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A STUDY COMPARING EFFICACY OF P6 ACUPRESSURE POINT, PALANOSETRON AND METOCLOPRAMIDE IN PREVENTION OF POST OPERATIVE NAUSEA AND VOMITING AFTER OBSTETRIC SURGERIES

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ABSTRACT

Introduction: Obstetric surgery places the patient at a high risk for Intra Operative Nausea and Vomiting (IONV), as well as Post-operative nausea and vomiting (PONV). Thus, PONV prophylaxis is an important component in providing safe anesthesia for these patients. Pharmaceutical interventions like metoclopramide and 5-HT3 antagonists are the current treatment of choice for PONV prophylaxis. However newer drugs are less easily available and more expensive and there is always a concern regarding the effects on fetus. There is a renewed interest in a non-pharmaceutical intervention that can be easily available and simple to use even at remote centers in the country. **Aims and objectives:** This study attempts to evaluate and compare efficacy of antiemetic effects of P6 acupressure point with metoclopramide and palonosetron for PONV prevention in obstetric surgery. **Material and methods:** A randomized control trial was done on 300 patients with ASA grade I-II, between ages of 18-45 undergoing obstetric surgery under spinal anesthesia at a tertiary care center. The patients were randomly allocated in four groups using a random sequence. In group I, 98 patients received metoclopramide 0.2 mg.kg intravenous (IV) 5 minutes prior to induction of anesthesia. In group II, 102 patients received 75 µg palonosetron IV 5 minutes prior to induction. Group IIIA contained 51 patients in acupressure (wrist band) group. Group IIIB included 49 patients in acupressure with capsaicin paste. All patients were followed till 24 hours post surgery and incidence of PONV was recorded intra-operative and till 30 minutes, at 2 hours, 6 hours and 24 hours post surgery. The results were analyzed using SPSS software. **Results:** The incidence of nausea

was higher in patients administered metoclopramide as compared to palonosetron or acupressure. The patients in wristband group had significantly lower (p=0.0316) incidence of nausea as compared to metoclopramide. The wristband group had 3% lower incidence of nausea as compared to palonosetron (p=0.32). Acupressure wristband can be considered as effective as palonosetron in prevention of nausea. The incidence of nausea was significantly lower in palonosetron group as compared to metoclopramide group (p= 0.0353). The cost analysis signifies the advantage of acupressure methods. **Conclusion:** Acupressure wristband is a safe and highly effective method to prevent PONV, even in emergency settings and highrisk patients. The acupressure wristband can help in bringing down cost and can be easily made at the small primary healthcare centers and trained midwifes, hence circumventing the issue of drug availability and economic burden.

KEYWORDS: P6 acupressure point, PONV, metoclpramide, 5 HT3 Antagonist, palonosetron.

INTRODUCTION

Post-operative nausea and vomiting (PONV) is a common complication after surgery. Incidence of PONV has been described to be as high as 60-80% in some studies.[1] Multiple studies have emphasized the economical burden of PONV and its effect on post-operative recovery.[2] The etiology of PONV associated with obstetric surgery is considered multifactorial and includes progesterone-induced reduction in LES (Lower Esophageal Sphincter) tone, increased intra-gastric pressure, hypotension, visceral stimulation, exteriorization of uterus, and use of neuraxial anesthesia.[3]

Obstetric surgery places the patient at a high risk for Intra Operative Nausea and Vomiting (IONV), as well as PONV. Thus, PONV prophylaxis is an important component in providing safe anesthesia for these patients. Pharmaceutical interventions like metoclopramide and 5-HT3 antagonists are the current treatment of choice for PONV prophylaxis.[4] However newer drugs are less easily available and more expensive and there is always a concern regarding the effects on fetus. There is a renewed interest in a non-pharmaceutical intervention that can be easily available and simple to use even at remote centers in the country. The P6 (neit guam) meridian point is recognized in acupressure as a target point for reducing nausea and vomiting. This study attempts to evaluate and compare acupressure with metoclopramide and palonosetron for PONV prevention in obstetric surgery.

MATERIAL AND METHODS

A randomized control trial was done on patients undergoing obstetric surgery under spinal anesthesia at obstetrics and gynaecology department of G S V M Medical College Kanpur after clearance from the institute's ethics committee. Patients with kidney dysfunction, diabetes, BMI >35 kg/m^2, smokers were excluded from the study. Three hundred patients with ASA grade I-II, between ages of 18-50 years were included in the study. The patients were randomly allocated in four groups using a random sequence. In group I, 98 patients received metoclopramide 0.2 mg.kg intravenous (IV) 5 minutes prior to induction of anesthesia. In group II, 102 patients received 75 µg palonosetron iv 5 minutes prior to induction. Group IIIA contained 51 patients in acupressure (wrist band) group. Group IIIB included 49 patients in acupressure with capsaicin paste. An acupressure wristband/capsaicin paste with dressing was applied at the P6 point (a point on the ventral surface of forearm between the palmaris longus and carpi radialis extensor tendons) For a distance two times wider than the distance of the thumb interphalangeal joint from the distal wrist crease (almost four cm from the distal wrist crease).[8] An elastic band of 1.5 cm width and a circular plastic button at the end for applying pressure to P6 Point was used. This band was applied 5 minutes prior to induction of anesthesia and kept in place for 24 hours post surgery.

To maintain appropriate blinding both metoclopramide and palanosetron were diluted with normal saline to get a five ml injection. patients in group I and II were applied a sham band (simple band without any acupressure point stimulating button on it) where as group III patients were given five ml normal saline injection. These patients underwent caesarean sections (elective and emergency), laparotomy for rupture uterus and ectopic pregnancy. All patients were followed till 24 hours post surgery and incidence of PONV was recorded intra-operative and till 30 minutes, at 2 hours, 6 hours and 24 hours post surgery. The rescue drug used was ondansetron in group I and III A, B and dexamethasone in group II. The results were analyzed using SPSS version 20 software. The monitored and calculated data were analysed using student's unpaired t test and z test. P value of <0.05 was considered significant.

RESULTS

The groups were well matched demographically in terms of mean age and weight of the patients and proportions of primigravida patients (Table 1). The incidence of nausea was higher in patients administered metoclopramide as compared to palonosetron or acupressure. The patients in wristband group had significantly lower (p=0.0316) incidence of nausea as

compared to metoclopramide. The p-value on comparison of two groups was also statistically significant (0.0316). The wristband group had 3% lower incidence of nausea as compared to palonosetron (p=0.32). Acupressure wristband can be considered as effective as palonosetron in prevention of nausea. The incidence of nausea was significantly lower in palonosetron group as compared to metoclopramide group (p= 0.0353). The difference between acupressure by capsaicin paste and other three groups was not significant. The incidence of vomiting was highest in palonosetron group (15%) but the difference was not statistically significant (Table 2). All the interventions were equally effective in prevention of vomiting again highlighting the efficacy of the acupressure wristband. Incidence of side effects was highest in the capsaicin group 24% (p<0.001) included pain, erythema and itching at the at the application site (table 3). Acupressure is extremely cost effective over palonosetron and metoclopramide as the number of patients increases. (figure 1).

Table 1- Patient demographic information.

Variables	group I	group II	group IIIa	group IIIb	p value
Age (mean)years	25.33	24.16	24.33	24.67	0.066
Weight (mean) kg	56.34	57.98	53.67	56.65	0.617
Primigravida (n)	34	30	32	33	0.915

Table 2- Incidence of nausea in various groups.

Timings	groupI (metoclopramide)		group II (palanosetron)		group IIIa (wrist band)		group IIIb (capsciacin)	
	n	%	n	%	n	%	n	%
IONV, <30 min	7	7.1%	4	3.9%	2	3.9%	2	4.08%
<2 hours	20	20.4%	14	13.7%	6	11.7%	7	14.3%
2-6 hours	3	3.06%	2	1.9%	-	-	1	2.04%
Total	30	29.4%	20	20.4%	8	15.6%	5	10.2%

p value- *Group I vs II-* ***p=0.0353****, gpI vs IIIa* ***p=0.0316,*** *gp I vs IIIb p=0.11 Gp II vs III a p= 0.326 gp II vs III b p= 0.442 gp IIIa vs IIIb p=0.301.*

Table 3- Incidence of vomiting in various groups.

Timings	groupI (metoclopramide)		group II (palanosetron)		group IIIa (wrist band)		group IIIb (capsciacin)	
	n	%	n	%	n	%	n	%
IONV, <30 min	3	3.06%	6	5.8%	2	3.9%	3	6.1%
<2 hours	9	9.1%	9	8.8%	2	3.9%	2	.08%
2-6 hours	-	-	-	-	-	-	-	-
Total	12	12.2%	15	14.7%	4	7.8%	5	10.2%

p value *Group I vs II- p=0.26, gpI vs IIIa p=0.17, gp I vs IIIb p=0.32 Gp II vs III a p= 0.0 gp II vs III b p= 0.142 gp IIIa vs IIIb p= 0.31.*

Table 4--Incidence of side effects.

Number		percentage	
Group I (metoclopramide)	n= 98	1	1.02%
Group II (palanosetron)	n=102	3	2.94%
Group IIIa (wrist band)	n=51	1	1.96%
Group IIIb (capsaicin)	n=49	12	24.48%

P value - Group I vs II- p=0.156, gpI vs IIIa p=0.30 gp I vs IIIb ***p=<0.001*** *Gp II vs III a p= 0.36 gp II vs III b* ***p= <0.001*** *gp IIIa vs IIIb* ***p= 0.005.***

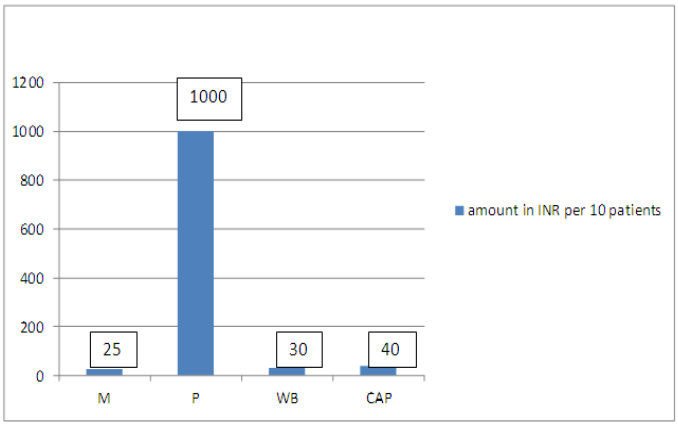

Figure 1- cost comparison.

DISCUSSSION

PONV prophylaxis has been a subject of multiple studies and meta-analysis but still evades an effective solution. Metoclopramide and 5HT3 antagonists are the mainstays of PONV prophylaxis. However, concerns about cost and side effects have led to interest in non-invasive methods like acupressure. This is especially true in setting of obstetrics where the effect of drug on the fetus and during lactation have to be kept in mind.

Our study shows that acupressure by wristband provides superior PONV prophylaxis in obstetric surgeries as compared to metoclopramide and is as effective as the newer and arguably better, 5HT3 antagonist palonosetron. However all the three interventions were equally effective in prevention of vomiting.

The P6 point is the major acupressure point studied however other points studied have been Shenmen (H7) and Shang Wen (CV13).[6,7] The exact mechanism of PONV reduction by P6

stimulation is not known.[5] The results in literature have been mixed with some studies showing a significant reduction in PONV whereas some failing to show any major effect. The Cochrane review by Griffth et al clearly showed that P6 acupressure point reduces the incidence of PONV as compared to sham treatment. There was no difference in efficacy of P6 point in prevention of PONV as compared to various pooled drugs as well.[5] However, the study by Stein et al did not detect difference in either group.[9]

The acupressure wristband was found to be significantly better than metoclopramide in nausea prophylaxis. The incidence was lower than palonosetron group as well but not statistically significant. Hence it can be implied that wristband is not inferior to palonosetron in prevention of nausea. This fact is important as palonosetron is much more expensive and less easily available than the acupressure band. A cheaper, more readily intervention like band if found efficacious can be preferred over more expensive and difficult to obtain drug like palonosetron.

The incidence of nausea was significantly lower in palonosetron group as compared to metoclopramide group. The p value by a more stringent two-tailed test (as the drug is more expensive), the p value was 0.07. This value of 0.07 is also close to the significant level of 0.05 and thus denotes a trend towards statistical significance that may be brought forward in a larger sample but is currently not statistically significant.

In contrast to the incidence of nausea, there was no significant difference between the groups in incidence of vomiting. This finding also highlights the reason why nausea and vomiting must be recorded separately to ensure proper recording of results and comparability of the studies, as both these parameters are independent. Acupressure wristband can be considered equally efficacious in prevention of post-operative vomiting as metoclopramide and palonosetron.

Good efficacy along with absence of major side effects makes P6 acupressure stimulation an attractive option in obstetrics anesthesia. Efficacy of P6 point in caesarean and other gynecological surgeries, versus a placebo has been established in multiple studies.[10-14] However studies comparing acupressure to other drugs in obstetrics surgery have been very few. We could not find any study comparing acupressure to 5-HT3 antagonists and very few comparing acupressure with dopamine antagonists.

CONCLUSION

The study demonstrates the efficacy of acupressure wristband in PONV prophylaxis for obstetric surgeries in comparison to metoclopramide and the new 5-HT3-antagonist palonosetron. The acupressure wristband can help in bringing down cost and can be easily made at the small primary healthcare centers and trained midwifes, hence circumventing the issue of drug availability and economic burden. A non-invasive, inexpensive intervention like acupressure can be extremely useful in public health care system in India.

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