EFFECT OF AURICULAR ACUPRESSURE THERAPY FOR THE PREVENTION OF POSTOPERATIVE NAUSEA AND VOMITING AFTER GYNECOLOGICAL SURGERY

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SUMMARY

Objective: Postoperative nausea and vomiting (PONV) is still a troubling problem in patients who undergo gynecological surgery, especially in patients using morphine for patient-controlled analgesia (PCA). In this study, we investigated whether auricular acupressure therapy reduced the incidence of PONV.

Materials and Methods: A total of 150 female patients (ASA I–II, aged 18–65 years) scheduled to undergo myomectomy or hysterectomy were enrolled in this double-blind, placebo-controlled study and randomly assigned to one of three groups. In groups I and II, we taped seeds of Wangbuliuxing onto auricular points (two sets of four) and asked patients to compress these points four times a day. Group III acted as the control group.

Results: Data were available for 124 patients. The incidence of PONV in group I was significantly decreased in the first 2 days (day 1: 16%; day 2: 12%) compared with group II (day 1: 42%, p = 0.021; day 2: 32%, p = 0.048) and group III (day 1: 40%, p = 0.030; day 2: 35%, p = 0.023).

Conclusion: Auricular acupressure therapy at the shenmen, jiaogan, wei, and pizhixia points prevented PONV after gynecological surgery with PCA. [Taiwanese J Obstet Gynecol 2005;44(3):242–246]

Key Words: auricular acupressure therapy, patient-controlled analgesia, postoperative nausea and vomiting

Introduction

Postoperative nausea and vomiting (PONV) is a common complication after gynecological surgery and is a common reason for poor satisfaction in the postoperative period. The overall incidence of PONV ranges from 35% to 65% [1]. Various methods to manage PONV have been investigated, including both pharmacologic and nonpharmacologic approaches. Medications to prevent and treat PONV studied include serotonin antagonists, butyrophenones, metoclopramide, dexamethasone, and scopolamine [2–14]. One nonpharmacologic technique, acupuncture in the perilarynx (P6), has been extensively studied and is an effective treatment for PONV [15–22]. Many other common oriental medical techniques have been used to prevent PONV [23].

Auricular acupuncture is reportedly effective in reducing PONV in female patients undergoing hysterectomy [15]. Acupuncture is the application of pressure using beads, seeds, or other hard substances to specific acupuncture points. The effectiveness of auricular acupuncture in preventing PONV has not been studied. We designed this study to investigate the effect of auricular acupressure in gynecological patients.

Materials and Methods

After obtaining Institutional Review Board approval and written informed consent, we studied female patients...
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American Society of Anesthesiologists I–II, aged 18–65 years) scheduled to undergo myomectomy or hysterectomy. Patients taking antiemetic drugs within 1 week of surgery were excluded. Patients were randomly assigned to one of three groups. In group I, patients had seeds of Wangbuliuxing (Vaccaria seeds) taped to the traditional antiemetic auricular points: shenmen, in the triangular fossa between the superior and inferior antihelix crus and the lateral third of the triangular fossa; jiaogan, in the terminal of the inferior antihelix crus; wei, located around the area where the helix crus terminates; and pizhixia, at the posterior superior corner of the lateral aspect of the antitragus (Figure). Group II patients had Wangbuliuxing seeds taped in the following auricular areas: sacral vertebrae, extending from the medial portion of the inferior antihelix crus to about parallel to the end of the bladder point; lumbar vertebrae, from the end of the sacral area, parallel to about the middle of the liver area; thoracic vertebrae, extending from the end of the lumbar area to just above the curvature of the lower antihelix crus; and cervical vertebrae, extending from the end of the thoracic area to the end of the curvature of the lower antihelix [24]. Stimulating these areas may contribute to relieving back pain according to traditional Chinese medicine theory. Group I and II patients were taught and asked to compress the particles four times a day, for 1 minute each time, after performing auricular acupressure once in the holding room. Group III patients did not receive any auricular acupressure therapy.

All patients were transferred to the operating room and received standard general anesthesia. Induction of general anesthesia consisted of atropine (0.01 mg/kg), fentanyl (2 μg/kg), and propofol (2–3 mg/kg). Rocuronium (0.8 mg/kg) was used to facilitate tracheal intubation. Dexamethasone (10 mg) was administered after patients were intubated, to prevent PONV [8,10,11]. General anesthesia was maintained with 50% air in 50% oxygen supplemented with desflurane. During surgery, standard monitors included electrocardiography, noninvasive blood pressure, pulse oximetry, end-tidal CO2, and body temperature. Residual neuromuscular blockade was antagonized with atropine (0.01 mg/kg) and neostigmine (0.05 mg/kg). After surgery, all patients were transferred to the recovery room and observed for 2 hours, with an inspired fractional concentration of oxygen in inspired gas (FiO2) of 0.4 via a venturi mask. Intravenous patient-controlled analgesia (PCA) using morphine was set up for postoperative pain control. A loading dose of morphine of 3 mg was administered in the recovery room when patients complained of pain. Droperidol 5 mg was added to 60 mg of morphine solution to prevent PONV. The PCA dose was 1 mg morphine in each bolus and the lockout time interval was 6 minutes for all patients.

For the purpose of data collection, nausea was defined as an unpleasant sensation associated with awareness of an urgent need to vomit. Retching and vomiting were defined as labored spasmodic rhythmic contractions of respiratory muscles with or without gastric contents [25]. Both nausea and vomiting were classified as one episode of PONV. The incidence of PONV and PCA morphine dose were recorded by a study nurse blinded to the study design.

Statistical analyses were performed using SPSS version 11.5 (SPSS Inc, Chicago, IL, USA). Analysis of variance (ANOVA) was conducted to examine the differences among the three groups with respect to continuous variables (e.g. age, weight, intravenous fluids). Fisher’s exact test and the Chi-squared test were used to analyze frequency data (e.g. number of patients with PONV episodes). Bonferroni corrections were made for two multiple comparisons whenever pairwise intergroup comparisons were made. Data are presented as mean ± standard deviation. A p value of less than 0.05 was considered to be significant.

Results

A total of 150 women undergoing gynecological surgery were enrolled in this study, of whom 26 were excluded: nine patients used PCA for less than 1 day, five in Group II and one in Group I complained of severe auricular pain and decided to withdraw from the study on postoperative day 1, nine were excluded because of incomplete data collection, and two patients were allergic to the adhesive tape and the particles were removed. In total, 124 patients completed the study.
There were no differences in age, height, body weight, duration of anesthesia, total blood loss, and morphine consumption in the first 2 days after surgery (Table 1). The incidences of a history of motion sickness, previous PONV, and smoking history were no different in the three groups.

There was a statistically significant difference among groups in the incidence of PONV (Table 2). On the first day, the incidences of PONV in Groups I, II, and III were 16%, 40%, and 42%, respectively. On the second day, the incidences of PONV were 12%, 35%, and 32%. Patients in Group I experienced significantly less PONV in the first 2 days than those in groups II and III. Of other PCA side effects, there was no significant difference in skin itching and dizziness among the three groups.

Discussion

The results of this randomized, double-blind, placebo-controlled study demonstrate that in the first 2 days after surgery, auricular acupressure at the shenmen, jiaogan, wei, and pizhixia points is effective in preventing PONV in females undergoing gynecological surgery. Acupuncture has been used for more than 3,000 years, within the wider context of ancient Chinese medicine. It is a relatively safe method of medical treatment, but serious or life-threatening complications do exist. Like acupuncture, the mechanism by which auricular acupuncture relieves clinical symptoms and signs remains unclear. Auricular acupuncture also plays an important role in Chinese medicine. There are some studies on auricular acupuncture, but most focus on drug abuse, smoking cessation, analgesic effects, and weight loss. Kim et al studied the effect of auricular acupuncture on the prevention of PONV [15]. They found that acupuncture at four auricular acupoints, sympathetic (jiaogan), shinmoon (shenmen), stomach (wei), and occiput, decreased the incidence of PONV.

Some adverse events such as nausea and syncope can be mild and transient in acupuncture therapy, but rare events such as septicemia and puncture infection can be fatal [26,27]. Thus, we replaced auricular acupuncture with auricular acupressure because it is easy to use, requires no special training and reduces the side effects of acupuncture. In mainland China, Wangubuliuxing seeds are popular tools in auricular acupressure because they are plentiful, inexpensive, and of appropriate size. Although the exact mechanism of auricular acupressure therapy in PONV is not fully understood, this study provides scientific evidence of its effectiveness.

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<th>Table 1. Patient characteristics</th>
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*Mean ± standard deviation. PONV = postoperative nausea and vomiting; MS = motion sickness.

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<th>Table 2. Evaluation of patient-controlled analgesia side effects after surgery</th>
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<td>Dizziness, n (%)</td>
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*Group I vs Group II; †Group I vs Group III; ‡Group II vs Group III. PONV = postoperative nausea and vomiting.
PONV remains a problem that may induce suture dehiscence, esophageal rupture, hematoma formation, and aspiration pneumonia. It also increases recovery time, expands nursing care, and prolongs hospital stay [28–31]. The condition becomes worse when patients receive morphine for postoperative pain control. In this study, dexamethasone and droperidol were administered to all patients to reduce the baseline incidence of PONV. Both nausea and vomiting are annoying problems from the patient’s perspective and are not independent side effects. To explore the true frequency of PONV, we treated nausea and vomiting as one PONV episode.

Many risk factors are associated with PONV. There are four major predictors: female gender, non-smoker status, use of postoperative opioids, and history of motion sickness. The incidence of PONV with the presence of none, one, two, three, and all four of these risk factors is 10%, 21%, 39%, 61%, and 79%, respectively [32]. In our study, most patients had at least three risk factors (female, non-smoker, and opioid use), so we used dexamethasone and droperidol to reduce the expected high incidence of PONV. A high incidence of dizziness was also noted during the study; we assumed that droperidol was the contributor of this dizziness as it is a CNS depressant, and is known to produce drowsiness and a tendency to fall asleep from which patients can be readily roused [14]. The incidence of dizziness in the three groups showed that acupressure at the eight auricular points cannot relieve sedation. It was also ineffective in preventing skin itching.

In summary, auricular acupressure therapy at the shemen, jiaogan, wei, and pizhixia points can reduce the incidence of PONV. Auricular acupressure therapy is an easy and safe method for preventing PONV in female patients undergoing hysterectomy and myomectomy and using PCA.

References

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