Clinical Study on the Adjuvant Therapeutic Effect of Moxibustion Therapy in Patients with High-Risk HPV Infection

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Abstract

Objective To investigate the adjuvant therapeutic effect of moxibustion therapy in patients with high-risk human papillomavirus (HPV) infection identified through cervical cancer screening. Methods Seventy patients who visited the Gynecology Department of our hospital from April 2022 to April 2024 with cervical cancer screening results positive for high-risk HPV were selected as study subjects. According to the randomized principle, they were divided into a control group and an experimental group, with 35 cases in each group. The control group received only conventional medication administration, while the experimental group received additional moxibustion therapy as a characteristic nursing intervention. All patients underwent HPV retesting after three months of group intervention, and the HPV negative conversion rates and patient satisfaction with nursing services were observed and compared between the two groups. Results The high-risk HPV negative conversion rate in the experimental group was 57.14%, significantly higher than the 25.71% in the control group, with a statistically significant difference ($P<0.05$). The nursing satisfaction rate in the experimental group was 94.29%, superior to the 74.29% in the control group, with a statistically significant difference ($P<0.05$). Conclusion Moxibustion therapy demonstrates excellent efficacy as an adjuvant treatment for patients with high-risk HPV infection, with high nursing satisfaction, and is worthy of promotion.

Full Text

Clinical Study on the Adjuvant Therapeutic Effect of Moxibustion Therapy in Patients with High-Risk HPV Infection

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Abstract

Objective: To investigate the adjuvant therapeutic effect of moxibustion therapy in patients with high-risk HPV infection. **Methods:** A total of 70 patients who underwent cervical cancer screening and tested positive for high-risk HPV at our hospital' s gynecology department between April 2022 and April 2024 were selected as study subjects. Using a digital randomization principle, they were divided into a control group and an experimental group, with 35 cases in each group. The control group received routine topical medication only, while the experimental group received moxibustion therapy as a characteristic nursing intervention in addition to routine care. After three months of group-specific interventions, all patients underwent HPV retesting. The HPV negative conversion rate and patient satisfaction with nursing services were observed and compared between the two groups. **Results:** The high-risk HPV negative conversion rate in the experimental group was 57.14%, significantly higher than the 25.71% in the control group ($P<0.05$). The nursing satisfaction rate in the experimental group was 94.29%, superior to the 74.29% in the control group ($P<0.05$). **Conclusion:** Moxibustion therapy demonstrates excellent efficacy as an adjuvant treatment for patients with high-risk HPV infection, with high nursing satisfaction, indicating significant value for broader clinical application.

Keywords: High-risk HPV; Moxibustion; Nursing Research

Introduction

Human papillomavirus (HPV) infection is one of the most common sexually transmitted diseases worldwide. According to World Health Organization (WHO) data, approximately 80% of sexually active women will be infected with at least one HPV subtype during their lifetime, with persistent infection by high-risk HPV types (such as HPV16/18) being a necessary factor for cervical cancer development [1-4]. The 2023 *China Cervical Cancer Prevention and Control Guidelines* report that approximately 119,000 new cervical cancer cases and 37,000 deaths occur annually in China, with high-risk HPV infection rates reaching 15.5% among women aged 25-45 [4-5]. Although HPV vaccines can effectively prevent infection, there remains no specific treatment for already infected individuals. Clinical management primarily relies on local therapies such as interferon and Baofukang suppositories, but these achieve negative conversion rates of less than 30% and suffer from high recurrence rates and poor patient compliance [6-9].

In recent years, integrated traditional Chinese and Western medicine treatment models have provided new approaches for HPV infection management. Traditional Chinese medicine (TCM) theory classifies HPV infection under the cate-

gories of "leukorrhea disease"and "damp-heat toxin,"with its pathogenesis rooted in insufficient vital qi and intermingling of damp-heat and blood stasis leading to malnourishment of the uterus [10-13]. As a characteristic TCM nursing technique, moxibustion regulates qi and blood circulation and enhances immune function through its warming meridian and yang-supporting effects. Basic research has confirmed that moxibustion can promote Th1/Th2 cytokine balance by regulating the TLR4/NF- B signaling pathway, significantly improving viral clearance rates in HPV-infected mouse models (P<0.01) [14]. Clinical studies have further revealed that patients with damp-heat constitution have a 2.33-fold higher risk of persistent HPV infection compared to those with balanced constitution (OR=2.33, 95%CI=1.45-3.76) [12], while moxibustion can improve the local microenvironment by regulating constitutional imbalances, aligning well with the TCM concept of "preventive treatment" [15-16].

However, current clinical evidence on moxibustion as adjuvant therapy for high-risk HPV infection has several limitations. First, most studies focus on mechanism exploration and lack support from high-quality randomized controlled trials (RCTs). Second, existing literature lacks standardized descriptions of moxibustion operation parameters (such as moxibustion distance and duration). Third, no evaluation system has been established for the synergistic effects between TCM nursing techniques and Western medical treatment protocols. In light of these gaps, this study employs a rigorously designed RCT following international CONSORT guidelines to validate the adjuvant therapeutic effect of moxibustion in high-risk HPV patients and explore its association with constitution regulation, aiming to provide scientific evidence for the evidence-based application of TCM nursing techniques.

Methods

1.1 General Information A total of 70 patients who tested positive for high-risk HPV during cervical cancer screening at our hospital' s gynecology outpatient clinic between April 2022 and April 2024 were selected as study subjects and divided into control and experimental groups (35 cases each) according to the principle of digital randomization.

Inclusion criteria: Confirmed chronic infection with high-risk HPV through cervical histopathological biopsy and clinical symptoms; Normal mental and psychological status with willingness to complete survey questionnaires; Sexually active women aged 20-65 years; No allergic reactions to moxibustion or vaginal medications.

Exclusion criteria: Women without sexual history; Age <20 or >65 years; Patients with malignant reproductive system tumors; Pregnant or lactating patients; Psychiatric patients unwilling or unable to cooperate.

The experimental group ranged in age from 28 to 62 years (mean $45\pm1 years), $whilethecontrolgroupranged from 28 to 64 years ($mean 48\pm1 years). No statistically significant differences were found between the two

groups in terms of age, family history of cervical cancer, or delivery mode (all P>0.05). See Table 1 .

1.2 Intervention Methods The control group received routine vaginal medication and monthly monitoring of vaginal secretion cleanliness. The experimental group received moxibustion therapy as a characteristic nursing intervention in addition to routine care. The moxibustion protocol employed a combination of revolving moxibustion and warming moxibustion box techniques at acupoints including Guanyuan (CV4), Qihai (CV6), Daimai (GB26) on the abdomen, Baliao points (BL31-BL34) on the lower back, and Sanyinjiao (SP6) on the ankles.

Patients first assumed a supine position for revolving moxibustion on abdominal points (Guanyuan, Qihai, Daimai) for approximately 5 minutes until local warmth and qi-blood circulation sensation were achieved. Warming moxibustion boxes were then applied to these points for 10 minutes. Patients then changed to a prone position for 10 minutes of moxibustion on Baliao points and bilateral Sanyinjiao. Each moxibustion session lasted 25 minutes total. Precautions were taken to avoid skin burns, and patients were instructed to drink a cup of warm water after treatment to accelerate metabolism and promote qi-blood circulation.

Experimental group patients scheduled treatments via WeChat group, avoiding their menstrual cycles according to individual circumstances, with 2-3 sessions per week, ensuring 8 sessions per month for a total of 24 sessions over three months. Vaginal secretion cleanliness was assessed after each month of 8 treatments. The observation period for both groups was three months, after which HPV retesting was performed to compare negative conversion rates.

1.3 Observation Indicators We compared monthly changes in vaginal secretion cleanliness between the two groups after intervention, as well as HPV negative conversion rates upon three-month retesting. Patient satisfaction with our department' s nursing services was also assessed using a self-developed WeChat mini-program survey with "satisfied" and "dissatisfied" options.

1.4 Statistical Methods Data were analyzed using SPSS 25.0 software. Measurement data were expressed as mean ± standard deviation (x±s) and tested for normal distribution. Normally distributed data were analyzed using t-tests, while non-normally distributed data used rank-sum tests. Count data were analyzed using chi-square tests. Statistical significance was defined as P<0.05.

Results

2.1 Comparison of Vaginal Secretion Cleanliness Across Time Points Initial vaginal secretion cleanliness showed no significant difference between

groups (^{2}=0.254, P=0.881>0.05). Similarly, no significant differences were observed after the first month (^{2}=3.214, P=0.200>0.05), second month (^{2}=2.448, P=0.348>0.05), or third month (^{2}=2.220, P=0.330>0.05). See Table 2 .

2.2 Comparison of High-Risk HPV Treatment Efficacy After three months, HPV retesting revealed that 20 patients in the experimental group converted from high-risk HPV positive to negative, yielding a negative conversion rate of 57.14%. In contrast, only 9 patients in the control group achieved negative conversion. The experimental group demonstrated significantly superior treatment efficacy compared to the control group (^{2}=7.124, P<0.05). See Table 3 .

2.3 Comparison of Patient Nursing Satisfaction A nursing satisfaction survey was conducted via WeChat mini-program among all 70 study participants. In the experimental group, 33 patients expressed satisfaction (94.29%), significantly higher than the 74.29% satisfaction rate in the control group (^{2}=3.883, P<0.05). See Table 4 .

Discussion

Cervical cancer is currently the second most common malignant tumor among women worldwide, after breast cancer, with approximately 260,000 cervical cancer deaths reported globally each year [4]. However, it is also the only cancer that can be prevented through intervention. HPV vaccination and regular screening are key measures for cervical cancer prevention [4,24], but effective management and treatment of already infected patients remain clinical challenges. High-risk HPV infection is closely related to host immune status, and the spontaneous clearance rate of HPV declines continuously with age. The high infection rate among middle-aged and elderly women is associated with decreased immunity [3,16,17]. Therefore, enhancing immune function and mobilizing the host immune system to clear the virus has become a research focus.

From a TCM perspective, high-risk HPV infection is considered leukorrhea disease caused by damp-heat descending [16]. Clinical studies have found that patients with damp-heat constitution have a significantly higher risk of persistent HPV infection than those with balanced constitution [12,20,25], suggesting that TCM constitution regulation could serve as an auxiliary intervention strategy. Traditional Chinese therapy adheres to the holistic concept, focusing not only on local virus clearance but also on improving overall immune function to achieve fundamental cure. As a TCM nursing technique, moxibustion enhances immune function, improves patient constitution, and increases local and systemic immunity through its warming meridian and yang-supporting effects, thereby promoting viral clearance [18-20]. Animal experiments have confirmed that moxibustion can enhance immune function in HPV-infected mice by regulating the TLR4/NF- B signaling pathway, providing molecular biological evidence for the immunomodulatory mechanism of TCM nursing [14].

In this study, the experimental group received moxibustion therapy as a characteristic nursing intervention, achieving a high-risk HPV negative conversion rate of 57.14%, significantly higher than the control group' s 25.71%. Additionally, mindfulness-based stress reduction has been shown to significantly reduce anxiety levels and enhance CD4+ T cell activity in HPV-positive women, supporting the synergistic effect of psychological intervention and immune modulation [25]. This suggests that moxibustion therapy can improve immune function not only through physical stimulation but also through psychological intervention to further enhance treatment efficacy. Meanwhile, a TCM nursing satisfaction scale constructed using the Delphi method has demonstrated good reliability and validity (Cronbach' s α>0.85) across dimensions including service attitude, technical operation, and health education [24,32], providing a robust tool for further improving service quality in nursing practice. Meta-analyses have shown that the adverse event rate of moxibustion is less than 5%, primarily minor burns, supporting its clinical safety [28,29,31], which increases our confidence in promoting moxibustion therapy.

This clinical trial validates the adjuvant therapeutic effect of moxibustion in high-risk HPV-infected patients, demonstrating significant negative conversion rates and high nursing satisfaction. Combined with findings from relevant literature [14,15,18,19,22,27,31], these results further confirm the advantages of moxibustion therapy in regulating immune function, improving patient constitution, and enhancing quality of life. Therefore, as a characteristic TCM nursing technique, moxibustion therapy holds broad application prospects and promotion value in the nursing care of high-risk HPV-infected patients.

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Note: Figure translations are in progress. See original paper for figures.