ORIGINAL ARTICLE

Comparison of the Frequency of Nausea and Vomiting With Dextrose Solution Versus Placebo Solution Post-Operatively in Laparoscopic Gynecological Procedures

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ABSTRACT

Background: Nausea and vomiting are stressful common complications of surgeries and causing dissatisfaction of patients.
Aim: To compare the dextrose solution (5% dextrose Ringer Lactate) with placebo (Ringer Lactate) for nausea and vomiting post-operatively in laparoscopic gynecological procedures.
Method:-It was a randomized controlled trial study. 250 patients undergoing elective gynecological procedures under general anesthesia were included and divided into two groups D (dextrose) and P (Placebo) by using lottery method. Each group comprised of 125 patients. Group P received 250 mlringer lactate solution (125 ml/h) and group D received 250 ml 5% dextrose ringer lactate solution (125 ml/h) over 2 hours. General anesthesia was induced with same method in both groups & no prophylactic antiemetic was given. All patient were kept in post-operative area and for pain management 30 mg intravenous ketorolac 12 hourly and inj paracetamol 1g intravenous 8 hourly was given and visual descriptive scale (VDS) scoring was used for assessment of PONV.
Result: In group D 54(43.2%) patients observed PONV and in group P 79(63.2%) observed PONV.
Conclusion: Intravenous 5% dextrose ringer lactate solution reduce the PONV in female patients undergoing for laparoscopic gynecological procedures.
Keywords: Ringer Lactate Solution, 5% Dextrose Ringer Lactate solution, PONV, General Anesthesia,

INTRODUCTION

Nausea and vomiting are common complication in post-operative time and incidence is approximately 30% in patients[1]. There are different factors which increases the risk of post-operative nausea and vomiting like female gender, general anesthesia with inhalational anesthetic, opioids, non-smokers, history of motion sickness, hypotension, cardiovascular complication, laparoscopic & gynecological procedures.[2,3,4,5] Different pharmacological and non-pharmacological modalities are being used to decrease the risk of PONV, pulmonary, aspiration & pneumonia in perioperative period like metoclopramide, dexamethasone , serotonin 5-HT3 receptor antagonist, erythromycin, dimenhydrinate, intravenous crystalloids and intravenous dextrose solutions. [6,7,8,9,10]
Unresolved PONV prolong nursing care, hospital stay, treatment cost and it reduces patient physical activity. [11 12]
In short to resolve PONV we should takes steps at each level of surgery and in this study we will compare the frequency of PONV with intravenous dextrose solution with placebo solution in our population undergoing elective short gynecological procedure.

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MATERIAL AND METHOD

After the approval of hospital ethics committee of Hameed Latif Hospital Lahore for this study. 250 patients of ASA class P1 & P2 status undergoing elective gynecological procedures under general anesthesia were included and inform consent were obtained. The demographic information (Name, Age, BMI, Weight & Surgery) was recorded. The patient were randomly allocated into two groups by using lottery method. Each group consist of 125 patients. Group P (Placebo) received 25ml of ringer lactate solution (125 ml/h) as placebo solution and group D (dextrose) received 250ml of 5% dextrose in ringer lactate solution (125 ml/h) over 2 hours beginning with start of surgical procedure. All patients were made familiar with use of visual descriptive scale (VDS) scoring. G.A was given to all patients with inj propofol, inj atracurium, sevoflurane, oxygen and air. For analgesia inj paracetamol 1g, intravenous, inj ketorolac 30mg intravenous and inj ketamine 25mg intravenous given to all patients. Intraoperative intravenous fluid was given according to holiday Segar method. Reversal was given at the end of the procedure. No prophylactic antiemetic was given. All patients were kept in post-operative area and in post-operative period 30mg intravenous ketorolac given 12 hourly and paracetamol 1gintravenous 8 hourly given to all patients. In patients with severe pain as rescue analgesia injection nalbuphin 4mg intravenous was given and such

patients were replaced with new patients for study. Data collection was done by same assessor after two hours in proforma. The collected data was entered and analyzed in SPSS version 21. Chi square test was applied and P value ≤ 0.05 was considered significant. It was a randomized controlled trial and sampling techniques was purposive nonprobability sampling and sample size was 250 cases calculated with 80% power of test.

RESULT

In group D mean age is 43.14 ± 9.53 & in group P age was 41.38±10.03. In group D ASA status I & II was respectively 59(47.2%) & 66(52.8%). In group P ASA status I & II was respectively 67(53.6%) & 58(46.4%). Mean height in group D & P was respectively 1.58±0.03 & 1.59±0.04. Mean Wight in group D & P was respectively 74.99±9.51 & 74.81±9.23kg. Mean BMI was in group B 29.79±4.02& in P it was 29.63 ± 3.89 Kg /m^2. Mean surgery time in group D was 2.68 ± 1.0 hours & in group Pit was 2.72±1.02 hours. Mean VDS score in group D & P was respectively 1.46 ± 1.12&1.62 ± 1.07. In group D 54(43.2%) patient observed PONV & in group P 79(63.2%) patient observed PONV & P value is significant. In group D age group 25-35 years observed PONV minimally while 36-45& more than 45 year age patients did not show any statistically significant difference. Similarly ASA I status patient observed PONV minimal as compare to ASA II in group D patients and there was no difference in all type of patients in Group P and patients whose weight was 60 to 70 & 81 to 90 kg among them frequency of PONV was lower in group D as compare to group P. Similarly among obese patients with high BMI PONV was higher in group P patients.

Table-1: Age distribution of patients

	Dextrose	Placebo
n	125	125
Mean	43.14	41.38
SD	9.532	10.031
Min	25	25
Max	60	60

Table-2: L ASA Status of patients

ASA	Dextrose	Placebo	Total
I	59(47.2%)	67(53.6%)	126
II	66(52.8%)	58(46.4%)	124
Total	125	125	250

Table 3: Descriptive statistics for Height, Weight & BMI

	Height(meters)		Weight(kg)		BMI(kg/m^2)	
	Dext.	Placebo	Dext.	Placebo	Dext.	Placebo
n	125	125	125	125	125	125
Mean	1.58	1.59	74.99	74.81	29.79	29.63
SD	0.03	0.04	9.51	9.23	4.02	3.89
Min	1.52	1.53	60.00	60.00	22.44	22.04
Max	1.67	1.67	90.00	90.00	38.32	38.70

Table 4: Type of procedure

	Dextrose		Placebo		Total
Laparoscopic Hysterectomy	23	18.4%	35	28.0%	58
Myomectomy	33	26.4%	22	17.6%	55
Cyst removal	20	16.0%	22	17.6%	42
Adhesionlysis	21	16.8%	20	16.0%	41
Reversal of B.T.L	28	22.4%	26	20.8%	54

Table-5: Descriptive statistics for Time of surgery

	Time of Surgery(hours)	
	Dextrose	Placebo
n	125	125
Mean	2.68	2.72
SD	1.00	1.02
Min	1.5	1.5
Max	4.0	4.0

Table-6: Descriptive statistics for VDS score

	VDS Score			
	Dextrose		Placebo	
n	125		125	
Mean±SD	1.46±1.12		1.62±1.07	
Min-Max	0-3		0-3	
VDS Score				
0	30	24.0%	29	23.2%
1	41	32.8%	17	13.6%
2	21	16.8%	51	40.8%
3	33	26.4%	28	22.4%

Table-7: Comparative Nausea and Vomiting in Treatment Groups

PONV	Dextrose	Placebo	Total
Yes	54(43.2%)	79(63.2%)	133
No	71(56.8%)	46(36.8%)	117

Chi-Square Test= 10.041, p-value= 0.002

Table 8 Frequency of Comparative Nausea and Vomiting in Treatment Groups stratified for age of patients

Age	PONV	Dextrose	Placebo	p-value
25-35	Yes	12(42.9%)	28(73.7%)	0.011
	No	16(57.1%)	10(26.3%)	
36-45	Yes	22(48.9%)	26(63.4%)	0.175
	No	23(51.1%)	15(36.6%)	
>45	Yes	20(38.5%)	25(54.3%)	0.115
	No	32(61.5%)	21(45.7%)	

Table-9: Frequency of Comparative Nausea and Vomiting in Treatment Groups stratified for ASA status

ASA	PONV	Dextrose	Placebo	p-value
I	Yes	25(42.4%)	45(67.2%)	0.005
	No	34(57.6%)	22(32.8%)	
II	Yes	29(43.9%)	34(58.6%)	0.103
	No	37(56.1%)	24(41.4%)	

Table 10: Frequency of Comparative Nausea and Vomiting in Treatment Groups stratified for weight of patients

Weight	PONV	Dextrose	Placebo	p-value
60-70	**Yes**	24(49%)	30(62.5%)	0.180
	No	25(51%)	18(37.5%)	
71-80	**Yes**	13(40.6%)	25(73.5%)	0.007
	No	19(59.4%)	9(26.5%)	
81-90	**Yes**	17(38.6%)	24(55.8%)	0.109
	No	27(61.4%)	19(44.2%)	

Table-11: Frequency of Comparative Nausea and Vomiting in Treatment Groups stratified for BMI of patients

BMI	PONV	Dextrose	Placebo	p-value
Normal	Yes	1(50%)	3(75%)	0.540
	No	1(50%)	1(25%)	
Over Weight	Yes	18(43.9%)	29(63%)	0.074
	No	23(56.1%)	17(37%)	
Obese	Yes	35(42.7%)	47(62.7%)	0.012
	No	47(57.3%)	28(37.3%)	

Table-12: Frequency of Comparative Nausea and Vomiting in Treatment Groups stratified for Type of surgery

Procedure	PONV	Dextrose	Placebo	p-value
Laparoscopic Hysterectomy	Yes	9(39.1%)	21(60%)	0.120
	No	14(60.9%)	14(40%)	
Myomectomy	Yes	15(45.5%)	10(45.5%)	1.000
	No	18(54.5%)	12(54.5%)	
Cyst removal	Yes	8(40%)	13(59.1%)	0.217
	No	12(60%)	9(40.9%)	
Adhesionlysis	Yes	12(57.1%)	16(80%)	0.116
	No	9(42.9%)	4(20%)	
Reversal of B.T.L	**Yes**	10(35.7%)	19(73.1%)	0.006
	No	18(64.3%)	7(26.9%)	

DISCUSSION

PONV is a stressful complication causing patients dissatisfaction regarding anesthesia care. Different method are used to prevent and treat PONV. PONV prevention is very important in this study and we focused on this problem and found that intravenous dextrose solution decreases the incident of PONV and the study of Firouzian A et al they used intravenous dextrose solution for prevention of post-operative PONV in 150 female patients for laparoscopic cholecystectomy and found it safe and effective method for prophylaxis.[13]In the study of Kim HJ et al they compared colloid solutions with crystalloid for PONV and found that colloid solution has more preventive effect but effect was observed only in surgeries of more than 3 hours.[14] Similarly in the study of Mishra A et al also support the result of my study. In their study they found that perioperative use of 5 % dextrose was reducing PONV significantly in laparoscopic surgeries[15]. In the study of Dabu-Bondoc S et al they found reduce incidence of PONV in patients receiving dextrose solution.[16] There was reduce requirement of antiemetic's in such patients and their stay in hospital was short. But the study of Zorrilla-Vaca A et al has opposite result and they find that preoperative intravenous dextrose infusion has no significant effect on PONV.[17] Now we conclude that there is need of further trails with large numbers of patients is different type of surgeries to find the accurate benefits of intra venous solutions, time of infusions and optimal dose of dextrose solution on PONV.

CONCLUSION

Intra venous 5% dextrose R/L solution effectively reduce the PONV in female patients undergoing for laparoscopic gynecological surgeries.

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