

Comparative Efficacy of Acupuncture at p6 Point with 0.2ml 50% Dextrose and Inj Ondansetron 50 µg kg⁻¹ IV for Preventing Postoperative Nausea and Vomiting

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ABSTRACT

Background: There is considerable evidence that acupuncture applied at the traditional Chinese acupuncture point P6 is effective at preventing PONV (post operative nausea and vomiting) with very few side-effects. Furthermore, the effect compares favourably with antiemetic drugs.

Patients & Methods: The study is conducted on a total of 50 patients, 25 for each group, age group ranging between 4 to 60years, ASA 1&2 category posted for surgery under General Anaesthesia.

Results: The incidence of vomiting in dextrose group and ondansetron groups were equal, compared using chi-square test. P value was found to be 0.656. This shows that dextrose group was equally effective as ondansetron group.

Conclusions: We found Injection of dextrose at P6 was equally effective as compared to Ondansetron IV in the prevention of post operative nausea and vomiting in the first 6 hours post operatively.

KEYWORDS: P6 injection, 50% Dextrose, Nausea, Vomiting, Ondansetron.

Postoperative nausea and vomiting (PONV) continues to be a common complication of surgery. It is a limiting factor in the early discharge of ambulatory surgery patients and is a leading cause of unanticipated hospital admission.^{1,2} PONV can lead to increased recovery room time, expanded nursing care, and potential hospital admission—all factors that may increase total health care costs. Equally important are the high levels of patient discomfort and dissatisfaction associated with PONV. Patients report that avoidance of PONV is of greater concern than avoidance of postoperative pain³ and are willing to spend up to US\$100 out of pocket for an effective antiemetic⁴, yet more than a quarter of patients continue to experience PONV within 24 h of surgery.^{5,6} Among high-risk patients, the incidence of PONV can be as frequent as 70% to 80%.⁷ Published evidence suggests that universal PONV prophylaxis is not cost-effective. Although some advocate prophylactic antiemetic therapy for high-risk patients and rescue antiemetic treatment for episodes of PONV, the optimal approach to PONV management remains unclear to many clinicians. Guidelines for prevention and treatment of PONV based on data from systematic reviews of randomized trials have been published.^{8,9} However, these guidelines did not consider evidence from sources other than systematic reviews. Evidence from single studies or data from logistic regression (aiming to identify risk factors for PONV) were not included. These guidelines also need to be updated with new evidence on the control of PONV.

The mechanism of action of acupuncture is still uncertain. It may be that low frequency stimulation of the skin activates A-β and Aα fibers, which may influence neurotransmission in the dorsal horn or higher centers. The endogenous opioid system is probably involved; 25 yrs ago, increased concentrations of β-endorphins were reported in human cerebrospinal fluid after acupuncture in patients with chronic pain.¹⁰ There is evidence to suggest that different frequencies of stimulation are associated with the release of specific opioids. For example, 2 Hz stimulation releases enkephalin, β-endorphin, and endomorphin; 100 Hz stimulation releases dynorphin. Perhaps part of the mechanism of action in nausea and vomiting is explained by the fact that acupuncture has been shown to inhibit gastric acid secretion and normalize gastric dysrhythmia. The release of β-endorphin in the cerebrospinal fluid will potentiate the antiemetic actions at the μ-receptor.¹¹

Present study was conducted to evaluate the effect of P6 point injection with 50% dextrose 0.2ml for preventing PONV as compared to ondansetron after general anaesthesia.

PATIENTS & METHODS

After getting ethical committee approval and informed patient consent. 50 ASA I and II patients of both sexes, age group ranging between 4 to 60 years, posted for surgery (General surgery, Laparoscopic surgery, ENT, Paediatric, Orthopaedic, Obstetric and Gynaecological surgery) under General

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Anaesthesia were selected in this randomised, double blind study. Exclusion criteria were patients with cardiovascular disease, central nervous system problems, previous history of PONV & motion sickness. Smokers were also not included in the study.

They were randomly allocated into 2 groups based on the computer generated random numbers table. People in Group A received P6 point injections with 50% dextrose 0.2ml at 2cms proximal to the palmar crease in between the tendons of Palmaris longus and extensor Carpi radialis with a 29G insulin syringe just under the skin taking care to avoid piercing the fascia after the induction of anaesthesia. Patients in Group B received 50µg kg⁻¹ of ondansetron at the end of surgery.

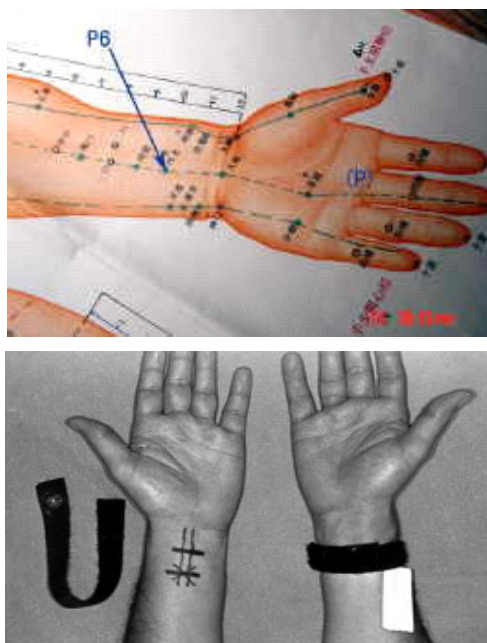


Figure 1

Location of P6 meridian point and the proper application of the acupressure wristband CHINESE NAME of Acupuncture Point P6: Neiguan, Nei means medial; guan means pass. The point is at an important site at the medial aspect of the forearm, like a pass.

Anaesthesia was standardized for all the patients. No antiemetic medications were given either during or before the surgery. All our patients received alprazolam 0.5mg at night and 1 hour before the surgery and premedication inj.glycopyrolate 0.004mg kg⁻¹. Induction was done with inj. Thiopentone 5mg kg⁻¹ and inj. Fentanyl 2µg kg⁻¹ and maintained with N2O and oxygen and isoflurane 0.8-1%. Muscle relaxation was maintained with inj.vecuronium 0.08 mg/kg. IV Fentanyl was given for pain relief in the recovery room and postoperative period. Ondansetron 4mg was prescribed for intolerable nausea and vomiting in the recovery room and postoperative ward.

Both patients and doctors were unaware of the group allocation. The incidence of nausea and vomiting was noted for the first 6 hours after the end of surgery. An anaesthetist blinded for the study assessed the presence of nausea and vomiting. Nausea was classified based on the severity as none, mild, moderate and severe. Vomiting and retching were not distinguished and were classified based on the number of episodes over 6 hours; none, mild (0-2) episodes, moderate (2-4) and severe (>4). At the end of 6 hours patients were assessed for antiemetic and analgesic requirements.

RESULTS

The results of the study were analysed with the appropriate statistical method using SPSS version 16. Age, sex ratio, weight of patients and duration of surgery were analysed using chi-square Test and were found to be statistically insignificant. Presence or absence of nausea and vomiting were analysed in the 2 groups using chi-square test and the value was 0.656 which was statistically insignificant. The above results show that the two groups were comparable with respect to age, sex ratio, duration of surgery and weight. The incidence of nausea and vomiting in the 2 groups were no different from each other suggesting that P6 point injection with 0.2 ml of 50% dextrose is equally as effective as giving inj.ondansetron 10µg/kg body weight.

Demographic Data

Means	Group A	Group B
Age (in years)	32.36±15.35	37.12±19.11
Sex (M:F)	16/9	10/15
Weight(in kg)	50.32±13.05	48.12±14.42
Duration of Anaesthesia (hrs)	2.21±1.01	3.3±2.76

Incidence of nausea and vomiting

Incidence	Group I	Group II
Nausea	4	5
Vomiting	4	5

DISCUSSION

The evidence-base for acupuncture at the traditional Chinese P6 point for the prevention of PONV has been reviewed by Lee and Done; their findings have recently been updated on the Cochrane Database of Systematic Reviews. Data pooled from relatively well-designed studies investigating the various methods of P6 acupuncture administration show that it is effective in the prevention of PONV. The size of the effect is comparable with antiemetic drugs. After analyzing 26 trials, the relative risk compared with sham treatment for nausea, vomiting

and need for escape antiemetic was 0.72, 0.71, and 0.76, respectively. There was a suggestion that P6 acupuncture is more effective against nausea compared with vomiting.¹²

The use of dextrose 50% injected at the P6 point for prophylaxis of PONV in children undergoing general anaesthesia and surgery has been described. Investigators used 0.2 ml of dextrose 50% injected at P6 and sham locations at the end of surgery before reversal of anaesthesia. This technique was compared with the efficacy of droperidol 10 µg kg⁻¹ in 190 children aged 7-16 yr undergoing day-case surgery.¹³ The study design was complicated (randomized, double-blind, sham placebo-controlled) but it was clear that P6 injections were effective. For example, the incidence of PONV in the post-anaesthetic care unit (PACU) was significantly lower in the acupoint group compared with the sham group (32 vs 56%; P<0.03); it was also better than the droperidol group, but not significantly so (32 vs 46%). Other measures, including need for rescue therapy, showed a similar pattern and logistic regression models excluded effects of other confounding variables. After 24 h, there were no differences between the groups but data were affected considerably by use of escape medication by this time.

The effect of 0.2 ml of glucose 30% injection has been compared with droperidol 20 µg kg⁻¹ and placebo in 120 adults undergoing gynecological laparoscopy. Both acupuncture injections and droperidol had a significant effect on PONV compared with placebo.¹⁴ Dundee and Ghaly suggested that P6 stimulation had to be administered pre-emptively before the start of surgery to be effective. A recent study involving children however, demonstrated that P6 acupoint injections with 0.2 mL of 50% dextrose solution at the conclusion of surgery was as effective as droperidol 10 µg kg⁻¹ IV in controlling early PONV.¹³

CONCLUSION

The above study between the two groups shows that injection of 0.2ml of 50% dextrose at P6 point was as effective as giving ondansetron to the patients at the end of surgery. P6 point injections have lesser adverse reactions as compared to ondansetron which may cause QT prolongation on intravenous administration. This effect of prevention of postoperative nausea and vomiting is most effective in the initial 6 hours after the patient comes out of general anaesthesia.

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