaesthesia.

ACKNOWLEDGEMENT: NIL

CONFLICT OF INTEREST: NIL

REFERENCES

1. Craigo PA. (1996). Gastro-intestinal physiology and pharmacology; Aspiration of gastric contents and Postoperative nausea and vomiting; Chapter 21. Collins. V.J. Physiologic and Pharmacological bases of anaesthesia. 1st edition, Baltimore, Williams and Wilkins, 361 – 394.
2. Collins VJ. (1993**)**. Principles of Anaesthesiology. 3rd edition, Lea and Febiger, USA
3. Stoelting RK, Hillier SC. (2006*)*. "Pharmacology and Physiology in Anaesthetic Practice. 4th edition, Lippincott Williams and Wilkins, USA.
4. Santos A, Datta S. (1984). Prophylactic use of droperidol for control of nausea and vomiting during spinal anaesthesia for caesarean section. *Anesth Analg*, 84(63), 85-7.
5. Lussos S, Bader A, Thornhill M, Datta S. (1992). The anti-emetic efficacy and safety of prophylactic metoclopramide for elective caesarean delivery during spinal anaesthesia. *Reg Anaesthesia*, 17, 126-30.
6. Watcha MF, White PF. (1992). Post-operative nausea and vomiting: its etiology, treatment and prevention. *Anesthesiology*, 77, 162-84.
7. Manullang TR, Viscomi CM, Pace NL. (2000). Intrathecal fentanyl is superior to intravenous ondansetron for the prevention of perioperative nausea during caesarean delivery with spinal anaesthesia. *Anesth Analg*, 90, 1162-66.
8. Matson A, Palazzo M. (1995) Post-operative nausea and vomiting. In: Recent advances in Anaesthesia and Analgesia No. 19 (eds. Adams AP, Cashman JN) Lond)on; Churchill Livingstone, 107-26.