대한한의학회지 : 제17권 제2호
K.O.M.S. Vol. 17. No. 2. 1996

Effect of Auricular Acupuncture on Postoperative Nausea and Vomiting

Yong-Suk KIM, Chang-Hwan KIM*, Keon-Sik KIM**

ABSTRACT

We have studied the effect of auricular acupuncture on postoperative nausea and vomiting (PONV). 100 female patients undergoing transabdominal hysterectomy were entered into the study. The patients were divided into two groups (auricular acupuncture treatment group and non-treatment group) to test the effectiveness of auricular acupuncture. acupuncture consisted of needle insertion in one ear at four points:sympathetic, stomach, shinmoon and occiput. Before the operation, the above points were punctured perpendicularly by the thumbtack-type needle, leaving its handle lying flat on the skin surface. There was no significant difference in age, weight, height and duration of anesthesia among the two groups of patients. There was a cignificant difference between the control group and auricular acupuncture treatment group in the incidence of vomiting at the first 12 h after surgery (68% and 30%, respectively, $P<0.01$). No noteworthy side effects fbom treatment were observed. Auricular acupuncture is effective in reducing nausea and vomiting after transabdominal hysterectomy

* Department of Acupuncture and Moxibustion, College of Oriental Medicine
** Department of Anesthesiology, College of Medicine,
KyungHee University, # 1 Hoegi-dong Tongdaemoon-ku, Seoul 130-702, Korea
Tel: +822-958-9192, FAX: +822-958-9200
※ 본 논문은 미국 New York에서 세계침구학회연합회(WFAS)주최로 개최된 The Fourth World Conference on Acupuncture (1996. 9. 19. - 9. 21)에서 구연발표한 논문을 전문게재한 것임.

in female patients.

Key words: nausea, vomiting, auricular acupuncture

Introduction

Nausea and vomiting after anesthesia and surgery is the most common complication of the early postoperative period. Postoperative vomiting causes patients distress and delays discharge after surgery[18]. Despite improvements in modern techniques and drugs, postoperative vomiting still remains a problem[15]. Some effective drugs and approaches were sought to treat postoperative nausea and vomiting, but none of them eliminated those complaints completely without side-effects[16]. Droperidol has been used effectively as an antiemetic in the postoperative patients, but its value is limited by its side effects[14].

In Oriental medicine, PC6 stimulation (acupressure[8,13], acupuncture[5,6,9,21], electroacupuncture[2,9,11], acupoint injection[20] was reported to be effective in reducing postoperative nausea and vomiting. However, auricular acupuncture for treating postoperative vomiting has not been studied previously.

The purpose of this study was to evaluate auricular acupuncture as an antiemetic method for postoperative vomiting following transabdominal hysterectomy.

Methods and Materials

Written informed consent had been given, 100 consecutive female patients undergoing transabdominal hysterectomy, ASA classification I or II, were included in the study. The patients were randomly and equally allocated to one of two group. Group I patients received non-treatment (control); Group 2 patients received auricular acupuncture treatment prior to anesthesia.

All patients were not premedicated. Anesthesia was induced with i.v. thiopental sodium (5 mg/kg). Tracheal intubation was performed after administration of succinylcholine (1 mg/kg) intravenously. Anesthesia was maintained with enflurane-N_2O-O_2 and vecuronium was used for muscle relaxation. To reverse the muscle relaxation, neostigmine and atropine were used at the end of surgery. All patients awoke in the operating room and were extubated. In this study, we excluded the patients with severe vomiting or retching during extubation.

Patients were then sent to the post-anesthesia recovery room and ward where they were observed for 12 hours. Any act of nausea and vomiting, including dry retching was regarded as postoperative emesis. The incidence of postoperative emesis was recorded by the other investigator during the study period. In this study, we administered a small dose of ketorolac (i.m.) for postoperative pain.

Other data collected included age, weight, height and duration of anesthesia.

Statistical significance ($P<0.05$) was determined using the unpaired t-test for age, weight, height and duration of anesthesia; chi-square test was used to analyse the incidence of vomiting

Auricular acupuncture

Auricular acupuncture consisted of needle

insertion in one ear at four points: (a) "sympathetic," located in the terminal of the inferior antihelix crus; (b) "stomach," located around the area where the helix crus terminates; (c) "shinmoon," located at the bifubcating point between superior and inferior antihelix crus, and the lateral 1/3 of the triangular fossa; (d) "occiput", located at the posterior superior corner of the lateral aspect of the antitragus[1,17].

All of these points were selected in the treatment of vomiting.

Stimulation method

Before operation, the area to be treated was thoroughly sterilized. Holding the handle of the thumbtack-type needle with a sterilized forcep, the points described above were punctured perpendicularly, leaving its handle lying flat on the skin surface, and then it was fixed with a piece of adhensive tape.

Results

There was no significant difference in age, weight, height and duration of anesthesia among the two groups of patients (Table I).

The incidence of postoperative nausea and vomiting for the control group was 58% in the first 3 h after surgery, 52% from 3 h to 6 h after surgery, 64% from 6 h to 9 h after surgery and 6 % from 9 h to 12 h after surgery. The corresponding results for the auricular acupuncture group webe 8% in the first 3 h after surgery, 4% from 3 h to 6 h after surgery, 14% from 6 h to 9 h after surgery and 16% from 9 h to 12 h after surgery.

There was a significant difference between the control group and auricular acupuncture treatment group in the incidence of nausea and vomiting at the first 12 h after surgery (68% and 30%, respectively, $P<0.01$) (Table II).

Table I. Patients characteristics

	Control(n=50)	Auricular acupuncture (n=50)
Age (years)	43.5±6.7	41.5±9.0
Weight (kg)	54.3±7.6	56.5±8.6
Height (cm)	156.2±9.2	157.9±4.2
Duration of anesthesia (min)	118.9±22.3	115.1±16.4

Mean±s.d.

Table II. Incidence of vomiting/nausea or retching at the time of observation noted in the postoperative period.

		Time after operation(h)				
	n	0-3	3-6	6-9	9-12	0-12
Controls	50	29 (58%)	26 (52%)	32 (64%)	30 (60%)	34 (68%)
Auricular Acupuncture	50	4 (8%)	2 (4%)	7 (14%)	8 (16%)	15 (30%)

Discussion

Nausea and vomiting has been associated for many years with the use of general anesthetics for surgical operation. In spite of the development of anesthetic and operation techniques, nausea and vomiting still remains a problem[3,15,18].

Many factors associated with anesthesia and surgery may contribute to induction of postoperative nausea and vomiting (PONV). Some background factors which have been shown to influence the incidence and severity of PONV are as follows: age, sex, history of motion sickness, history of PONV after previous anesthesia, administration of antiemetics before

operation, phase of menstrual cycle. PONV is more common in women than in men, a difference that is thought to be hormonal in origin. Some factors related to operation and administration of anesthesia to influence PONV are as follows: type and duration of operation, type of premedication, type of induction agent, type of maintenance agent, reversal of muscle relaxation, postoperative pain and its treatment, and movement of patients[12].

In response to virtually all emetic stimuli, women are more sensitive than men so it is perhaps not surprising that gynecological surgery should be associated with a high incidence of PONV. Understanding the mechanism of PONV after gynecological surgery is complicated by the prevailing hormonal status of the women. These observations are consistent with the view that the changing endocrine environment sensitizes the brain stem emetic mechanisms to the action of other emetic stimuli as has been proposed for pregnancy sickness.

PC6 stimulation (acupressure, acupuncture, electroacupuncture and acupoint injection) appears to be a clinically useful, non-toxic antiemetic in certain groups of patients.

The mechanism of acupuncture is still unknown. Endogenous opioid peptides released during acupuncture have been well documentated[10]. Costello & Bonson et al. administered naloxone into the cerebral ventricle, which induced vomiting despite ablation of the chemoreceptor trigger zone. They suggested that an endogenous morphine-like factor might have provided antiemetic tone[4].

Dundee et al. also demonstrated a significant reduction in the incidence of postoperative nausea and vomiting following preoperative PC6 acupuncture needling in patients undergoing minor gynecological surgery[6]. Weightman et al, however, found no such effect in women undergoing elective laparoscopy[19]. Dundee et al. explained the difference of results between these two studies in terms of the timing of acupuncture[7]. To be effective, it should be administrated before the emetic stimulus. However, Yang et al PC6 electroacupuncture administered in the recovery room was effective in reducing postoperative emesis. PC6 acupoint injection with 0.2ml 50% glucose in water was effective in reducing postoperative emesis[20]. In our earlier study, PC6 electroacupuncture was effective in reducing postoperative nausea and vomiting. Although PC6 electroacupuncture is recognized as having an antiemetic effect, its inconvenient instrumentation may limit its clinical application[2].

We have studied the effect of auricular acupuncture on postoperative vomiting and nausea undergoing transabdominal hysterectomy. There was significant difference in the incidence of vomiting between the auricular acupuncture and non-treatment groups.

Even though, these findings cannot be well explained, but it is recommended that the use of auricular acupuncture as an anti-emetic.

Conclusion

We conclude that auricular acupuncture is preferable to PC6 electroacupuncture because it is simple, convenient, time-saving and equally effective. We were able to demonstrate that auricular acupuncture ic an effective method of preventing nausea and vomiting without anyside-

effect. Further studies should be conducted to investigate this possibility and mechanism.

국문초록

수술후 오심구토에 대한 이침요법의 임상적 연구

김용석, 김창환[1], 김건식[2]

본 논문은 수술후 오심, 구토증에 대한 이침요법의 효과를 연구하기 위하여 시도되었다.

경희대학교 의과대학 부속병원에서 전신마취하에 복식 자궁절제술을 받기로 예정된 100명의 환자를 임의로 두 군으로 나누어 이침요법을 하지 않은 대조군과 이침요법을 시행한 실험군을 대상으로 연구를 하였다.

대상환자의 연령, 체중, 신장, 마취시간은 두 군간에 통계적으로 유의성있는 차이는 없었다. 수술후 12시간이내에 한번이라도 오심, 구역 및 구토가 발생된 환자는 대조군이 68%, 실험군이 30%으로 실험군이 대조군에 비하여 유의성있는 효과를 보였다. 이침요법에 의한 부작용은 나타나지 않았다.

이침요법은 복식 자궁절제술후 오심, 구토를 부작용없이 예방하는데 상당한 효과가 있는 것으로 사려된다.

Key words: nausea, vomiting, auricular acupuncture

1) 경희대학교 한의과대학 침구학교실
2) 경희대학교 의과대학 마취과학교실

REFERENCES

1. Choi YT et al: Acupuncture and Moxibustion(II), pp. 1369-1396, Seoul, Jipmoondang, 1991.
2. Kim KS, Kim DS, Shin KI, Kim YS: Effect of electro acupunctere stimulaton of PC6 and PC7 antiemetic point on postoperative nausea and vomiting, The Journal of the Korean Society of Anesthesiologists, 28(3):433, 1995.
3. Andrews PLR: Physiology of nausea and vomiting, British Journal of Anaesthesia, 69(Suppl.1):2S, 1992.
4. Costello DJ, Borison HL: Naloxone antagonizes narcotic selfblockade of emesis in the cat, J Pharmacol Exp Ther, 203:222, 1977.
5. Dundee JW, Chestnut WN, Ghaly RG, Lynas AGA: Traditional Chinese acupunctere: a potentially useful antiemetic?, British Medical Journal, 293:583, 1986.
6. Dundee JW, Ghaly RG, Bill KM, Chestnutt WN, Fitzpatrick KTJ, Lynas AGA: Effect of stimulation of the P6 antiemetic point on postoperative nausea and vomiting, British Journal of Anaesthesia, 63:612, 1989.
7. Dundee JW, Ghaly RG: Does the timing of P6 acupunctere influence its efficacy as a postoperative antiemetic?, British Journal of Anaesthesia, 63:630, 1989.
8. Fry ENS: Acupressure and postoperative vomiting, Anaesthesia, 41:661, 1986.
9. Ghaly RG, Fitzpatrick KTJ, Dundee JW: Antiemetic studies with traditional Chinese acupunctere. A comparison of manual needling with electrical stimulation and commonly used antiemetics, Anaesthesia, 42:1108, 1987.
10. Han JS, Terenius L: Neurochemical basis of

acupunctere analgesia, Ann Rev Pharmacol Toxicol, 22:193, 1983.
11. Ho RT, Jawan B, Fung ST, Cheung HK, Lee JH: Electro-acupunctere and postoperative emesis, Anaesthesia, 45:327, 1989.
12. Korttila K: The study of postoperative nausea and vomiting. British Journal of Anaesthesia, 69(Suppl.1):20S, 1992.
13. Lewis IH, Pryn SJ, Reynolds PI, Pandit UA, Wilton NCT: Effect of P6 acupressure on postoperative vomiting in children undergoing outpatiend strabismus correction, British Journal of Anaesthesia, 67:73, 1991.
14. Melnick S, Sawyer R, Karamteikar D, Phitayakorn P, Uy NT, Patel R: Delayed side effects of droperidol after ambulatory general anesthesia, Anasth Anal, 69:748, 1989.
15. Rabey PG, Smith G: Anaesthetic factors contributing to postoperative nausea and vomiting, British Journal of Anaesthesia, 69(Suppl.1):40S, 1992.
16. Rowbotham DJ: Current management of postoperative nausea and vomiting, British Journal of Anaesthesia, 69(Suppl.1):46S, 1992.
17. Wang DS: Zhongguo zhenjiuxue, pp.76-77, Tianjin, Tianjin science & technology translation & publishing Corp, 1992.
18. Watcha MF, White PF: Postoperative nausea and vomiting: its etiology, treatment and prevention, Anesthesiology, 77:162, 1992.
19. Weightman WM, Zacharias M, Herbison P: Traditional Chinese acupuncture as an antiemetic, British Journal of Anaesthesia 295:1379, 1987.
20. Yang LC, Jawan B, Chen CN, Ho RT, Chang KA, Lee JH: Comparision of P6acupoint injection with 50% glucose in water and intravenous droperidol for prevention of vomiting after gynecological laparoscopy, Acta Anaesthesiol Scan, 37:192, 1993.
21. Yentis SM, Bissonnette B: P6 acupuncture and postoperative vomiting after tonsillectomy in children, British Journal of Anaesthesia, 67:779, 1991.