ORIGINAL ARTICLE

Comparison of Chlorquinaldol-Promestriene Vaginal Tablets and Opin Suppositories Effect on Inflammatory Factors and Immune Function in Chronic HPV Cervicitis

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ABSTRACT

Objective: To compare the effects of chlorquinaldol-promestriene vaginal tablets and opin suppositories on serum inflammatory factors and immune function in patients with chronic cervicitis complicated with HPV infection.

Study Design: An experimental study.

Place and Duration of Study: Department of Gynaecology and Obstetrics, People's Hospital of Zhouzhi County, Shaanxi, China, from January 2016 to June 2017.

Methodology: A total of 98 patients with chronic cervicitis complicated with HPV infection were randomly divided into the observation group and the control group with 49 cases in each group. Control group received vaginal administration of opin suppositories, and the observation group received chlorquinaldol-promestriene vaginal tablets. After treatment, the HPV-DNA negative conversion rate, levels of serum inflammatory factors (IL-1β, IL-6 and hs-CRP) and indices of immune function (CD_3^+,CD_4^+, CD_8^+ and CD_4^+/CD_8^+) were compared between the two groups.

Results: At 6 and 9 months after treatment, the HPV-DNA negative conversion rate in the observation group was higher than that in the control group (p=0.001 and p<0.001, respectively). At 6 months after treatment, serum IL-1β, IL-6, and hs-CRP levels in the observation group were lower than those in the control group (p<0.001, p=0.001 and p=0.002, respectively); serum CD_3^+,CD_4^+, CD_8^+ and CD_4^+/CD_8^+ levels in the observation group were higher than those in the control group (all p<0.001).

Conclusion: Chlorquinaldol-promestriene vaginal tablet is more effective than opin suppository in the treatment of patients with chronic cervicitis complicated with HPV infection. It can effectively improve the HPV-DNA negative conversion rate, reduce the level of serum inflammatory factors and improve the body's immune function.

Key Words: *Chlorquinaldol-promestriene vaginal tablet, Opin suppository, Chronic cervicitis, HPV infection, Inflammatory factors, Immune function.*

INTRODUCTION

Chronic cervicitis is a common disease in gynecology, mainly caused by not completely cured acute cervicitis and delayed condition.[1,2] Clinical symptoms of chronic cervicitis mainly include lower genital pain, abnormal vaginal discharge and constant lochia. Once suffering from chronic cervicitis, the patient's quality of life will be greatly impacted, and it may also be complicated with pathogen infection.[3,4] The most common type of pathogen infection is human papilloma virus (HPV). HPV is a DNA tumor virus that infects the squamous epithelial hyperplasia around the reproductive system.[5] Sustained infection with high-risk HPV can further lead to cervical precancerous lesions and cervical intraepithelial neoplasia. Chronic cervicitis complicated with HPV infection is now more common clinically, causing a significant increase in the incidence of cervical cancer.[6]

Chlorquinaldol-promestriene vaginal tablet is a broad-spectrum antibiotic that reconstructs the vaginal defence system. Its main component, chlorquinaldol, is effective in the treatment of vaginal infections caused by various pathogens. Promestriene can repair damaged mucosal tissue and the vaginal mucosal barrier, and effectively restore the damaged micro-ecological environment.[7] Previous studies have demonstrated that using chlorquinaldol-promestriene vaginal tablet in the treatment of vagina infections in women was safe and effective.[8]

Opin suppository is a recombinant human interferon α-2a (rhuIFN α-2a) in suppository form, which can indirectly inhibit the replication of the virus by inducing the production of antiviral proteins with enzymatic activity in cells, thereby achieving the antiviral effect.[9] Studies have suggested that rhuIFN α-2a would be effective and safe in the treatment of some genital warts.[10]

The objective of this study was to compare the effects of chlorquinaldol-promestriene vaginal tablets and opin suppositories on serum inflammatory factors and

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immune function in patients with chronic cervicitis complicated with HPV infection.

METHODOLOGY

This study was conducted at the The Department of Gynaecology and Obstetrics, People's Hospital of Zhouzhi County, Shaanxi, China, from January 2016 to June 2017. A total of 98 patients with chronic cervicitis complicated with HPV infection were selected as study subjects. Inclusion criteria were patients diagnosed with chronic cervicitis by pathological examination, HPV positive was detected by PCR, married or active sexual life history, non-pregnant and without any other genital diseases. Exclusion criteria were patients with cervical malignancy, surgical history of reproductive system, cognitive dysfunction, relative contraindications to interferon, acute vaginitis or those who were allergic to the study drug. The study was approved by the Hospital Ethics Committee, and all patients volunteered to participate in the study. Patients were randomly and blindly divided into the observation group and the control group, with 49 cases in each group.

In the observation group, 3 to 5 days after the end of menstruation, one vaginal tablet (0.200 grams/tablets of chlorquinaldol and 0.010 grams/tablet of promestriene) per day were placed deep in the vagina for 2 weeks as one course of treatment; the duration of therapy was 3 courses of treatment. Control group was given vaginal opin suppositories, one suppository (60,000 U/suppository) every other day for 2 weeks as the course of treatment; the duration of therapy was 3 courses of treatment, too. Both administrations were pushed deep into the vagina, and discontinued during menstruation. Sexual activity was forbidden during treatment.

After 3, 6 and 9 months of treatment, the patients were interviewed by telephone and were asked to return to the hospital for reexamination. Cervical exfoliated cells were collected to detect HPV-DNA negative conversion by the authors. Meanwhile, at 6 months after treatment, 3 mL of fasting venous blood was taken from the patients in the early morning and placed in an EDTA anti-coagulant tube. It was centrifuged at 3,000 r/min for 15 min, and the upper serum was reserved for use. Serum inflammatory cytokines such as IL-1β, IL-6 and hs-CRP levels were detected by ELISA. Changes in immune function such as CD_3^+, CD_4^+, CD_8^+ and CD_4^+/CD_8^+ were detected by alkaline phosphatase assay.

SPSS 22.0 statistical software was used for data analysis and processing. Measured data were expressed as the mean ± standard deviation and compared using independent-sample t-test. Count data were expressed using n (%) and compared using the Chi-square test. $P<0.05$ was considered statistically significant.

RESULTS

Ninety-eight patients were 26 to 68 years old, mean age being 35.41 ±4.67 years. Ninety-eight patients included in which 50 (51.02%) cases were high-risk HPV16 positive, 35 (35.71%) cases high-risk HPV18 positive, 6 (6.12%) cases high-risk HPV33 positive, 4 (4.08%) cases high-risk HPV52 positive, and 3 (3.06%) cases high-risk HPV58 positive.

At 3 months after treatment, there was no significant difference in HPV-DNA negative conversion rate between the two groups (p=0.247); however, at 6 and 9 months after treatment, the HPV-DNA negative conversion rate in the observation group was higher than that in the control group (p=0.001 and p<0.001 respectively, Table I).

At 6 months after treatment, serum IL-1β, IL-6, and hs-CRP levels in the observation group were lower than those in the control group (p<0.001, p=0.001 and p=0.002 respectively, Table II).

Table I: Comparison of HPV-DNA negative conversion rate in the two groups.

Group	n	3 months after treatment		6 months after treatment		9 months after treatment	
		n (%)	p-value	n (%)	p-value	n (%)	p-value
Control group	49	10 (20.41)	0.247	13 (26.53)	0.001	20 (40.82)	<0.001
Observation group	49	15 (30.61)		29 (59.18)		45 (91.84)	

Table II: Comparison of serum immune function between two groups after 6 months of treatment.

Group	n	IL-1β (pm/L)		IL-6 (pm/L)		hs-CRP (mg/L)	
		Mean ±SD	p-value	Mean ±SD	p-value	Mean ±SD	p-value
Control group	49	6.32 ±0.43	<0.001	9.34 ±1.29	0.001	1.65 ±0.35	0.002
Observation group	49	5.11 ±0.31		8.52 ±0.97		1.37 ±0.49	

Table III: Comparison of serum immune function between two groups after 6 months of treatment.

Group	n	CD_3^+ (%)		CD_4^+ (%)		CD_8^+ (%)		CD_4^+/CD_8^+	
		Mean ±SD	p-value	Mean ±SD	p-value	Mean ±SD	p-value	Mean ±SD	p-value
Control group	49	57.26 ±4.29	<0.001	28.31 ±6.12	<0.001	23.44 ±2.16	<0.001	1.12 ±0.22	<0.001
Observation group	49	63.15 ±5.42		35.02 ±8.25		26.13 ±3.32		1.34 ±0.19	

At 6 months after treatment, serum CD_3^+, CD_4^+, CD_8^+ and CD_4^+/CD_8^+ levels in the observation group were higher than those in the control group (all p<0.001, Table III).

DISCUSSION

HPV infection is a risk factor for chronic cervicitis. HPV can be transmitted to the host cell through contact with the uterine cervix, as well as be replicated and transcribed within the host cell; however, HPV will not enter the blood circulation system and thus will not cause viremia. At present, there are many treatments for chronic cervicitis complicated with HPV infection, such as radiofrequency treatment, cryotherapy, immunotherapy, and drug treatment.[11,12] Among them, drug treatment is favoured by clinicians because of its advantages of high safety, low adverse reactions, few complications, and ease of use.[13] Studies have confirmed that the promestriene in the chlorquinaldol-promestriene vaginal tablets has little effect on the endocrine system of women of childbearing age and therefore does not show systemic estrogenic effects.[14,15] Opin suppository is a recombinant interferon preparation, which can lower the levels of progesterone and estradiol, reduce cervical and vaginal secretions, and promote rapid growth of cervical squamous epithelial cells.[16] This study compared the efficacy of chlorquinaldol-promestriene vaginal tablets and opin suppositories on patients with chronic cervicitis complicated with HPV infection. The results of this study showed that at 6 and 9 months after treatment, the HPV-DNA negative conversion rate was higher in the observation group than that in the control group. This suggested that chlorquinaldol-promestriene vaginal tablet can improve the HPV-DNA negative conversion rate more effectively than opin suppository in patients with chronic cervicitis complicated with HPV infection. This conclusion is basically consistent with the result of previous studies.[8]

Cytokines play a very important regulatory role in the immune system and cause pathological reactions under abnormal conditions.[17] The correlation between HPV infection-induced chronic cervicitis and inflammatory cytokine levels has been widely demonstrated.[18] IL-1β is an important inflammatory cytokine with antigen-presenting activity. It is mainly produced by monocytes, keratinocytes, and activated B cells. Its carboxyl terminal contains multiple glycoprotein ligands that can be bound to T-lymphocytes to promote damage of natural killer T-lymphocytes to columnar epithelial cells and exacerbate HPV infection and pathogenicity.[19] IL-6 is a cytokine with inflammatory mediator activity and is mainly produced by monocyte macrophages and certain activated T cells.[20] In addition to its immunopotentiating effects, IL-6 is also involved in the pathophysiological processes of many inflammatory diseases. hs-CRP is an acute phase reaction protein, the level of which can reflect the local and systemic immune response and degree of inflammatory reaction.[21,22] The results of this study showed that serum IL-1β, IL-6, and hs-CRP levels were lower in the observation group than those in the control group at 6 months after treatment. This showed that chlorquinaldol-promestriene vaginal tablets can reduce the level of serum inflammatory cytokines more effectively, and thus alleviate the patient's condition.

T lymphocyte subsets play an important role in the body's antiviral cellular immunity.[23] CD_3^+ is the gross value of T lymphocytes, CD_4^+ the helper T cell, and CD_8^+ the inhibitory T cell. The balanced and CD_4^+/CD_8^+ ratio maintains normal cellularimmune function. The decrease in this ratio indicates the presence of T cell-related immunodeficiency, and it is significantly associated with the development of HPV-associated infections and tumors. Related studies have shown that patients with subclinical HPV infection have reduced cellular immune function, which mainly reflects in reduction of CD_4^+ cells.[24] The results of this study showed that compared with the control group, patients in the observation group had significantly higher serum CD_3^+, CD_4^+, CD_8^+ and CD_4^+/CD_8^+ levels after treatment. It showed that chlorquinaldol-promestriene vaginal tablets can improve the T lymphocyte levels and cellular immune function of the patient. This conclusion is basically consistent with the result of previous studies.[25]

CONCLUSION

Chlorquinaldol-promestriene vaginal tablet is more effective than opin suppository in the treatment of patients with chronic cervicitis complicated with HPV infection. It can effectively improve the HPV-DNA negative conversion rate, reduce the level of serum inflammatory factors and improve the body's immune function.

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