

Original Research Article

A comparative study of glycopyrrolate and dexamethasone in the control of postoperative nausea and vomiting after intrathecal fentanyl and bupivacaine for caesarean section

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ABSTRACT

Background: Postoperative nausea and vomiting (PONV) is an undesirable outcome that parturient who undergo caesarean section experience. We compare the efficacies of IV glycopyrrolate and IV dexamethasone as prophylaxis against PONV in these parturient.

Methods: This was a prospective, randomized, double blind placebo-controlled study of seventy six (76) ASA II patients aged 18-40 years who underwent elective caesarean section under spinal anaesthesia. Patients were randomly allocated to three groups, group G (glycopyrrolate): n=26, group D (dexamethasone): n=25 and group C (control; normal saline): n=25. Data collection was with the aid of a proforma which included the biophysical profile, Belville scoring scale for PONV, Likert scale was used for patient satisfaction and side effects were also documented. The data were analyzed using SPSS version 17 and presented in tables and figures.

Results: The demographic characteristics and mallampati scores of patients in all 3 groups were similar. The results showed that the incidence of PONV in group D was 8%, in group G 19.2% and in group C 32% (p= 0.048, OR= 0.185, 95% C.I for OR= 0.035 – 0.983). All patients expressed satisfaction in the care they received as assessed using the Likert scale and only patients who received IV glycopyrrolate experienced side effects in the form of dryness of the mouth. There were no side effects reported in patients who received IV dexamethasone.

Conclusions: The study demonstrated that IV dexamethasone 8mg was more effective in controlling PONV after intrathecal fentanyl and bupivacaine for caesarean section when compared to 0.2 mg IV glycopyrrolate.

Keywords: Parturient, Postoperative nausea, Vomiting, Glycopyrrolate, Dexamethasone

INTRODUCTION

Postoperative nausea and vomiting is defined as any nausea, retching, or vomiting occurring during the first 24-48 hours after surgery. It remains the most common complication following surgery and has become increasing worrisome despite measures targeted against it.^{1,2} With risk factors including the female gender, smoking, prior history of motion sickness, the use of volatile agents in general anaesthesia, prolonged surgery, opioid use and a previous history of PONV. The

worldwide incidence of PONV is 30% and even patients with no known risk factor, have an incidence as high as 10%.^{3,4}

In pregnant women undergoing caesarean section, the incidence can be as high as 60%.^{3,4} Postoperative nausea and vomiting, when severe can lead to dehydration, electrolyte imbalance, bleeding, wound dehiscence and aspiration of gastric contents to delay in discharge and unanticipated hospital re-admission with its antecedent effect on hospital cost.^{1,3}

Studies have shown that general anaesthesia increases the risk of PONV and where possible, regional anaesthesia should be used as it significantly lowers the risk of PONV.^{4,5} Regional anaesthesia has continued to gain popularity in obstetrics and so has the addition of intrathecal opioids as additives.⁶ Opioids like fentanyl can be used as adjuncts for regional anaesthesia and when used, produces intense analgesia. While studies have shown lower incidence of vomiting in the immediate perioperative periods following intrathecal fentanyl administration, the effect on pregnant women undergoing caesarean section is still unclear.¹

No single mechanism can explain PONV following regional anaesthesia and several mechanisms of action have been proposed.¹ Studies have shown that hypotension following spinal anaesthesia (systolic blood pressure <80 mmHg) is associated with nausea and vomiting.⁷ Administration of supplemental oxygen has improved PONV, suggesting that hypoxaemia at the vomiting centre could be a culprit.⁷ The incidence of nausea and vomiting decreased by the intravenous administration of atropine, suggesting that vagal stimulation may also play a role via action on higher centres.⁷

There is no general consensus about the most appropriate antiemetic prophylaxis for the prevention of PONV. Thus, there was a need to carry out this prospective study to compare IV glycopyrrolate and IV dexamethasone as prophylactic agents against PONV in women undergoing elective caesarean section.

METHODS

This was a prospective, randomized, double blind placebo controlled study which was carried out patients who underwent elective caesarean section under spinal anaesthesia at the University of Nigeria Teaching Hospital (UNTH), Enugu South East Nigeria. Ethical Clearance for the study was obtained from the hospital's Health Research Ethics Committee. Approval and written informed consent of every participating patient was obtained before recruitment into the study.

Sample size calculation was based on reports from previous studies. The incidence of PONV in obstetric surgeries in the study done by Rudra et al.⁸ was 25%. For this study, the desired incidence of PONV was 20%. Under the null hypothesis of no difference in the incidence of PONV between groups, the null proportion was 50%. To calculate the sample size with a significance level of 5% and power of study 90%, the following formula was used.⁹

$$n = [u\sqrt{\pi(1-\pi)} + v\sqrt{\pi_0(1-\pi_0)}]^2 \div (\pi - \pi_0)^2$$

$$n = 2.226 \div 0.09 = 25$$

An attrition rate of 5% was used and one additional patient was added to each group.

The study recruited 78 ASA I or II pregnant women (singleton) at term aged 18-40 years undergoing elective caesarean section under spinal anaesthesia. Excluded from the study are patients with previous history of PONV, motion sickness, allergic to any of the study drugs or comorbidities. Also excluded were patients who had received anti-emetics, opioids or steroids within the previous 24 hours.

Each patient was reviewed a night before the surgery by the investigator and were properly educated on all measuring tools to be used for this study. Thorough clinical assessment were carried out and patients were fasted from midnight before surgery day. All patients received ranitidine tablet 150 mg a night before and on the morning of surgery, and also received 10 mg IV metoclopramide 45 minutes before induction of anaesthesia.

In the theatre an anaesthetic machine with oxygen supply, laryngoscope, resuscitation drugs and airway devices were available. The patients were asked to randomly pick a ballot paper from a box containing seventy eight (78) ballot papers. A total of 26 papers were labelled G for glycopyrrolate, 26 labelled D for dexamethasone group and 26 labelled C for the control group (normal saline) all sealed in envelopes. All safety precautions were taken. A Dash 4000 multiparameter monitor (GE Medical Inc. USA) was used for the patients' vital signs monitoring. Parameters monitored included arterial oxygen saturation (SpO₂), systolic blood pressure (SBP), diastolic blood pressure (DBP), the mean arterial pressure (MAP), electrocardiogram (ECG), heart rate (HR) and respiratory rate. Intravenous access was secured with two size 16G cannulae and intravenous normal saline infusion connected via a blood giving set.

Study medications were prepared in a double-blind fashion in identical 2 ml syringes. A pharmacist prepared the drugs while a trained assistant administered the medications. The investigator was blinded to the study drugs and monitored the patient, measured and collected the outcome variables (nausea, vomiting and vital signs). Patients received either 0.2 mg of IV glycopyrrolate, reconstituted to 2 ml with normal saline for group G, 8mg of IV dexamethasone for group D, or 2 ml of normal saline for group C. All medications were in identical 2 ml syringes of the same volume and were administered by the assistant before establishing spinal anaesthesia.

Patients were preloaded with 15 ml/kg of normal saline over 15-20 minutes while lying in the left lateral position (to avoid aorto-caval compression), after which they were put in a sitting position for the spinal anaesthesia. The patients were requested to flex the back to open the intervertebral spaces. The anaesthetist scrubbed and the back of each patient was cleaned with antiseptic lotion

(chlorhexidine) and spirit (70% alcohol) and then draped. The appropriate lumbar inter-space was located at either L4-L5 or L3-L4, with the land mark being an imaginary line drawn between the iliac crests which crosses the L4 vertebral body. The skin, subcutaneous tissue, supraspinous and interspinous ligaments were infiltrated with 2 ml of 2% lidocaine and the spinal needle was inserted in the midline, with the spinal needle pointing slightly cephalad, using a 25G Whitacre pencil-point spinal needle with an introducer. Correct placement was confirmed by free flow of cerebrospinal fluid at the hub of the needle. The local anaesthetic agent was administered in each patient using 2.4 ml of 0.5% hyperbaric bupivacaine and 25 microgram of fentanyl. Following injection, the patients were repositioned supine with the head and shoulders supported with a pillow, a wedge placed under the right hip for left uterine displacement by 150 and a slight head up tilt to limit the cephalad spread of the spinal agent. The vital signs were recorded every 3 minutes for the first 15 minutes and then every 5 minutes till the end of surgery.

Hypotension (defined as reduction in systolic blood pressure >30 mmHg or diastolic blood pressure >15 mmHg from baseline)¹⁰ was treated by increasing the rate of normal saline and where necessary with IV ephedrine 3-6 mg boluses. Normal saline was used for intraoperative fluid management and whole blood was transfused whenever blood loss was more than the calculated allowable blood loss.

Patients were given supplemental 100% oxygen by a face mask whenever SpO₂ was $<95\%$.

At the end of the procedure, patients were transferred to the recovery room where monitoring of patients was continued for one hour. When cardiorespiratory values were stable, they were transferred to the ward.

Rescue antiemetic ondansetron 4 mg IV bolus was administered to patients who vomited. Patients who complained of nausea and/or vomiting intraoperatively were excluded from the study. Postoperative pain relief was managed with 100 mg of rectal diclofenac suppository 12 hourly, IV tramadol 100mg, 6 hourly and IV paracetamol 1g 8 hourly. Each patient was monitored for 24 hours while data were collected by the investigator.

In this study, nausea was defined as a subjective unpleasant sensation associated with awareness of the urge to vomit, while vomiting was the forceful expulsion of gastric contents from the mouth. Nausea and vomiting were assessed immediately after surgery and at 30 minute intervals in the recovery room for one hour. In addition, nausea and vomiting were evaluated at 4, 12, 18 and 24 hour by direct questioning and by spontaneous complaint of the patients.

Patient's level of satisfaction was assessed using Likert's scale¹¹, it was expressed as satisfied, dissatisfied and very dissatisfied.

Nausea and vomiting were evaluated using the Belville's score⁹ (0=none, 1=nausea and 2=vomiting). In this study, no distinction was made between vomiting and retching.

Statistical analysis

Data collected were analyzed with the aid of statistical package for social sciences (SPSS version 17 Inc. Chicago Illinois). Descriptive statistics of frequency and percentages were used to summarize categorical variables (incidence of nausea, vomiting and requirement of rescue medication, patient satisfaction etc) while means and standard deviations were obtained for continuous variables (age, weight, height etc). Association between categorical variables were done using chi square and logistic regression. Means of continuous variables were compared using ANOVA. A p value of less than 0.05 was accepted as statistically significant. Results were presented in tables and charts.

RESULTS

A total of 78 women who underwent elective caesarean section were recruited into this study. There were 26 patients for group G (glycopyrrolate), 25 for group D (dexamethasone) and 25 for group C (control-placebo group). The demographic characteristics are shown in Table I. There is no significant statistical differences amongst the groups in terms of age, weight, height and BMI with p values of 0.168, 0.725, 0.424 and 0.882 respectively. Patients who received IV glycopyrrolate had higher baseline mean heart rates of 93.96 ± 9.23 ; group D patients had a mean heart rate of 92.04 ± 11.92 and the control group had heart rates of 92.96 ± 11.23 as baseline (p=0.819).

Table 1: Demographic characteristics of patients.

	Agent used			F/ χ^2	P value
	G	D	C		
	Mean \pm SD	Mean \pm SD	Mean \pm SD		
Age (years)	32.62 \pm 4.23	33.27 \pm 4.85	34.84 \pm 3.57	1.829	0.168
Weight (kg)	86.17 \pm 10.46	84.08 \pm 8.30	84.18 \pm 12.59	0.323	0.725
Height (m)	1.66 \pm 0.07	1.64 \pm 0.06	1.66 \pm 0.07	0.867	0.424
BMI (kg/m ²)	31.17 \pm 3.86	31.24 \pm 2.59	30.74 \pm 4.89	0.126	0.882

*Group G = Glycopyrrolate, Group D = Dexamethasone, Group C = Control.

Table 2: Incidence of PONV in groups G and D.

	Incidence			χ^2	P value
	Group G f/n (%)	Group D f/n (%)	Group C f/n (%)		
30 mins					
None	25/26 (96.2)	24/25 (96.0)	21/25 (84.0)	3.970	0.410
Nausea	1/26 (3.8)	1/25 (4.0)	3/25 (12.0)		
Vomiting	0/26 (0.0)	0/25 (0.0)	1/25 (4.0)		
1 hour					
None	22/26 (84.6)	24/25 (96.0)	22/25 (88.0)	3.699	0.448
Nausea	3/26 (11.5)	1/25 (4.0)	1/25 (4.0)		
Vomiting	1/26 (3.8)	0/25 (0.0)	2/25 (8.0)		
4 hours					
None	26/26 (100.0)	25/25 (100.0)	24/25 (96.0)	2.067	0.356
Nausea	0/26 (0.0)	0/25 (0.0)	1/25 (4.0)		

*f = frequency, n = total no. of patients, Group G = Glycopyrrolate, Group D = Dexamethasone, Group C = Control.

Table 3: Association between incidence of PONV and use of 0.2 mg glycopyrrolate and 8mg dexamethasone.

Agent used	PONV incidence		P value	OR	95% C.I for OR
	Yes f/n (%)	No f/n (%)			
Control	8/25 (32.0)	17/25 (68.0)			
0.2 mg glycopyrrolate	5/26 (19.2)	21/26 (80.8)	0.300	0.506	0.140-1.833
8 mg dexamethasone	2/25 (8.0)	23/25 (92.0)	0.048	0.185	0.035-0.983

*f = frequency, n = total no. of patients, OR=odds ratio, CI=confidence interval.

Table 4: Patients' satisfaction in the three groups.

Satisfaction	Agent used		
	G, n (%)	D, n (%)	C, n (%)
Undecided	1 (3.8)	0 (0.0)	0 (0.0)
Somewhat	3 (11.5)	1 (4.0)	5 (20.0)
Very much	22 (84.6)	24 (96.0)	20 (80.0)

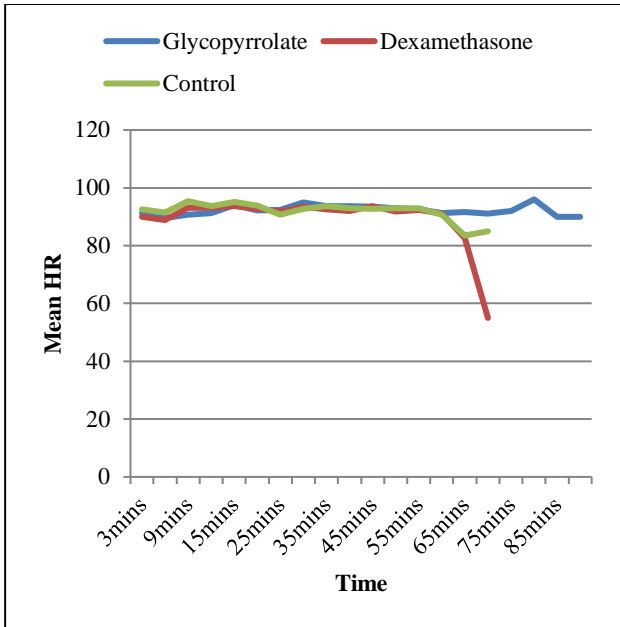
$\chi^2 = 5.019$, $P = 0.285$, G = Glycopyrrolate group, D = Dexamethasone group, C = Control group.

Over the course of the intra-operative period, glycopyrrolate had the highest mean heart rates (105.67 ± 4.93) compared with group D and C patients and this was statistically significant with a p value of 0.046. This is graphically presented in Figure 1. The groups were similar in terms of respiratory rates ($p=0.636$).

The mean SBP values of the three groups were similar apart from the third minute, the twelfth minute and the sixty fifth minute of surgery which showed that glycopyrrolate had statistically significantly higher values of 127.62 ± 20.64 , 123.27 ± 15.09 and 108.75 ± 5.96 respectively with p values of 0.024, 0.048 and 0.038 respectively. The dexamethasone group recorded the highest mean systolic pressures when compared with groups G and C, with no statistical significance ($p=0.295$) (Figure 2).

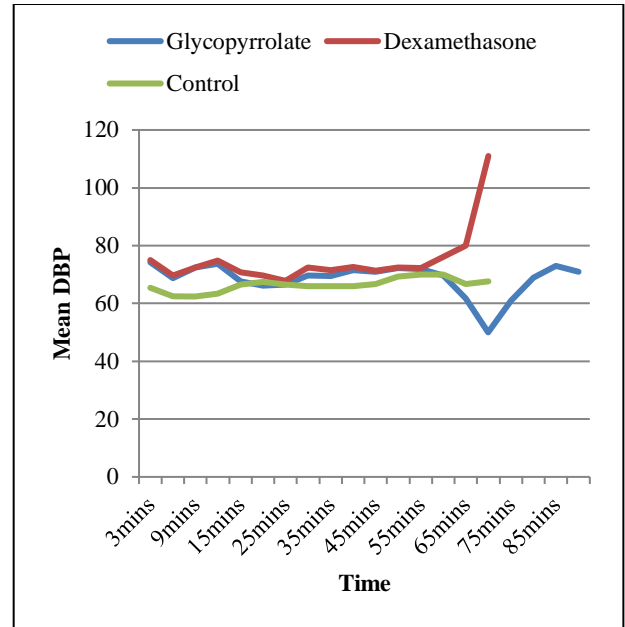
The diastolic mean values were identical, but at the third minute of surgery, group C had the lowest mean DBP of all the groups (65.44 ± 13.12). This was statistically significant, with a p value of 0.038 (Figure 3).

At the third minute, the MAP of patients in group D was 91.60 ± 14.39 , group G was 91.00 ± 17.59 and group C, 81.28 ± 12.47 . Group D patients had the highest mean MAP values and this was statistically significant ($p=0.028$). The pattern was similar all through the surgery durations (Figure 4). The intraoperative oxygen saturation was 95.88 ± 17.90 in the dexamethasone group (group D), 98.80 ± 1.12 in the glycopyrrolate group (group G) and 99.40 ± 0.76 in the control group (group C). Even though the dexamethasone group had lower oxygen saturation values, there was no statistical difference ($p=0.442$).



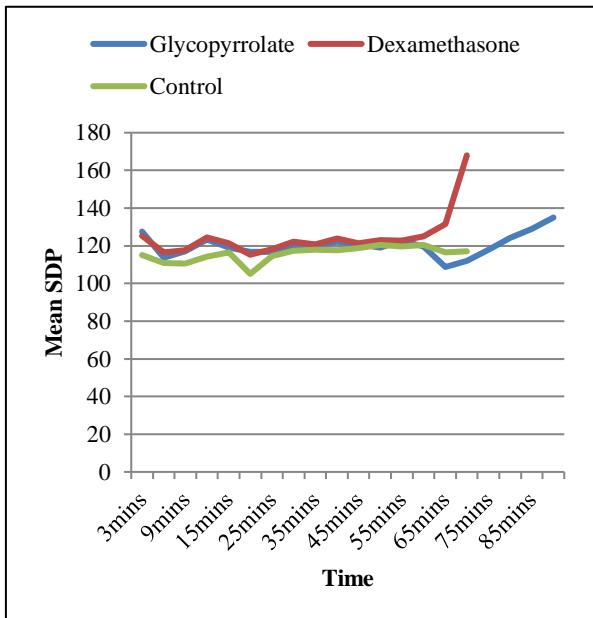
Group G: Glycopyrrolate Group, Group D: Dexamethasone Group, Group C: Control Group, HR: Heart Rate.

Figure 1: Mean heart rate of patients.



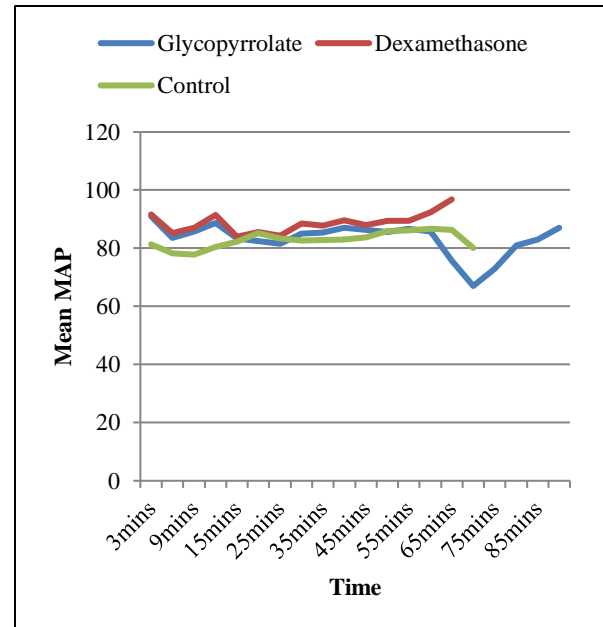
Group G: Glycopyrrolate Group, Group D: Dexamethasone Group, Group C: Control Group, DBP: Diastolic Blood Pressure

Figure 3: Mean DBP of patients.



Group G: Glycopyrrolate Group, Group D: Dexamethasone Group, Group C: Control Group, SBP: Systolic Blood Pressure.

Figure 2: Mean SBP of patients.



Group G: Glycopyrrolate Group, Group D: Dexamethasone Group, Group C: Control Group, MAP: Mean Arterial Blood Pressure.

Figure 4: Mean MAP of patients.

Table 2 shows the incidence of PONV in groups G, D and C. A total of 26 patients were analyzed in group G. Within the first 30 minutes, 1 (3.8%) patient experienced nausea, and at the first hour another 3 (11.5%) patients also experienced nausea. No patient vomited within the first 30 minutes and by the first hour, 1 (3.8%) patient vomited. Only 1 (3.8%) patient vomited in group G. Overall, 4 (15.4%) patients had nausea while 1 (3.8%) vomited in group G.

In the group that received 8mg of intravenous dexamethasone (group D), 1 (4%) person experienced nausea by the first 30 minutes, while at the first hour, 1 (4%) person also experienced nausea. A total of 2 (8%) patients experienced nausea in group D and no (0%) patient vomited. Finally, the control group (group C), out of 25 patients, 1 (4%) experienced nausea at 30 minutes, another 3 (12%) also experienced nausea by 1 hour and 1 (4%) by the fourth hour, making a total of 5 (20%) patients who experienced nausea. One (4%) patient

vomited at 30 minutes and 2 (8%) by the first hour. A total of 3 (12%) patients vomited in group C. All the data were analyzed with chi square and there was no statistical difference between the groups by the thirtieth minute, first hour and fourth hour, with p values of 0.410, 0.448 and 0.356 respectively.

Table 3 shows the association between the incidence of PONV and the use of 0.2 mg IV glycopyrrolate and 8mg IV dexamethasone. The Table shows that in the control group, a total of 8 patients, with an incidence of 32% experienced PONV. In the glycopyrrolate group, a total of 5 patients experienced PONV, with an incidence of 19.2%, while in the dexamethasone group, a total of 2 patients experienced PONV (incidence 8%). The Table shows that the use of 8 mg dexamethasone was significantly associated with a lower incidence of PONV.

Table 4 shows the level of patient satisfaction during the duration of the procedure. In group G, 1 patient (3.8%) was undecided, 3 patients (11.5%) were somewhat satisfied and 22 patients (84.6%) were very much satisfied. In the dexamethasone group, 1 patient (3.8%) was somewhat satisfied and 25 patients were very much satisfied. Group C had 5 patients (19.2%) who were somewhat satisfied and 21 patients (80.8%) who were very much satisfied. All the patients who were somewhat satisfied in group C, had experienced nausea or vomiting during the surgery. There was no statistical significance ($\chi^2=5.049$, $p=0.282$).

In this study, 23 patients (90%) in the glycopyrrolate group complained of dryness of the mouth, there were no other side effects reported during the study and there was no incidence of PONV between 4 and 24 hours postoperatively.

DISCUSSION

The results of this study showed that intravenous dexamethasone 8 mg administered before establishing spinal anesthesia reduced the incidence of postoperative nausea and vomiting when compared to patients who received intravenous glycopyrrolate 0.2 mg and the control group (normal saline placebo). The main findings in this study were similar to other studies done previously which found dexamethasone effective in reducing the incidence of PONV in adult patients undergoing major surgeries.^{12,13} The mechanism of action of dexamethasone is not well established, but it is widely used due to its antiemetic properties.¹⁴ It is proposed that dexamethasone acts by antagonizing prostaglandin or it releases endorphins that elevate mood.^{14,15} Carlisle and Stevenson in a Cochrane Review, calculated a risk ratio for dexamethasone of 0.48 (95% CI 0.43-0.54) for the prevention of PONV, similar to ondansetron [RR 0.56 (95% CI 0.50-0.62)].¹⁶ The IMPACT Group had similar findings and found that when combined with other antiemetics, dexamethasone had an additive effect and therefore was more effective.¹⁷

In this study, none of the patients who received dexamethasone experienced side effects, and all patients expressed satisfaction. This is similar to results published by Gecaj-Gashi et al.¹⁸ It is important to note however that dexamethasone has potential side effects and they include increased risk of postoperative infection, impairment of glucose homeostasis and psychiatric disturbances.¹⁹ None of the patients in this study experienced any of these side effects. This is most likely because they all received them as single boluses.

Jain et al studied the effects of glycopyrrolate and ondansetron on nausea and vomiting in caesarean section and they found no significant difference in nausea and vomiting between the two groups.²⁰ This is in contrast to this study which found that dexamethasone was more effective in the control of PONV compared to glycopyrrolate even though glycopyrrolate had a lower incidence of PONV compared to the control group. Glycopyrrolate acts as an antiemetic by inhibiting central muscarinic and cholinergic receptors.^{21,22} It is a quaternary ammonium and unlike atropine, which is a tertiary amine, does not cross the placental barrier hence, it is safe for use in pregnant women.²⁰ In this study, those who experienced side effects complained of dryness of the mouth, and this could be a draw-back to the routine use of glycopyrrolate. The glycopyrrolate group also experienced higher heart rates compared to the dexamethasone and control group even though this was not statistically significant ($p=0.819$). There was also no difference in the mean arterial pressures between the groups.

The most common symptoms following surgery and anaesthesia are pain and emesis.^{23,24} The female gender, sex hormones, young age and increased body fat, all found in pregnant women increases the risk of PONV.²⁵ Studies exploring different approaches to reducing the incidence of PONV have been done.^{1,3} In this study, all patients in the 3 groups received metoclopramide in addition to the study drugs, so the study in essence compared combination therapies of dexamethasone and metoclopramide, glycopyrrolate and metoclopramide and metoclopramide and normal saline for the control of PONV following the spinal anaesthesia for Caesarean section. Frikha et al in a study which compared the use of combined metoclopramide and dexamethasone versus dexamethasone alone found that the incidence of nausea during both intra and postoperative periods was not different between the two groups, even though intraoperative nausea and vomiting was not assessed in this study.²⁶ The incidence of PONV in those that received dexamethasone in this study was however significantly lower ($p=0.048$).

In this study the control group (normal saline) had a 32% incidence of PONV, while the glycopyrrolate group had a 19.2% incidence and the dexamethasone group had the lowest incidence of 8% ($p=0.048$). Anticholinergic agents antagonize muscarinic and histaminic receptors in the

vestibular and vomiting centres and have been shown to decrease the incidence of nausea and vomiting.²⁷ Ure et al studied the efficacy of glycopyrrolate as a prophylaxis against nausea in pregnant women and showed that patients given glycopyrrolate prophylactically showed a reduction in the frequency ($p=0.02$) and severity ($p=0.03$) of nausea and it showed no adverse neonatal effects.²⁸

Studies have been done to assess the efficacy and effective dose of dexamethasone for the prevention of PONV. Lee et al showed that dexamethasone 8 mg was more superior than dexamethasone 5 mg in reducing the incidence of PONV in female patients scheduled for thyroidectomy.²⁹ In this present study, 8 mg of IV dexamethasone was used and it was shown to be adequate. Chiu-Ming et al noted the low cost of dexamethasone as an advantage of its use, coupled with its longer duration of action, even though it was beyond the scope of this study to compare the cost effectiveness of the study drugs, it is however worth considering.³⁰ It has been found that the use of dexamethasone for the prevention of PONV caused by intravenous or epidural opioid for pain control offers good therapeutic control.³⁰ Liu and his colleagues in the study of the control of PONV in high risk patients showed that dexamethasone was effective in reducing the overall incidence of vomiting from 63.3% to 20.0% ($p<0.01$) in patients who received chemotherapy, and in this study, dexamethasone reduced the incidence of PONV from 32% in the control group to 8%.³¹

Tobi et al studied the effects of dexamethasone and metoclopramide on early and late postoperative nausea and vomiting in women undergoing myomectomy under spinal anaesthesia and they concluded that dexamethasone protects against the incidence of late PONV without any effect on early PONV, while metoclopramide on the other hand has comparable effect on both.³² In this index study, there was no incidence of PONV after 4 hours in all study groups, similar to the findings of Tobi et al which suggests that the pharmacology of the medications administered protected against the incidence of late onset PONV.³²

In this present study, there were no immediate complications following dexamethasone administration, all patients received single doses of 8 mg dexamethasone and it was beyond the scope of the study to follow up patients for possible long term complications. The sequelae of adverse effects from dexamethasone administration are not usually immediate, and they could range from difficulty in controlling blood sugar levels, delayed wound healing, wound infections, gastric ulcers and avascular necrosis.¹² However, these potential side effects usually occur following long term use and not after single doses.³⁰ Dexamethasone is cheap, readily available, safe and is therefore considered an ideal antiemetic.³⁰

CONCLUSION

This study demonstrated that IV 8mg dexamethasone administered before the induction of spinal anaesthesia for elective caesarean section, significantly decreased the incidence of PONV, when compared to IV 0.2 mg glycopyrrolate and the control (normal saline). The only side effect reported in the study was dryness of the mouth, found in 90% of patients in the glycopyrrolate group. The use of 8mg intravenous dexamethasone is being encouraged as it is safe and effective.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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