A Comparison Between Ondansetron and Dexamethasone In The Prevention of Postoperative Nausea and Vomiting After Elective Overioctomy (oophorectomy)

layla Khalil Ibrahim (MBCHB, FICMS) [1]

Abstract

Background: Laparoscopic surgeries are associated with an appreciable high rate of post-operative nausea and vomiting, there is a trial to compare the effect of two drugs to minimize it.

Objective: To compare the effect of ondansetron and dexamethasone in a sample of patients.

Patients and Methods: One hundred had been patients scheduled for laparoscopic overioctomy match divided to two groups randomly, given same anesthesia technique, Group 1; 50 receive dexamethasone 8mg i.v. (8mg/2ml). Group 2; 50 receive ondansetron (de –vomit, 4mg/2nl) iv. Both nausea and vomiting assessed during 24 h after operation. The assessment tool according to belliville scoring scale.

Results: The two group match for better comparison study, list of side effect destitution in both group were assessed, post-operative nausea and vomiting (PONV) assessed in different episodes during the operation time, their PONV was lower in both groups. No superior drugs found.

Conclusion: Use of ondansetron (de-vomit, 4mg/2nl) iv. And dexamethasone 8mg i.v. (8mg/2ml) both can reduce PONV, but the intensity of these symptoms between the groups were not statistically significant difference.

Key words: Ondansetron, dexamethasone, post-operative nausea, overioctomy.

Corresponding Author: Layla_khalil@yahoo.com.

Received: 23th January 2017

Accepted: 16 th April 2017

[1]Medical City - Special Nursing Home - Baghdad - Iraq.

Introduction

Post-operative nausea and vomiting PONV are common for a lot surgeries of not understand causes [1]. With related incidence 53-72% [2][3]. This may resulted in a lot of consequences like delay patients discharge.

A lot of antiemetic has been studded for minimizing this phenomenon especially in laparoscopic surgery [3][4][5][6][7].

The ondansetron a competitive serotonin type 3 receptor antagonist. It is effective in the treatment of nausea and vomiting caused by cytotoxic chemotherapy drugs, including cisplatin, and has reported anxiolytic and neuroleptic properties is one of derivatives of carbazoline, with structure same as serotonin, but does not have any activity of dopenergic, histamine, adrenergic and cholinergic receptors. It can be reduce the activity of vagus nerve.

The dexamethasone, dexamethasone is a corticosteroid that prevents the release of substances in the body that cause inflammation. Dexamethasone is used to treat many different conditions such as allergic disorders, skin conditions, ulcerative, colitis,

arthritis, lupus, psoriasis, or breathing disorders. A corticosteroid it an inexpensive and effective antiemetic drug [8].

To make sure dexamethasone is safe for one have to be wear of the following liver disease (such as cirrhosis); kidney disease; a thyroid disorder; a history of malaria; tuberculosis; osteoporosis; a muscle disorder such as myasthenia gravis; glaucoma or cataracts; herpes infection of the eyes; stomach ulcers, ulcerative colitis, diverticulitis, inflammatory bowel disease; depression or mental illness; congestive heart failure; or high blood pressure [9]. Dexamethasone may also be used for purposes not listed in this medication, this study trail to explore these two drugs effect.

Patients and Methods

Study design and setting

Cross-sectional with some analytical contain conducted in AL-Jarah Hospital in Bghdad- Iraq, from; 1st of June to 2013 to 30th July 2015. A sample consist of 100 female scheduled for ovary removal. Their age from 45-55 year old. .indications for oophorectomies was decided by the supervised sergeants.

Exclusion criteria

Body mass index (BMI) above 35, smoking, diabetes mellitus, hypertension, steroid therapy, history of vestibular neuritis.

The sample divided in to 2 groups 50 for each. Group 1; 50 receive ondansetron (de-vomit, 4mg/2nl)iv. Group 2; 50 receive dexamethasone 8mg i.v. (8mg/2ml).

Same standard anesthesia technique was used in all cases. Patients were monitored during anesthesia by continued electrocardiogram, noninvasive blood pressuer, pulse oximetry .premedication was given using midazolam at 0.15 mg/kg .general anesthesia was induced with propofol 2mg/kg. and fentanyl 2mcg/kg .in all group vacuronium 0.1mg/kg was given to facilitate tracheal intubation .anesthesia was maintained with1.0 %-2.5 % (inspired concentration) isoflurane in oxygen .additional fentanyl and vacuronium were used if necessary .after tracheal intubation a nasogastric tube was placed to promote baseline emptying of the stomach of air and gastric content .the intravenous fluids used during surgery was 0.9% saline .reversal of muscle relaxation was achieved with atropine and neostigmine at the end of surgery .during surgery the patients were placed in the revers trendelburge position co2 was carefully evacuated at the end of surgery by manual compression of the abdomen with open trocars .the nasogastric tube was removed at the end of the operation. After surgery; patients were observed for 24 hours.

PONV; the incidence of nausea and vomiting was recorded during 6 assessment period each period about four hour. The measurement done by trained nursing staff and the resident doctors, as a routine work and assessing nausea and vomiting and other vital sign.

Questioner conducted to assess the severity of nausea and vomiting. The assessment tool According to belliville scoring scale.

The score; the intensity of vomiting was evaluated through Bellville scale (lake of nausea and vomiting = 0, nausea =1, nausea with belching =2, and vomiting = 3).

Statistical analysis

Measurement of 6 times occurrence of the outcome understudy, MINI TAB soft were v. 22 used. Descriptive statistic as graph and table. Analytical statistic as t test and chi test. P value below 0.05 represent statically significant edge.

Results

According to table (1) both two studies group no differences researcher try to match both group for better analysis.

The side effect value for both studies group shows no differences both drug have same effect on side effect values.

Table 1 show there are no demographic and anesthetics techniques deference's,

researcher trying to concentrate on problem of PONV only. Table 2 shows that other consequences apart from PONV deference's, no deference's appears.

Table (1): Demographic data and anesthetic data.

Z	Demographic data	Dexamethasone	Ondansterone	p=value
1	Age (year) mean	45.9	46.1	NS*
2	BMI mean	33	32	NS
3	Duration of surgery mean	77.2	75.8	NS
4	Duration of anesthesia mean	90.4	89.7	NS
5	Mean arterial presser	88.8	88.8	NS
6	Pulse rate mean	76	77	NS
7	SPO2 mean	98	97	NS

*Ns= not significant differences p=value above 0.05

Table (2): Side effect destitution in both group.

	Side effect	Dexamethasone	%	Ondansterone	%	pvalue
1	Head ache	5	10	4	8	ns
2	Drowsiness	1	2	3	6	ns
3	Dizziness	4	8	2	4	ns

*Ns= not significant differences p=value above 0.05

The PONV value for both studies group show no differences both drug have same effect on PONV values.

Table (3): Score of PONV in the 2 group.

Time	score	Dexamethasone	%	Ondansterone	%	p= value
0-4h	0	39	78	28	56	0.213
	1	10	20	20	40	0.017
	2	1	2	2	4	1.00
	3	0	0	0	0	invalid
>4-8h	0	33	66	32	64	0.324
	1	15	30	17	34	0.065
	2	1	2	1	2	1.00
	3	1	2	0	0	invalid
>8-12h	0	27	64	30	60	0.765
	1	19	38	15	30	0.08
	2	3	6	5	10	1.00
	3	1	2	0	0	invalid
>12-16h	0	38	76	34	68	0.712
	1	9	18	13	26	0.0961
	2	2	4	2	4	1.00
	3	1	2	1	2	1.00
>16-20h	0	41	82	40	80	0.983
	1	6	12	10	20	0.654
	2	2	4	0	0	invalid
	3	1	2	0	0	invalid
>20-24h	0	44	88	43	86	0.654
	1	5	10	7	14	0.456
	2	1	2	0	0	invalid
	3	0	0	0	0	invalid

*No significant differences p=value above 0.05

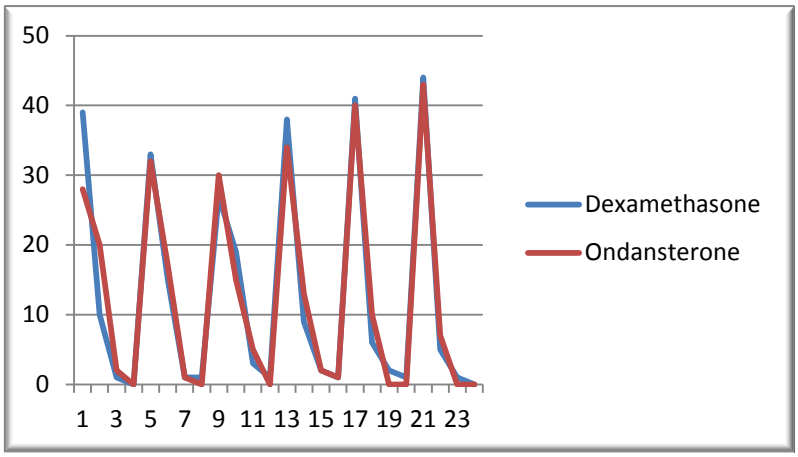

Figure (1): The score changes between the two study groups.

Discussion

Post-operative nausea and vomiting (PONV) was very important issue for anesthetics and surgeons, as well as patient, the staff in the operation word, recovery room and finally the surgical unit [12].

Concerning intensity of PONV among the study groups, the observation of 24 h monitoring of this event, ondasterone group show less intensity then dexamethasone one [12][13][14].

This comparison not well studded in the literatures, but in Iraq there are always need for alternatives, unfortunately the international finding not well helpful in this issue. Mohammed et al (2012). Who conduct a great comparison between ondasterone (4mg IV) granisterone (3mg IV) and dexamethasone (8mgIV) all compared to placebo, all the 3 drugs in similar manner reduced the occurrence of PONV [15].

Lopiez-olaondo *et al* reported that dexamethasone was effective as ondasterone in reducing PONV [16].

Gupta also concluded that both drugs have same effect [17]. Munozs *et al* reach the same conclusions [18]. Schaider *et al* reach that ondosrerone show more effect on reducing PONV [19]. Bolton *et al* show that dexamethasone has a better effect in post tonsillectomy operation [20].

Lonescu *et al* study 60 patients undergoing laparoscopic cholecystectomy he showed that PONV in dexamethasone group was little in compression to other one with good significant level [21].

From review of above studies a lot of finding but all not reach a clear cut line for dissension ,study design play a gear role, sample size ,patient variations, type of surgical procedures, anesthesia type, POVN definitions also have a role in this results , and finally dose have a good hand in change the results also[22].

In current study both 2 drugs were reduced POVN equally, so it suitable to use in such conditions.

As far as both 2 drugs have the same effects, the use of dexamethasone seems to be better, because of its cost. By simple cost - benefit analysis [15]. MOH cost list. Scientifically the present study showed that both drugs have advantages and disadvantages, but the safety of both has been confirmed [23][24][25].

In conclusion; PONV can be reduced by using both drugs, with no superior one. Although ondasterone was little more effective than dexamethasone in reducing PONV, but both not eliminate the problem. Further studies needed to clarify the real effects.

References

[1] The Royal College of Anesthetists provides patient resources, such as "What is anesthesia?" Available at: www.rcoa.ac.uk/ (accessed 22 November 2014).

[2] An article in Hospital Pharmacist explains inhaled and intravenous anesthesia. Digger T, Viira DJ. Anesthesia and surgical pain relief-the ideal anesthetic agent. Hospital Pharmacist 2013; 10:432–40.

[3] Macario A, Weinger M, Carney S, Kim A. Which clinical anesthesia outcomes are important to avoid? The perspective of patients. Anesth Analg 2013; 89:652-8.

[4] Macario A, Weinger M, Truong P, Lee M. Which clinical anesthesia outcomes are both common and important to avoid? The perspective of a panel of expert anesthesiologists. Anesth Analg 2013;88:1085-91.

[5] Apfel CC, Kranke P, Katz MH, Goepfert C, Papenfuss T, Rauch S, *et al.* Volatile anaesthetics may be the main cause of early but not delayed postoperative vomiting: a randomized controlled trial of factorial design. Br J Anaesth 2012; 88:659-68.

[6] Chen HL, Wong CS, Ho ST, Chang FL, Hsu CH, Wu CT. A lethal pulmonary embolismduring percutaneous vertebroplasty. Anesth Analg 2012; 95:1060-2.

[7] Wu CL, Berenholtz SM, Pronovost PJ, Fleisher LA. Systematic review and analysis of postdischarge symptoms after outpatient surgery. Anesthesiology2014; 96: 994-1003.

[8] Bano F, Zafar S, Aftab S, Haider S. Dexamethasone plus ondansetron for prevention of postoperative nausea and vomiting in patients undergoing laparoscopic cholecystectomy: a comparison with dexamethasone alone. J Coll Physicians Surg Pak. 2008; 18(5):265-9.

[9] Gautam B, Shrestha BR, Lama P, Rai S. Antiemetic prophylaxis against postoperative nausea and vomiting with ondansetron-dexamethasone combination compared to ondansetron or dexamethasone alone for patients undergoing laparoscopic cholecystectomy. Kathmandu Univ Med J (KUMJ). 2008 ;6(23):319-28.

[10] Tramèr MR. A rational approach to the control of postoperative nausea and vomiting: evidence from systemic reviews. Part I. Efficacy and harm of antiemetic interventions, and methodological issues. Acta Anaesthesiol Scand 2011;45:4-13.

[11] Apfel CC, Läärä E, Koivuranta M, *et al.* A simplified risk score for predicting postoperative nausea and vomiting. Anesthesiology 2010; 91:693-700.

[12] Apfel CC, Korttila K, Abdalla M, IMPACT Investigators. A factorial trial of six interventions for the prevention of postoperative nausea and vomiting. N Engl J Med 2014; 350:2441-51.

[13] Diemunsch P, Joshi GP, Brichant JF. Neurokinin-1 receptor antagonists in the prevention of postoperative nausea and vomiting. Br J Anaesth 2009; 103:7-13.

[14] Kakuta N, Tsutsumi YM, Horikawa YT, *et al.* Neurokinin-1 receptor antagonism, aprepitant, effectively diminishes post-operative nausea and vomiting while increasing analgesic tolerance in laparoscopic gynecological procedures. J Med Invest 2011; 58:246-51.

[15] Mahmoud Eidi, Khosro Kolahdouzan, Hamzeh Hosseinzadeh, Razieh Tabaqi. A Comparison of Preoperative Ondansetron and Dexamethasone in the Prevention of Post-Tympanoplasty Nausea and Vomiting. Iran J Med Sci. 2012; 37(3): 166–172.

[16] Mahmoud Eidi,1 Khosro Kolahdouzan,2 Hamzeh Hosseinzadeh,1 andRazieh Tabaqi A Comparison of Preoperative Ondansetron and Dexamethasone in the Prevention of Post-Tympanoplasty Nausea and Vomiting Iran J Med Sci. 2012 Sep; 37(3): 166–172 .

[17] Gupta A. evidence base medicine in day surgery .curr open anesthesia 2007; ; 25 -5.

[18] Munoz HR, Mertz VF. Contriled trail of dexamethasone with droperdoland

ondasterone for treatment of PONV rev med chil. 2006134; 697-702.
[19] Schainder TB, veira AM, Comparative study af antiemetic .rev.bras.anesteresiol .2008; 58; 612-16.
[20] Bolton CM, Prophylaxis of PONV in children. bj anesth.2006; 597-604.
[21] Cruz NI. Timing of ondansterone administration to prevent PONV) P.R health Sci J. 2008; 27; 43-47.
[22] Ionescu D, Mitre C, Leuke L, Bertianu C, Paskarenko G, Puia C. *et al.* procedures to prevent PONV .aneth.reanimatrol.2007 50-56.
[23] Aopro MS. dexamethasone as antiemetic in PONV N. J. MED. 1981 77; 162.84.
[24] Watch MF.(etiology of PONV) anesthesiology 1992 77;162-84.
[25] Holte K. Perioperative glucocorticoid administration pathophysiological effect and clinical implication) J Am coll surg. 2012; 195; 694-712.