Original Article

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Haemodynamic Stability and Side Effects of Granisetron and Granisetron Dexamethasone Combination

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Abstract

Background: Granisetron is a selective 5-hydroxy tryptamine -3(5HT3) receptor antagonist with little or no affinity for other serotonin receptors. Chemically, it is endo-N-(9-Methyl-9-Azabicyclo [3.3.1]non-3-yl)-1-methyl-1H-indazole-3-carboxamide hydrochloride. Serotonin receptors of the 5HT3 type are located peripherally on vagal nerve terminals and centrally in the CTZ of the area postrema. **Subjects and Methods:** The protocol was explained to patients and informed consent was taken. All the patients received tab. Diazepam (10mg) and tab. Ranitidine (150mg) on the previous night before surgery. Patients were kept nil by mouth for 8 hours before surgery. On the day of surgery, nil by mouth status of patient was confirmed and written and informed consent obtained. Intravenous line was secured with crystalloid infusion was started. **Results:** In Group-GD, 2 patients had Headache, 1 patient had dizziness and 2 patients had dry mouth, while in Group-G, 3 patients had Headache, 1 patient had dizziness and 2 patients had dry mouth which did not require any treatment. No other side effect was observed during study. No difference in incidence of side effects in between two groups. **Conclusion:** Patients were haemodynamically stable throughout the study in both the groups.

Keywords: Granisetron, Dexamethasone, Haemodynamic Stability.

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Introduction

The 5-HT3 receptor is unique, beging the only monoamine neurotransmitter recepotrs that is known to function as ligand operated ion channel. The 5-HT3 receptor corresponds to Gaddum and Picarelli's M receptor. Activation of 5-HT3 recepotrs elicits a rapidly desensiting depolarization, mediated by the gating of cations. These receptors are on paresympathetic terminal in GI tract, including vagal and splanchnic afferents. In the CNS, a high density of 5-HT3 receptors is found in solitary tract nucleus and in the area postrema. 5-HT3 receptors in both gastrointestinal tract and CNS participate in the emetic response, providing an anatomical basis for the antiemetic property of 5-HT3 recepotr antagonist. Most ligand-operated ion channel are composed of multiple subunits; however, original, cloned 5-HT3 receptor subunit forms functional chennels that gate cations when expressed in xenopus oocytes or in cultured cells. Nevertheless, extensive pharmacological and physiological data obtained in tissues and intact animals clearly suggest the existence of multiple components of 5-HT3 receptores.[1,2]

Recently, spice variants of 5-HT3 receptor have been identified, perhaps explaining the observed functional diversity. Granisetron is a selective 5-hydroxy tryptamine -3(5HT3) receptor antagonist with little or no affinity for other serotonin receptors. Chemically, it is endo-N-(9-Methyl-9-Azabicyclo[3.3.1]non-3-yl)-1-methyl-1H-indazole-3-carboxamide hydrochloride.[3]

Serotonin receptors of the 5HT3 type are located peripherally on vagal nerve terminals and centrally in the CTZ of the area postrema. During chemotherapy or surgery which can induce vomiting, mucosal enterochromaffin cells release serotonin, which stimulates 5HT3 receptors. This evokes vagal afferent discharge inducing vomiting. Granisetron acts by blocking these receptors.[4]

A 2mg dose of granisetron oral solution is bioequivalent to the corresponding dose of granisetron tablets. Plasma protein binding is 65% and it distributes freely between plasma and red blood cells. Granisetron metabolism involves N-demethylation and aromatic ring oxidation followed by conjugation. In vitro liver microsomal studies show that metabolism is inhibited by Ketoconazole, suggestive of metabolism mediated by the cytochrome P-450 3A subfamily. Clearance is predominantly by hepatic metabolism. In normal volunteers, approximately 11%of the orally administered dose is eliminated unchanged in the urine in 48 hours. The remainder of the dose is excreted as metabolites, 48% in the urine and 38% in the faeces. The ranges of the pharmacokinetic parameters in the elderly volunteers (mean age 71 years), given a single 40mcg/kg

intravenous dose of granisetron, were generally similar to those in younger healthy volunteers; mean values were lower for clearance and longer for half-life in the elderly. Total clearance of Granisetron was not affected in patients with severe renal failure who received a single 40 mcg/kg dose of Granisetron injection. In patients who have impaired hepatic function, the total clearance of Granisetron was decreased considerably. A pharmacokinetic study in paediatric cancer patients (2-16 years of age), given a single 40mcg/kg intravenous dose of Granisetron, showed that volume of distribution and total clearance increased with age.[5,6]
Dexamethasone is very potent and highly selective glucocorticoid. It is longer acting glucocorticiod having biological half life .>36hrs. It has purely glucocorticoid activity having no mineralocorticiod activity at all.

Subjects and Methods

A detail preoperative assessment was performed on preoperative visit on the day before surgery. Where detail history, thorough general examination, airway assessment and systemic examination was performed. All routine investigations were done like haemogram, routine urine examination, random blood sugar, blood urea, serum creatinine and serum liver function test.
X-ray chest and ECG were done when indicated.

Inclusion Criteria

- Age group 20-60yrs
- Sex-male/female
- ASA status 1 and 2
- Laparoscopic Cholecystectomy

Exclusion Criteria

- Age <20 years and age>60 yrs
- ASA III & IV
- Previous h/o PONV
- H/o acid peptic disease
- H/o allergic reaction to drug
- Pregnancy and lactating women

The protocol was explained to patients and informed consent was taken. All the patients received tab. Diazepam (10mg) and tab. Ranitidine (150mg) on the previous night before surgery. Patients were kept nil by mouth for 8 hours before surgery.
On the day of surgery, nil by mouth status of patient was confirmed and written and informed consent obtained.Intravenous line was secured with crystalloid infusion was started.

Group – G

Inj. Granisetrone (40µg/kg) in 5ml NS Intravenously.

GROUP – GD

Inj. Granisetrone (40µg/kg) + Inj. Dexamethasone (150µg/kg) in 5ml NS intravenously.
Haemodynamic parameters were observed by same observer after giving drugs.
Than, Inj. Fentanyl [1µg/kg] was given intravenously 5minute before induction in both the groups.
Patients were observed for following side effects;-
headache, dryness of mouth, dizziness, hypersensitivity reactions, wound infection and others.

Results

Table 1: Pulse Rate (Per Minute) (Mean± Sd)

	GROUP – G	Intra group 'P' Value	GROUP -GD	Intra group 'P' Value	Inter group 'P' Value
Before giving drug	81.73 ± 3.62		80.53 ± 3.74		> 0.05
5 min after giving drug	82.6 ± 3.06	> 0.05	82.06 ± 2.70	> 0.05	> 0.05
Inra-Operative					
5 min	82.26 ± 2.55	>0.05	83.21 ± 3.13	>0.05	>0.05
10 min	84.46 ± 2.66	> 0.05	84.86 ± 1.79	> 0.05	> 0.05
15min (After pneumoperitonium)	88.80 ± 3.38	<0.05	89.33 ± 3.03	< 0.05	> 0.05
30 min	83.53 ± 5.27	> 0.05	83.86 ± 2.22	> 0.05	> 0.05
45 min	84.73 ± 3.94	> 0.05	84.30 ± 2.69	> 0.05	> 0.05
1 hr	84.60 ± 2.63	> 0.05	84.16 ± 2.10	> 0.05	> 0.05
30 min (After CO2 release)	83.40 ± 3.32	> 0.05	82.13 ± 2.67	> 0.05	> 0.05
2 hr	84.60 ± 2.04	> 0.05	84.55 ± 2.97	> 0.05	> 0.05
Post-Operative					
Immediate	84.66 ± 1.84	> 0.05	83.33 ± 1.18	> 0.05	> 0.05
15 min	84.80 ± 2.0	> 0.05	83.80 ± 2.48	> 0.05	> 0.05
30 min	84.20 ± 2.84	> 0.05	83.46 ± 3.01	> 0.05	> 0.05
45 min	83.33 ± 2.95	> 0.05	84.46 ± 1.87	> 0.05	> 0.05
1 hr	81.40 ± 3.11	> 0.05	86.06 ± 3.12	> 0.05	> 0.05
2 hrs	82.86 ± 4.50	> 0.05	81.2 ± 1.71	> 0.05	> 0.05
3 hrs	83.06 ± 2.86	> 0.05	82 ± 1.81	> 0.05	> 0.05
4 hrs	84.13 ± 3.31	> 0.05	82.93 ± 2.66	> 0.05	> 0.05
6 hrs	82.33 ± 2.79	> 0.05	82.33 ± 2.05	> 0.05	> 0.05
8 hrs	82.33 ± 2.88	> 0.05	81 ± 2.18	> 0.05	> 0.05
12 hrs	81.06 ± 3.48	> 0.05	79.40 ± 3.48	> 0.05	> 0.05
24 hrs.	79.60 ± 3.47	> 0.05	78.26 ± 2.86	> 0.05	> 0.05

Intra group study

Group G

As shown in above [Table-1], Basline pulse rate was 81.73±3.62. There was insignificant change in Pulse rate after giving drug .Intraoperatively there was significant change in pulse rate at 15mins(after pneumoperitonium 88.80±3.38, p<0.05),than onwards there was no other significant change in pulse rate intraoperatively and post operatively throughout the study (P> 0.05).

Group GD

As shown in above table-1, Basline pulse rate was 80.53±3.74. There was insignificant change in Pulse rate after giving drug. Intraoperatively there was significant change in pulse rate at 15mins (after pneumoperitonium 89.33±3.03, p<0.05), than onwards there was no other significant change in pulse rate intraoperatively and post operatively throughout the study (P> 0.05).

Intergroup study

As shown in [Table-1], baseline pulse rate was comparable to each other in both group. There was insignificant change in pulse rate after giving drug, in both groups (Group-G; -82.6 ± 3.06, Group-GD; -82.06 ± 2.70 P> 0.05).

No other significant change in pulse rate was observed throughout the study. (P> 0.05).

Table 2: SYSTOLIC BLOOD PRESSURE (mmHg) (Mean± SD)

	GROUP – G	Intra group 'P' Value	GROUP -GD	Intra group 'P' Value	Inter group 'P' Value
Before giving drug	121.80 ± 6.35		119.6 ± 5.61		> 0.05
5min after giving drug	117 ± 5.57	> 0.05	118.2 ± 5.26	> 0.05	> 0.05
Inra-Operative					
5 min	121.2 ± 4.44	> 0.05	120.33 ± 5.40	> 0.05	> 0.05
10 min	122.6 ± 4.17	> 0.05	123 ± 3.62	> 0.05	> 0.05
15min (After pneumoperitonium)	129.26 ± 5.54	< 0.05	129 ± 3.99	< 0.05	> 0.05
30 min	122.93 ± 6.11	> 0.05	123.4 ± 3.93	> 0.05	> 0.05
45 min	122.53 ± 5.27	> 0.05	122.06 ± 2.89	> 0.05	> 0.05
1 hr	122 ± 5.06	> 0.05	121.46± 3.74	> 0.05	> 0.05
30 min (After CO2 release)	122 ± 4.13	> 0.05	121. 66 ± 3.15	> 0.05	> 0.05
2hr	122.25 ± 5.70	> 0.05	122± 3.21	> 0.05	> 0.05
Post-Operative					
Immediate	122.53 ± 4.72	> 0.05	123.66± 2.52	> 0.05	> 0.05
15 min	118.66 ± 6.67	> 0.05	119.8 ± 4.24	> 0.05	> 0.05
30 min	119.46 ± 7	> 0.05	117.86 ± 5.11	> 0.05	> 0.05
45 min	119.93 ± 7.17	> 0.05	117.8 ± 5.49	> 0.05	> 0.05
1 hr	118.6 ± 7.77	> 0.05	120.46 ± 6.22	> 0.05	> 0.05
2 hrs.	120.16 ± 6.98	> 0.05	120 ± 4.95	> 0.05	> 0.05
3 hrs.	120.21 ± 6.08	> 0.05	118.73 ± 4.11	> 0.05	> 0.05
4 hrs	119.93 ± 6.02	> 0.05	118.73 ± 3.50	> 0.05	> 0.05
6 hrs.	119.53 ± 5.76	> 0.05	118.26 ± 5.11	> 0.05	> 0.05
8 hrs.	118.53 ± 6.51	> 0.05	118.2 ± 4.27	> 0.05	> 0.05
12 hrs	117.53 ± 7.89	> 0.05	117.6 ± 5.44	> 0.05	> 0.05
24 hrs.	117.87 ± 6.87	> 0.05	117.46 ± 6.43	> 0.05	> 0.05

Intra group study

Group G

As shown in table – 2, Basline Systolic Blood Pressure was 121.80±6.35. There was insignificant change in systolic blood pressure after giving drug . Intraoperatively, there was significant change at 15mins(after pneumoperitonium 129.26±5.54, p<0.05),than onwards there was no other significant change in systolic blood pressure intraoperatively and post operatively throughout the study (P> 0.05).

Group GD

As shown in [Table-2], Basline Systolic Blood Pressure was 119±5.61. there was insignificant change in systolic blood pressure after giving drug . Intraoperatively, there was significant change at 15mins(after pneumoperitonium129±3.99, p<0.05), than onwards there was no other significant change in systolic blood pressure intraoperatively and post operatively throughout the study (P> 0.05).

Intergroup study

As shown in [Table-2], Baseline systolic blood pressure was comparable to each other in both groups. There was insignificant change in Systolic Blood Pressure after giving drug in both groups (Group-G; - 117 ± 5.57, Group-GD; -118.2 ± 5.26, P> 0.05).

No other significant change in Systolic Blood Pressure was observed throughout the study (P> 0.05).

Table 3: DIASTOLIC BLOOD PRESSURE (mmHg) (Mean± SD)

	GROUP – G	Intra group 'P' Value	GROUP -GD	Intra group 'P' Value	Inter group'P' Value
Before giving drug	80.06 ± 4.01		79 ± 3.0		> 0.05
5 min after giving drug	79.46 ± 3.96	> 0.05	79.80± 2.36	> 0.05	> 0.05
Intra-Operative					
5 min	82.20 ± 2.64	> 0.05	82.60 ± 2.04	> 0.05	> 0.05
10 min	83.93 ± 2.25	> 0.05	83.73 ± 1.79	> 0.05	> 0.05
15min (After pneumoperitonium)	88.53 ± 3.52	< 0.05	87.6 ± 2.72	< 0.05	> 0.05

30 min	84.86 ± 3.18	> 0.05	84.06 ± 1.43	> 0.05	> 0.05
45 min	83.40 ± 3.06	> 0.05	82.20 ± 1.76	> 0.05	> 0.05
1 hr	83.60 ± 2.94	> 0.05	82.40 ± 1.99	> 0.05	> 0.05
30 min (After CO2 release)	83.26 ± 2.49	> 0.05	83.46 ± 1.27	> 0.05	> 0.05
2 hr	83.75 ± 1.66	> 0.05	82.33 ± 1.84	> 0.05	> 0.05
Post-Operative					
Immediate	82.46 ± 2.55	> 0.05	83.53 ± 1.94	> 0.05	> 0.05
15 min	82.53 ± 2.28	> 0.05	81.53 ± 2.08	> 0.05	> 0.05
30 min	82.33 ± 3.15	> 0.05	81.06 ± 2.14	> 0.05	> 0.05
45 min	81.53 ± 2.81	> 0.05	80.4 ± 1.52	> 0.05	> 0.05
1 hr.	81.13 ± 3.13	> 0.05	80.46 ± 2.44	> 0.05	> 0.05
2 hrs.	80.60 ± 3.11	> 0.05	80.26 ± 1.79	> 0.05	> 0.05
3 hrs.	80.33 ± 3.24	> 0.05	81.13 ± 2.95	> 0.05	> 0.05
4 hrs.	80.06 ± 2.65	> 0.05	80.06 ± 2.19	> 0.05	> 0.05
6 hrs.	80.26 ± 3.77	> 0.05	79.46 ± 1.88	> 0.05	> 0.05
8 hrs.	79.33 ± 3.17	> 0.05	79.93 ± 2.31	> 0.05	> 0.05
12 hrs	79.53 ± 3.22	> 0.05	79.86 ± 1.67	> 0.05	> 0.05
24 hrs.	79.33 ± 3.65	> 0.05	79 ± 1.72	> 0.05	> 0.05

Intra group study

Group G

As shown in [Table-3], Basline Diastolic Blood Pressure was 80.6±4.01. There was insignificant change in diastolic blood pressure after giving drug .Intraoperatively there was significant change at 15mins(after pneumoperitonium 88.53 ± 3.52 p<0.05),than onwards there was no other significant change in pulse rate intraoperatively and post operatively throughout the study (P> 0.05).

Group GD

As shown in [Table-3], Basline diastolic Blood Pressure was 79±3. There was insignificant change in diastolic blood pressure after giving drug . Intraoperatively, there was significant change at 15mins (after pneumoperitonium87.6±2.72, P<0.05), than onwards there was no other significant change in diastolic blood pressure intraoperatively and post operatively throughout the study (P> 0.05).

Intergroup study

As shown in [Table-3], Baseline Distolic blood pressure was comparable to each other in both groups. there was insignificant change in Diastolic Blood Pressure after giving drug in both groups (Group-G; - 79.46 ± 3.96, Group-GD; - 79.80 ± 2.36.46, P> 0.05).

No other significant change in Diastolic Blood Pressure was observed throughout the study (P> 0.05).

Table 4: ETCO2 (Mean± SD)

	GROUP – G	Intra group 'P' Value	GROUP -GD	Intra group 'P' Value	Inter group 'P' Value
Intra-Operative					
5 min	33.4±1.49		33.06 ± 1.46		> 0.05
10 min	34.86 ± 1.33	> 0.05	34.7 ± 1.05	> 0.05	> 0.05
15min(After pneumoperitonium)	37.96 ± 0.99	> 0.05	37.66 ± 1.15	> 0.05	> 0.05
30 min	35.73 ± 1.46	> 0.05	36.13 ± 0.73	> 0.05	> 0.05
45 min	35.33 ± 1.84	> 0.05	35.06 ± 1.55	> 0.05	> 0.05
1 hr	36.10 ± 1.72	> 0.05	35.7 ± 2.07	> 0.05	> 0.05
30 min (After CO2 release)	35.96 ± 1.49	> 0.05	35.56 ± 1.97	> 0.05	> 0.05
2 hr	36.5 ± 1.85	> 0.05	36± 1.84	> 0.05	> 0.05

No significant change in Etco2 were noted in intra and inter group study in both the groups.

Table 5: Respiratory Rate (Per Minute) (Mean± Sd)

	GROUP – G	Intra group 'P' Value	GROUP -GD	Intra group 'P' Value	Inter group 'P' Value
Before giving drug	16.6 ± 1.06		16.20 ± 1.21		> 0.05
5 min after giving drug	16.6 ± 1.30	> 0.05	16.73 ± 1.33	> 0.05	> 0.05
Post-Operative					
Immediate	18.63 ± 1.18	> 0.05	18.23 ± 1.07	> 0.05	> 0.05
15 min	18.16 ± 1.62	> 0.05	18.33 ± 1.47	> 0.05	> 0.05
30 min	18.06 ± 1.20	> 0.05	18.03 ± 1.15	> 0.05	> 0.05
45 min	18.4 ± 1.83	> 0.05	18.3 ± 1.57	> 0.05	> 0.05
1 hr.	18.63 ± 1.15	> 0.05	18.76 ± 1.56	> 0.05	> 0.05
2 hrs.	18.60 ± 1.46	> 0.05	18.73 ± 1.43	> 0.05	> 0.05
3 hrs.	18.46 ± 1.94	> 0.05	18.33 ± 1.82	> 0.05	> 0.05
4 hrs.	18.73 ± 1.33	> 0.05	18.73 ± 1.71	> 0.05	> 0.05
6 hrs.	18.20 ± 1.51	> 0.05	17.93 ± 1.11	> 0.05	> 0.05
8 hrs.	17.80 ± 1.09	> 0.05	17.80 ± 0.96	> 0.05	> 0.05
12 hrs	17.53 ± 1.25	> 0.05	17.60 ± 0.96	> 0.05	> 0.05
24 hrs	17.46 ± 1.38	> 0.05	17.20 ± 1.34	> 0.05	> 0.05

As shown in [Table–5], Baseline respiratory rate was comparable to each other in both the groups. There was insignificant change in Respiratory Rate after giving drug in both groups (Group-G; - 16.60 ± 1.30, Group-GD; - 16.73 ± 1.33, P> 0.05). No other significant change in Respiratory Rate was observed throughout the study (P> 0.05).

Table 6: OXYGEN SATURATION (Mean± SD)

	Group – G	Intra Group 'P' Value	Group -GD	Intra Group 'P' Value	Inter Group 'P' Value
Before giving drug	98.53 ± 0.50		98.46 ± 0.50		> 0.05
5 min after giving drug	98.6 ± 0.40	> 0.05	98.53 ± 0.50	> 0.05	> 0.05
INRA-OPERATIVE					
5 min	98.80 ± 0.40	> 0.05	98.86 ± 0.34	> 0.05	> 0.05
10 min	98.2 ± 0.40	> 0.05	98.4 ± 0.49	> 0.05	> 0.05
15 min(After pneumoperitonium)	98.33± 0.47	> 0.05	98.5 ± 0.50	> 0.05	> 0.05
30 min	98.33 ± 0.47	> 0.05	98.53 ± 0.68	> 0.05	> 0.05
45 min	98.5 ± 0.57	> 0.05	98.63 ± 0.55	> 0.05	> 0.05
1 hr	98.16 ± 0.83	> 0.05	98.43 ± 0.56	> 0.05	> 0.05
30 min (After CO2 release)	98.83 ± 0.37	> 0.05	98.63 ± 0.49	> 0.05	> 0.05
2 hr	98.37 ± 0.51	> 0.05	98.55 ± 0.51	> 0.05	> 0.05
POST-OPERATIVE					
Immediate	98.53 ± 0.50	> 0.05	98.36 ± 0.49	> 0.05	> 0.05
15 min	98.6 ± 0.49	> 0.05	98.46 ± 0.50	> 0.05	> 0.05
30 min	98.56 ± 0.50	> 0.05	98.16 ± 0.79	> 0.05	> 0.05
45 min	98.33 ± 0.47	> 0.05	98.6 ± 0.49	> 0.05	> 0.05
1 hr.	98.66 ± 0.47	> 0.05	98.5 ± 0.50	> 0.05	> 0.05
2 hrs.	98.76 ± 0.43	> 0.05	98.53 ± 0.60	> 0.05	> 0.05
3 hrs.	98.73 ± 0.44	> 0.05	98.46 ± 0.50	> 0.05	> 0.05
4 hrs.	98.7 ± 0.46	> 0.05	98.6 ±0.49	> 0.05	> 0.05
6 hrs.	98.53 ± 0.50	> 0.05	98.5 ± 0.50	> 0.05	> 0.05
8 hrs.	98.4± 0.49	> 0.05	98.83 ± 0.30	> 0.05	> 0.05
12 hrs	98.6 ± 0.49	> 0.05	98.8 ± 0.40	> 0.05	> 0.05
24 hrs.	98.73 ± 0.44	> 0.05	98.86 ± 0.34	> 0.05	> 0.05

As shown in [Table –6]
No significant change in SPO2 was observed throughout the study in both the groups. (P≥ 0.05).

Table 7: POST OPERATIVE SIDE EFFECTS

	Side Effect	Group-G	Group-GD
1	Headache	03	02
2	Dizziness	01	01
3	Dry Mouth	02	02
4	Hypersensitivity	0	0
5	Wound infection	0	0

[Table-7] shows that side effect observed during study. In Group-GD, 2 patients had Headache, 1 patient had dizziness and 2 patients had dry mouth, while in Group-G, 3 patients had Headache, 1 patient had dizziness and 2 patients had dry mouth which did not require any treatment. No other side effect was observed during study. No difference in incidence of side effects in between two groups.

Discussion

Pulse Rate (Per Minute)

Intra group study

Group G

There was insignificant change in Pulse rate after giving drug .Intraoperatively there was significant change in pulse rate at 15mins which was within 20% of pre op value and it was due to pneumoperitonium & did not required any treatment. Thenonwards there was no other significant change in pulse rate intraoperatively and post operatively throughout the study (P> 0.05).

Group GD

There was insignificant change in Pulse rate after giving drug .Intraoperatively there was significant change in pulse rate at 15mins which was within 20% of pre op value and it was due to pneumoperitonium & did not required any treatment. Thanonwards there was no other significant change in pulse rate intraoperatively and post operatively throughout the study (P> 0.05).

Intergroup study

There was insignificant change in pulse rate after giving drug in both groups .No other significant change in pulse rate was observed throughout the study (P> 0.05).

Mohd. Parvez Khan & Monika Kohali et al (2006), Mohd. Parvez Khan & Monika Kohali et al (2009) observed no significant change in pulse rate in between the groups during their study.Our study was in consonance with their study.

SYSTOLIC BLOOD PRESSURE (mmHg)

Intra group study:

Group G:

There was insignificant change in systolic blood pressure after giving drug .Intraoperatively there was significant change in pulse rate at 15mins which was within 20% of pre op value and it was due to pneumoperitonium. Than onwards there was no other significant change in in systolic blood pressure intraoperatively and post operatively throughout the study (P> 0.05).

Group GD:

There was insignificant change in in systolic blood pressure after giving drug. Intraoperatively there was significant change in systolic blood pressure at 15 mins which was within 20% of pre op value and it was due to pneumoperitonium. Than onwards there was no other significant change in systolic blood pressure intraoperatively and post operatively throughout the study (P> 0.05).

Intergroup study:

There was insignificant change in systolic blood pressure after giving drug in both groups .No other significant change in systolic blood pressure was observed throughout the study (P> 0.05).

Mohd. Parvez Khan & Monika Kohali et al (2006)[7], Mohd. Parvez Khan & Monika Kohali et al (2009).[8] observed no significant change in systolic blood pressure in between the groups during their study.

Our study was in consonance with their study.

Diastolic Blood Pressure (Mmhg)

Intra group study

Group G

There was insignificant change in diastolic blood pressure after giving drug. Intraoperatively there was significant change in diastolic blood pressure at 15mins which was within 20% of pre op value and it was due to pneumoperitonium. Than onwards there was no other significant change in in diastolic blood pressure intraoperatively and post operatively throughout the study (P> 0.05).

Group GD

There was insignificant change in in diastolic blood pressure after giving drug . Intraoperatively there was significant change in in diastolic blood pressure at 15mins which was within 20% of pre op value and it was due to pneumoperitonium. Than onwards there was no other significant change in diastolic blood pressure intraoperatively and post operatively throughout the study (P> 0.05).

Intergroup study

There was insignificant change in in diastolic blood pressure after giving drug in both groups .No other significant change in in diastolic blood pressure was observed throughout the study (P> 0.05).

Mohd. Parvez Khan & Monika Kohali et al (2006)[7], Mohd. Parvez Khan & Monika Kohali et al (2009)[8] observed no significant change in diastolic blood pressure in between the groups during their study.

Our study was in consonance with their study.

ETCO2 (mmHg)

There was no significant changes in etco2 in both the groups throu ghout the study(>0.05).

Mohd. Parvez Khan & Monika Kohali et al (2006)[7], Mohd.Parvez Khan & Monika Kohali et al (2009)[8] observed no significant change in ETCo2 in between the groups during their study.

Our study was in consonance with their study.

Respiratory Rate (Per Minute)

There was no significant changes in Respiratory Rate in both the groups throughout the study(>0.05)

Mohd.Parvez Khan & Monika Kohali et al (2006)[7], Mohd.Parvez Khan & Monika Kohali et al (2009)[8] observed no significant change in Respiratory rate in between the groups during their study.

Our study was in consonance with their study.

Oxygen Saturation

There was no significant changes in SPO_2 in both the groups throughout the study(>0.05).

Mohd.Parvez Khan & Monika Kohali et al (2006)[7], Mohd.Parvez Khan & Monika Kohali et al (2009)[8] observed no significant change in Spo2 in between the groups during their study.

Our study was in consonance with their study.

Adverse Effects

Adverse effects were rarely observed and were mainly related to 5-HT3 receptor antagonists. 2 patients in group-G & 3 patients in group-GD had headache which was most common, 1 patient in both group had dizziness and 2 patients in both groups had dryness of mouth which did not require any treatment. No other side effect was observed in both the group. Adverse events observed in this study were not clinically serious and did not differ in incidence between the groups. Thus, dexamethasone did not increase the adverse events when added to granisetron. Our result is similar to other studies.[9,10]

B.N. Biswas & A. Rudra et al observed that 10 patients had headache in both groups, 8 patients had dry mouth in both groups, and 8 patients in group-G & 9 patients in group-GD had dizziness during their study. Our observation consistent with this study. While, Mohmad. Parvez Khan & Monica Kohali et al also observed that 6 patients had Headache & 4 patients had dizziness in group-G out of 60, while 2 patients had headache & 1 patients had dizziness in group-GD out of 60 during their study. Our result consistent with this study also.

Falkson et al (1994)[11] reported that mild headache occurs in patients receiving Granisetron.5HT3 receptors do not affect heart rate, blood pressure respiratory rate; there is no drug interaction reported with the usual perioperative anaesthetic drugs.Minor, asymptomatic, transient ECG changes have been reported in patients receiving 5HT3 antagonists.No ECG changes were observed in the patients who received Granisetron alone and also in the combined group,

Adverse effects related to a single dose of Dexamethasone

are extremely rare. Wang et al (1999)[12] stated that they were unable to find any report on side effects associated with a single dose of Dexamethasone.Less than 24 hour of Dexamethasone therapy is considered safe and almost without adverse effects.In our study also, no adverse events were noted in the postoperative period in the combined group where Dexamethasone was used.

Conclusion

- Patients were haemodynamically stable throughout the study in both the groups.
- No difference in adverse effects was noted in both the groups.

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References

1. Huang JC, Shieh JP, Tang CS, Tzeng Jim Chu KS, Wang JJ et al. Low-dose dexamethasone effectively prevents postoperative nausea and vomiting after ambulatory laparoscopic surgery. Can J Anaesth 2001; 48: 973-977.
2. Yoshitaka Fujii H, Tanaka MD, Hidenori Toyooka et al. Prophylactic antiemetic therapy with a combination of Granisetron and Dexamethasone in patients undergoing middle ear surgery. Br J Anaesthesia 1998; 81: 754-756.
3. Ashraf S. Habib, Tong J, Gan et al. Combination antiemetics what is the evidence International Anaesthesiology Clinics 2003; 41: 119-114.
4. McKenzie R, Tantisira B, Karembelkar et al. Comparison of ondansetron with ondansetron plus Dexamethasone in the prevention of PONV. Anaesth Analg 1994; 9: 15-22.
5. Lopez Olando L, Carracosa F, Pueyo FJ et al. Combination of Ondansetron and Ondansetron plus Dexamethasone for the prevention of PONV. Br J Anaesth 1996; 76: 835-840.
6. Yamac Erhan, Elvan Erhan, Hasan Aydede, Okan Yumus and Alp Yentur et al. Ondansentron, granisetron and dexamethasone compared for the prevention of postoperative nausea and vomiting in patients undergoing laproscopic cholecystectomy. A randomized lacebo-controlled study. Surg Endosc. 2008 Jun; 22(6): 1487 - 92.
7. Mohd. Parvez Kahn, Monica Kohali, G.Arunkumar, Vinita Singh et al. Granisetron Dexamethasone combination for prevention of postoperative nausea and vomiting after laparoscopic cholecystectomy; A double blind, placebo controlled study. J Anaesth Clin Pharmacol 2006; 22(3) ; 261-265.
8. Bermudz J, Boyle EA, Minter WD et al. The antiemetic potential of the 5HT3 receptor antagonist BRL 43694. Br J Cancer 1988; 58: 644-50.
9. Furue H, Oota k, Taguchi T, Niitani H et al. Clinical evaluation of granisetron against nausea and vomiting induced by anticancer drugs. (1) Optimal dose-finding study. J Clin Therap Med 1990; 6: 49-61(Japanese).
10. Aapro MS, Alberts DS et al. Dexamethasone as an antiemetic in patients treated with cisplatin. N Engl J Med 1981; 305: 520.
11. Falkson G, Van Zyl AJ et al. A phase I study of a new 5HT3 receptor antagonist, BRL43694A, an agent for the prevention of chemotherapy-induced nausea and vomiting. Cancer Chemotherapy Pharmacology 1989; 24: 193-196.
12. Wang JJ, Ho ST, Liu HS, Ho CM et al. Prophylactic antiemetic effect of Dexamethasone in women undergoing ambulatory laparoscopic surgery. Br J Anaesth 2000; 84: 459-462.

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