A pilot study of acupuncture at pain acupoints for cervical cancer pain

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Abstract
This retrospective study aimed to investigate the feasible effectiveness of acupuncture at pain acupoints for the treatment of patients with cervical cancer pain (CCP). A total of 64 cases were analyzed. All these cases were assigned to an acupuncture group or a control group according to the different therapies they received. The cases in the acupuncture group received acupuncture treatment at pain acupoints, while the subjects in the control group underwent acupuncture at regular acupoints. The primary endpoint was CCP, assessed by numeric rating scale (NRS). The secondary endpoints were evaluated by the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30), and Karnofsky Performance Status (KPS). In addition, adverse events were also recorded during the treatment period. After treatment, patients in the acupuncture group exerted greater outcomes in CCP reduction when compared with patients in the control group (P < .01). In addition, no adverse events were recorded in either group. The results of this study showed that acupuncture at pain acupoints might be efficacious in patients with CCP after 14-day treatment.

Abbreviations: CCP = cervical cancer pain, EORTC QLQ-C30 = European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30, KPS = Karnofsky performance status, NRS = numeric rating scale.

Keywords: acupuncture, adverse event, cancer pain, cervical cancer, effectiveness

1. Introduction
Cervical cancer (CC) is the second most common cancer among female population worldwide.[1,2] It is also the primary causes of death in women with CC.[3,4] It has been estimated that it is responsible for about 85% of total new cases (more than 530,000 cases) around the world, and about 7.5% deaths of all women cancer (more than 275,000 mortality) annually.[5–7]

Persistent human papilloma virus (HPV) infection and subsequent malignant transformation are supposed to cause CC in more than 95% cases.[8,9] Additionally, other factors can also account for CC, such as precocious intercourse, multiple sexual partners, high parity, smoking, or human immunodeficiency virus HIV.[8,9] Of those, persistent infection of HPV is the most common cause of CC.[9] Therefore, the most effective prevention of CC is the screening and HPV vaccination by utilizing bivalent or quadrivalent vaccine.[10–13] It has been reported that about 20% to 30% of cancer patients who bear a variety of levels of cancer pain.[14,15] Although various pain medications have been utilized for pain relief in many cancer patients, the efficacy is still not satisfied, especially in patients with advanced cancer pain.[16–18] Although analgesics, such as opioids has been widely used for cancer pain management, serious side effects are often accompanied, including constipation, respiratory inhibition, nausea, vomiting, sleep disorder, hallucinations, and drug resistance.[19,20]

Acupuncture is recommended as one of the most potential candidates for cancer pain control.[21–23] Previous studies have reported that it not only has beneficial efficacy for cancer pain management, but also almost has no adverse events for patients with cancer pain.[22] Moreover, few data are available for acupuncture for treating patients with cervical cancer pain (CCP). Additionally, no study specifically explored the effectiveness of acupuncture at pain acupoints for CCP. Therefore, this study explored the effectiveness of acupuncture at pain acupoints for the management of patients with CCP.

2. Patients and methods
2.1. Ethical consideration
This pilot study was approved by the Medical Ethics Committee of The Second Affiliated Hospital of Shaanxi University of Chinese Medicine.

2.2. Design
This pilot study was designed as a retrospective study. The written informed consent from each case was waived because all the data were collected from completed medical records. All the cases were collected between February 2017 and January 2018 at gynecology department of Second Affiliated Hospital of Shaanxi University of Chinese Medicine. A total of 64 cases were analyzed, and were assigned to an acupuncture group, and a
control group according to the different treatments they received. Each group analyzed 32 cases. The cases in the acupuncture group received acupuncture at pain acupoints, while the subjects in the control group underwent acupuncture at regular acupoints. All patients in both groups were treated for a total of 14 days.

2.3. Subjects
All patients with confirmed diagnosis of CC at Stage II, III, or IV by the tests of cervical scraping smear and biopsy. Additionally, all subjects were included if they mainly complained CCP, more than 18 years old, at least had 3 months life expectancy, and had normal hearing and communication skills, as well as had ability to evaluate outcomes independently. However, patients were excluded if they suffered from unrelated cancer pain, mental illness, pregnancy, or lactating subjects. In addition, if the patients previously had received acupuncture or similar therapy 1 month before the treatment was also excluded.

2.4. Treatment schedules
Patients in the acupuncture group received acupuncture treatment at local pain acupoints. Sterile disposable acupuncture needles (40 mm in length and 0.30 mm in diameter; Andy brand) were utilized to treat patients with CCP. It was manufactured by Guizhou Andy Medical Instrument Co. It was administered for 30 min each session, with 1 session daily for a total of 14 days. All cases were reported to achieve deqi during the period of their treatments.

Patients in the control group underwent acupuncture therapy at commonly used acupoints of Zusanli (ST36, 3 cun below the lower border of the patella, 1 finger width lateral from the anterior border of the tibia) and Sanyinjiao (SP6, 3 cun directly above the tip of the medial malleolus on the posterior border of the tibia) according to the previous published studies.[24–26] The acupuncture needles were the same as them in the intervention group used. It also had the same treatment session, as well as the treatment period.

2.5. Endpoint measurements
The primary endpoint was assessed by numeric rating scale (NRS).[27] It ranges from 0, no pain, to 10, the worst pain, with higher score indicating worse pain. The secondary endpoints included European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30). The score varies from 0 to 100, with higher score indicating worse pain. The secondary endpoints were measured before and after 14 days of treatment.

2.6. Statistical analysis
All data of characteristic and endpoints were analyzed by using SPSS software (SPSS V.15.0, IBM Corp., Armonk, NY). Fisher exact test was used to analyze dichotomous data, and Mann–Whitney U test was used to perform continuous data. The value of $P < .05$ was regarded as a statistical significance.

3. Results
The characteristic values of all included patients are listed in Table 1. There were no significant differences regarding all these values between 2 groups in the present study.

4. Discussion
A previous study reported the effectiveness of acupuncture for cancer pain and related symptoms.[30] It did not only explore the effectiveness of acupuncture for cancer pain, but also for the nausea, vomiting, constipation, pruritus, neuropathy, and joint pain.[30] Although no conclusion of acupuncture management on cancer pain was made in that study, it provided clinical clues for the further studies.

Presently, no study investigated the effectiveness of acupuncture for CCP. To our best knowledge, this pilot study showed more promising effectiveness in NRS score ($P < .01$; Table 2), except the EORTC QLQ-C30 scores (Global health scale, $P = .20$; Functional scale, $P = .35$; Symptom scale, $P = .40$; Table 3), and KPS scale ($P = .64$, Table 4), compared with patients in the control group.

No adverse events were documented in both groups during the 14-day treatment period.

4.1. Comparison of NRS scores between 2 groups
After 14-day treatment, patients in the acupuncture group showed more improvement in NRS score ($P < .01$; Table 2), except the EORTC QLQ-C30 scores (Global health scale, $P = .20$; Functional scale, $P = .35$; Symptom scale, $P = .40$; Table 3), and KPS scale ($P = .64$, Table 4), compared with patients in the control group. No adverse events were documented in both groups during the 14-day treatment period.

Presently, no study investigated the effectiveness of acupuncture at pain acupoints for CCP. To our best knowledge, this pilot study showed more promising effectiveness in NRS score ($P < .01$; Table 2), except the EORTC QLQ-C30 scores (Global health scale, $P = .20$; Functional scale, $P = .35$; Symptom scale, $P = .40$; Table 3), and KPS scale ($P = .64$, Table 4), compared with patients in the control group. No adverse events were documented in both groups during the 14-day treatment period.

Table 2

| NRS scale          | Acupuncture group (n = 32) | Control group (n = 32) | $P$ value |
|--------------------|----------------------------|-----------------------|-----------|
| After treatment    | 2.3 (2.0)                  | 4.5 (2.2)             |           |
| Change from baseline | $-4.2$ (-5.2, -2.6)      | $-2.2$ (-3.1, -1.0)  |           |
| Difference         | $-2.1$ (-3.0, -1.2)        | < .01                 |           |

Data are present as mean ± standard deviation. NRS = numeric rating scale.
study firstly conducted the feasible effectiveness of acupuncture at pain acupoints for CCP among Chinese female population. Although it is still a pilot study, it may provide more helpful information for either the clinical therapists, or for the searchers of future clinical trials to further investigate the effectiveness of acupuncture at pain acupoints for patients with CCP.

The results of this study demonstrated that patients who received acupuncture treatment at pain acupoints for CCP had more promising effectiveness than patients who underwent acupuncture management at regular acupoint, although patients did not differ significantly at other outcome measurements of EORTC QLQ-C30 and KPS scores. It indicated that acupuncture at pain acupoints for CCP may be efficacious among female CC population.

This study has several limitations. First, the sample size was relatively small, which just investigated the feasible effectiveness of acupuncture at pain acupoints for CCP. Second, it only included the treatment period of 14 days, thus, it may still not long enough to exert positive results for other outcome measurements, except the pain evaluation. Third, lacking randomization application may increase the selection risk. Fourth, follow-up assessments should still be considered in future studies.

5. Conclusion

This study showed that acupuncture at pain acupoints might be effective for patients with CCP after 14-days treatment.

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