

Case Report

Acupuncture effect on Chemotherapy-induced Vomiting and Nausea: A case series

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Objectives: We carried out an observational study of the effects of Nei Guan (P6) and Gong Sun (SP4) acupuncture for the treatment of CINV, preparing for further randomized controlled trial study. This is a case series to explore the changes in the incidence of CINV by acupuncture.

Methods: Patients reported a Rhodex index indicating the severity of nausea and vomiting and loss of appetite, before acupuncture, after acupuncture and 1-week follow-up examination. Twelve patients with CINV participated in this study. We included patients receiving chemotherapeutic agents that might induce moderate or severe nausea and vomiting. We conducted 5 treatment sessions with P6 and SP4 acupuncture over the course of 5 days.

Results: The median Rhodex score were decreased in 5 patients over time, while we observed loss of appetite of 6 patients were improved over time. During the study, the mean of Rhodex of total patients revealed a decrease of Day 1, Day 7, Day 14; 0.74, 0.68, 0.38, respectively, while the mean of loss of appetite showed a decrease of Day 1, Day 7, Day 14; 5.25, 4.08, 4.00, respectively.

Conclusions: The study gives a preliminary data that manual acupuncture of P6 and SP4 may reduce the severity of CINV and loss of appetite, and justifies further study.

Key Words : acupuncture, CINV(chemotherapy-induced vomiting and nausea), Rhodex index, appetite

Introduction

About 70-80% of cancer patients experience nausea, vomiting, or both after chemotherapy.¹ Although there are many antiemetic medications to alleviate chemotherapy-induced nausea and vomiting (CINV), such as serotonin (5-HT₃) antagonists, antiemetic agents have noticeable side effects and cannot always provide satisfactory prevention of symptoms. Clinical use of 5-HT₃ antagonists can control episodes of emesis to some extent; however, chemotherapy-induced vomiting is still a serious

problem to overcome. Also, appetite loss is commonly reported by people receiving chemotherapy even among those who do not report nausea. It is unclear to what extent this relates to altered taste function or to changes to the sense of smell or touch. More than approximately half of chemotherapy patients experienced loss of appetite.²

Among alternative therapies, acupuncture is the technique that has been mainly assessed for its efficacy in controlling CINV. Several studies have investigated the efficacy of acupuncture in CINV³⁻⁹, with needles manipulated or electro-stimulated, and

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those studies adopted NeiGuan (P6) as the main acupoint for alleviating CINV, although some introduced other acupoints, such as Zusanli (ST36), Zhongwan (CV12), Hegu (LI4), Nei Ting (ST44), and Gong Sun (SP4).^{3,4,8} These acupoints were selected to treat CINV solely or in combination with P6.

A majority of clinicians use the combination of multiple acupoints, which may be more effective than a single acupoint for enhancing the therapeutic response. Particularly, SP4 is an acupoint employed to treat gastralgia, vomiting, abdominal pain, diarrhea, etc.^{10,11} and a previous study using the combination of P6 and SP4 with Bai Hui (DU20) reported an improvement in idiopathic refractory nausea.¹¹

Methods

An observational study was conducted on twelve patients between January 2011 and December 2011 at the Daegu Catholic University Hospital of Korea. Acupuncture was started from 1st day of chemotherapy and applied at two acupoints, P6 and SP4, bilaterally with manipulation strong enough to generate De-Qi sensation. P6 is located on 2 cm above the transverse crease of the wrist, between the tendons of the muscularis palmaris longus and the flexor radialis. SP4 is located in the depression distal and inferior to the base of the first metatarsal bone. After 25 minutes of acupuncture, the needles were removed. Acupuncture was performed by government-registered traditional Korean medicine physicians with clinical careers of over 10 years. The needle types used were sterile, disposable, stainless steel needles (30 × 0.25 mm; Dongbang Acupuncture Inc., Chungcheongnam-do, Korea). The skin was swabbed with an alcohol prep pad before acupuncture was administered, and needles were inserted into the skin at a depth of 10–20 mm. The study involved 5 treatment sessions over 5 consecutive days, once a day, with a follow-up examination at 1 week after final treatment.

CINV was recorded as the visual analogue scale (VAS) score of nausea, anorexia and vomiting severity. All patients completed an open questionnaire for vomiting and nausea after each treatment session and 1-week follow-up. “Index of Nausea, Vomiting & Retching”, provided by Rhodes et al.¹², was used to evaluate nausea and vomiting. The instrument consists of 8 questions with 5-point scale, possible score 0 [none] to 4 [severe]. Loss of appetite was evaluated by VAS score with scale of 0 [none] to 10 [severe]. At every treatment session, adverse events associated with acupuncture were recorded by investigators.

Results

12 cancer patients (7 men and 5 women) having underwent chemotherapy participated in this study, and they were aged between 49 and 68 years. The most common chemotherapy regimens included oxaliplatin (33.3%) and cisplatin (25.0%).

In total, 9 patients (75%) experienced CINV over time. Differences of CINV severity among patients’ characteristics are summarized in Table 1. The median Rhodex score showed 5 patients reported a decreasing pattern from Day 1 to Day 14, and 3 patients reported no CINV. But, patients # 2, 6, 9 and 12, at Day 5, showed a higher severity than Day 1. In analysis of loss of appetite, 6 patients were improved over time, while other patients showed no improvement comparing the score at Day 1. Except for patient #3 and 6 there was no increase of loss of appetite between Day 5 and Day 14.

During the study, the mean of Rhodex of total patients revealed a decrease of Day 1, Day 7, Day 14; 0.74, 0.68, 0.38, respectively, while the mean of loss of appetite showed a decrease of Day 1, Day 7, Day 14; 5.25, 4.08, 4.00, respectively.

Table 1. Changes of Chemotherapy-induced Vomiting and Nausea and Appetite

Patients	Age	Cancer type	Rhodes index			Appetite		
			Day 1	Day 5	Day 14	Day 1	Day 5	Day 14
1 (M)	67	Urothelial ca.	0	0	0	2	3	3
2 (F)	68	Rectal ca.	0	0.75	0.125	5	4	2
3 (M)	50	Colon ca.	1.25	0.875	0.75	8	4	5
4 (F)	50	Cholangiocellular carcinoma	2	1.625	1.5	8	5	5
5 (M)	63	Stomach ca.	0	0	0	9	4	4
6 (M)	58	Colon ca.	0	0.5	0.25	5	0	3
7 (F)	49	Stomach ca.	3.25	2	0	10	5	5
8 (M)	57	Stomach ca.	1.125	0.625	0.375	5	5	4
9 (F)	55	Lymphoma.	0.875	1	0.75	0	8	7
10 (M)	62	Lung ca.	0	0	0	1	2	2
11 (M)	51	Lung ca.	0.375	0	0	5	4	3
12 (F)	58	Gallbladder ca.	0	0.75	0.75	5	5	5

Discussion

The majority of studies investigating acupuncture in the control of CINV have used P6 as an acupoint, with a few also using ST36, ST44, and CV12 as additional acupoints. Each acupoint has its own therapeutic effect, and adjunctive acupoints are generally added to main acupoints for treating specific symptoms.¹³ Consequently, the coordination

of acupoints may enhance the efficacy of acupuncture in controlling certain symptoms. According to traditional acupuncture theory, the combination of P6 and SP4 is used to treat diseases of heart, chest, and stomach, in particular, this combination is clinically used to treat gastric function disorder including nausea and vomiting. To our knowledge, until now there is no clinical study using this combination, except for one study¹⁰ investigating the effect of

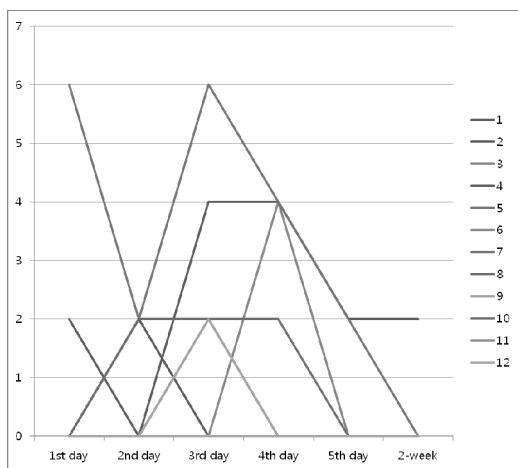


Fig. 1. Intensity of chemotherapy-induced nausea and vomiting.

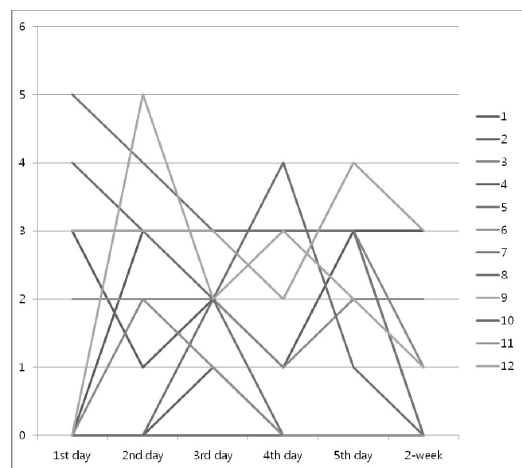


Fig. 2. Change of appetite

gastric function in rat model. Thus, to explore other acupoint candidates for the management of CINV, this study was performed by manual acupuncture of P6 and SP4.

Acute CINV occurs within 24 hours of chemotherapy, usually beginning within 2 to 4 hours and peaking in the first 4 to 6 hours, whereas delayed CINV occurs from day 2 to 6 of chemotherapy.¹⁴ In our study, we performed acupuncture during consecutive 5 days from first day following chemotherapy. Our study showed a lower severity at Day 5 than acute CINV (Day 1). One study reported that patients receiving chemotherapy experienced more delayed CINV twice than acute CINV.¹⁵

Loss of appetite induced by chemotherapy may be affected by various aspects such as fatigue, taste alternations as well as CINV. For instance, loss of eating pleasure as a result of a cisplatin-induced metallic taste is one example. A study performed by 24 sessions of acupuncture including P6 acupoint over 6 months showed a slightly decrease of loss of appetite.¹⁶ Loss of appetite is connected to weight loss and immunity in cancer patients, therefore, the investigation of the interventions for the enhancement of appetite need to be developed.

The current study was performed without concomitant administration of pharmacologic agents for emesis; however, previous studies using acupuncture plus antiemetics have shown that the combination was more effective than either acupuncture or antiemetics only.^{4,8} In addition, a recent randomized controlled trial including manual acupuncture of CV12, ST36, and LI4 revealed a positive effect of the treatment in alleviating CINV compared to placebo.⁷ Two other studies have also shown positive results for CINV.^{5,17} On the other hand, a randomized controlled trial with manual acupuncture of P6 revealed negative results in the prevention of acute emesis after chemotherapy versus placebo.⁶ These confusing results may be attributed to differences in the applied acupoints, sample sizes,

or concomitant use of antiemetic drugs.

We observed the overall reduction of both CINV and loss of appetite, but there were differences of CINV severity among the patients. These results may be a preliminary data for a future study to confirm the affirmative effect of acupuncture on CINV, which should include a larger sample size with control group.

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References

1. Morran C, Smith DC, Anderson DA, McArdle CS. Incidence of nausea and vomiting with cytotoxic chemotherapy: a prospective randomised trial of antiemetics. *Br Med J.* 1979;1(6174): 1323-1324.
2. Zubernig A, Gamper EM, Giesinger JM, et al. Taste alterations in cancer patients receiving chemotherapy: a neglected side effect? *Oncologist.* 2010;15(8): 913-920.
3. Dundee JW, Ghaly RG, Fitzpatrick KT, Abram WP, Lynch GA. Acupuncture prophylaxis of cancer chemotherapy-induced sickness. *J R Soc Med.* 1989;82(5):268-271.
4. Shen J, Wenger N, Glaspy J, et al. Electroacupuncture for control of myeloablative chemotherapy-induced emesis: A randomized controlled trial. *JAMA.* 2000;284(21):2755-2761.
5. Nystrom E, Ridderstrom G, Leffler AS. Manual acupuncture as an adjunctive treatment of nausea in patients with cancer in palliative care--a prospective, observational pilot study. *Acupuncture Med.* 2008;26(1):27-32.

6. Streitberger K, Friedrich-Rust M, Bardenheuer H, et al. Effect of acupuncture compared with placebo-acupuncture at P6 as additional antiemetic prophylaxis in high-dose chemotherapy and autologous peripheral blood stem cell transplantation: a randomized controlled single-blind trial. *Clin Cancer Res.* 2003;9(7):2538-2544.
7. Choo SP, Kong KH, Lim WT, Gao F, Chua K, Leong SS. Electroacupuncture for refractory acute emesis caused by chemotherapy. *J Altern Complement Med.* 2006;12(10):963-969.
8. Gottschling S, Reindl TK, Meyer S, et al. Acupuncture to alleviate chemotherapy-induced nausea and vomiting in pediatric oncology - a randomized multicenter crossover pilot trial. *Klin Padiatr* 2008;220(6):365-370.
9. Yang Y, Zhang Y, Jing NC, et al. Electroacupuncture at Zusanli (ST 36) for treatment of nausea and vomiting caused by the chemotherapy of the malignant tumor: a multicentral randomized controlled trial. *Zhongguo Zhen Jiu.* 2009;29(12):955-958.
10. Wang SB, Chen SP, Gao YH, Luo MF, Liu JL. Effects of electroacupuncture on cardiac and gastric activities in acute myocardial ischemia rats. *World J Gastroenterol.* 2008;14(42):6496-6502.
11. Ouyang A, Xu L. Holistic acupuncture approach to idiopathic refractory nausea, abdominal pain and bloating. *World J Gastroenterol.* 2007; 13(40):5360-5366.
12. Rhodes VA, McDaniel RW. The Index of Nausea, Vomiting, and Retching: a new format of the index of Nausea and Vomiting. *Oncol Nurs Forum.* 1999;26(5):889-894.
13. Kaptchuk TJ. Acupuncture: theory, efficacy, and practice. *Ann Intern Med.* 2002;136(5):374-383.
14. Hesketh PJ. Chemotherapy-induced nausea and vomiting. *N Engl J Med.* 2008;358(23):2482-2494.
15. Ihbe-Heffinger A, Ehlken B, Bernard R, et al. The impact of delayed chemotherapy-induced nausea and vomiting on patients, health resource utilization and costs in German cancer centers. *Ann Oncol.* 2004;15(3):526-536.
16. Sawada NO, Zago MM, Galvão CM, et al. The outcomes of visualization and acupuncture on the quality of life of adult cancer patients receiving chemotherapy [published online September-October, 2010]. *Cancer Nurs.* doi: 10.1097/NCC.0b013e3181d86739.
17. Dhond RP, Kettner N, Napadow V. Neuroimaging acupuncture effects in the human brain. *J Altern Complement Med.* 2007;13(6):603-616.