

## **REPORT**

# **Clinical curative effect of traditional Chinese medicine combined with doxycycline in the treatment of genital Chlamydia trachomatis and Urea plasma urealyticum infections**

**Yueqin Ruan<sup>1</sup>, Zhaodong Han\*<sup>1</sup> and Xiaotong Han<sup>2</sup>**

<sup>1</sup>Binzhou Medical University Hospital, Binzhou, Shandong, China

<sup>2</sup>Heilongjiang University Of Chinese Medicine, Harbin, Heilongjiang, China

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**Abstract:** This paper aims to study clinical curative effect of traditional Chinese medicine combined with doxycycline in treating genital Chlamydia trachomatis (Ct) and Urea plasma urealyticum (Uu) infections. The observed subjects in this paper were 60 patients who had been randomly divided into two groups, among which the control group was treated with doxycycline and the treatment group with Chinese medicine combined with doxycycline. Results showed that the curative effect of the treatment group was much better than that of the control. So it is proved that Chinese medicine combined with doxycycline is worth promoting because it is a convenient and safe way, which does not easily produce drug-resistant strain.

**Keywords:** Genital infection; Chlamydia trachomatis; Ureaplasma urealyticum; Chinese medicine; Doxycycline.

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## **INTRODUCTION**

Genital infection includes traditional sexual transmitted infection, bacterial vaginosis and candida vulvovaginitis, causing by Chlamydia trachomatis (Ct), Ureaplasma urealyticum (Uu), Mycoplasma hominis (Mh), fungus or virus (Shuping *et al.*, 2012; Xiaofang, 2007). Ct and Uu attract much attention with its frequent presence in genital infections. It is informed that Ct and Uu lead to genital infections of vagina, cervix and pelvic, and closely relate to infertility, eccyesis, abortion and IUGR (intrauterine growth retardation). Yunheng Zhou (Yunheng *et al.*, 2010) took drug sensitivity tests on 1464 patients with genitourinary infections, and detected high relevance ratio of Ct and Uu. Besides, primary options of antibacterials in treating genitourinary infections would be tetracycline, minocycline and doxycycline. Jing Liu (Jing *et al.*, 2014) found that Uu had been the major pathogenic bacteria for genital infections through the culture and drug test of Uu with 3127 women of reproductive age and patients with Uu infections were sensitive to minocycline doxycycline and biaxin, which could be the proof of clinical treatments. In addition, via the curative effects of treating minocycline and urealyticum-resistant genitourinary infections, Yongyong Zhou (Yongyao, 2010) confirmed that Chinese medicine combined with azithromycin was more effective in treating minocycline and Ureaplasma urealyticum infections than azithromycin or Chinese medicine alone. Based on above researches, this paper compares clinical curative effects of doxycycline and Chinese medicine combined with doxycycline in treating

genital Ct and Uu infections, to make contribution to clinical treatments.

## **MATERIALS AND METHODS**

### ***General materials***

This paper randomly divided 60 outpatients and inpatients with genital Ct and Uu infections in hospital between February 2011 and January 2012, among which 30 for control and 30 for treatment. In the treatment, patient's age was between 21-38, with average in (29.27±4.76); and courses of disease varied from 25 days to 270 days with (127.44±73.67) days in average. In the control, ages differed from 22 to 40, average in (27.87±4.56); and the average course was (138.79±85.04) day with minimum 20 days and maximum 240 days. Pathogen infections were presented in table 1. From the table, it could be noticed that the results was comparable without statistical significant difference (P>0.05).

### ***Diagnostic criteria***

#### ***Therapeutic method***

Diagnostic criteria for Western medicine referred to Prevention of Sexually Transmitted Disease edited by Epidemic Prevention Department of Ministry of Public Health of China, and published by Jiangsu Science and Technology Press. Diagnostic criteria for Chinese medicine was according to Guiding Principles for Clinical Study of New Chinese Medicine (published in 1993) and Chinese Gynaecology (the forth edition of teaching materials for medical collages and universities). TCM (traditional Chinese medicine) syndrome differentiation was damp and heat accumulation.

\*Corresponding author: e-mail: hzd0229@163.com

**Table 1:** Pathogen infections of two groups of patients

Groups	Number	Ct		Uu	
		Positive	Negative	Positive	Negative
Treatment	30	12	18	20	10
Control	30	14	16	17	13

**Table 2:** Effect standards

Curative Effect	Performances
Healing	Symptoms disappeared with normal gynaecological and pathogenic test results.
Remarkable	Symptoms eased with significant improvement in gynaecological and pathogenic tests.
Effective	Symptoms eased with improvement in gynaecological and pathogenic tests.
Ineffective	Symptoms eased or worsened with the same gynaecological and pathogenic test results before treatments

**Table 3:** Comparisons of two groups in the overall clinical curative effects

Groups	N	Heal	Remarkable	Effective	Ineffective	Overall effect	$\mu$	P
Treatment	30	5(16.7)	6(20.0)	15(50.0)	4(13.3)	26(86.7)	2.165	0.030
Control	30	1(3.3)	1(3.3)	23(76.7)	5(16.7)	25(83.3)		

### Treatment methods

The control group received intravenous infusion of 0.2g doxycycline along with 500ml 5% Glucose and Normal Saline Infusion (GNS) in the first day and intravenous infusion of 0.1g oxytetracycline along with 250ml 5% GNS each day in the following 6 days.

The treatment took treatment combined with Chinese medicine on the basis of above methods of the control. Ingredients of internally taken Chinese medicine were: 9g herba artemisiae capillaris, 12g cape jasmine, 15g golden cypress, 15g tree peony bark, 15g radix paeoniae rubra, 12g grifola, 12g rhizoma alismatis, 12g plantago seed, 12g angelica root, 12g poria cocos, 15g fructus meliae toosendan, and 12g fructus kochia; one dose each day with decoction for three times. Externally: 15g golden cypress, 15g radix bupleuri, 15g angelica root, 15g isatis root, 15g fructus kochia, 15g herba andrographis, and 15g radix gentianae; one dose each day with decoction for external wash.

Sexual partners were treated at the same time. In sexual life, condom should be used to prevent cross infections. Also, the treatment should not involve menstrual period. Finally, curative effects were evaluated three weeks after a course of 7 days treatment.

### RESULTS

Curative effects were assessed in both groups with self-made effect standards, performed in table 2. Based on rank test, the results indicated that the treatment group was better than the control in aspects of healing, remarkable curative effects and effective curative effects, and the differences had statistical significance ( $P < 0.05$ ); the treatment group also notably had better overall curative effects than the control. Reference to table 3 and fig. 1.

### DISCUSSION

In recent years, it has seen an increase in the occurrence of genital infections caused by Chlamydia trachomatis (Ct), Ureaplasma urealyticum (Uu), and Mycoplasma hominis (Mh). Chinese medicine did not record any genital Ct and Uu infections, but according to clinical features, the infections related to stranguria, leukorrheal diseases and pruritus vulvae (Shuping *et al.*, 2012; Chunfang, 2011; Ling and Jing, 2014). Unapparent as Ct and Uu infections, they did bring about coelitis and endometritis, even infertility. It was found that patients with infertility increased with the rise in Ct infections (Kui *et al.*, 2014; Jinghua, 2012). Uu was the smallest microorganism between bacteria and virus, and lived independently. Once infected, Uu would cling to receptors of genitourinary epithelial cells, and cytomembrane of red blood cells, macrophage and sperm. While absorbing lipids and cholesterins from host cytomembranes, Uu released poisonous metabolites, such as hydrogen peroxide, super oxide radical and hydrogen nitride to cause damages. Ct was a special cell parasite containing serotype and genotype; and MOMP, the antigen for division, was the major pathogen for sexually transmitted diseases (Yuhua and Yuying, 2013).

As for the treatment of Ct and Uu, Western medicines were advised to apply antibiotics and destroy pathogen. Zhanhui Bao and Xiaoyan Cao. (Zhanhui, 2013; Xiaoyan *et al.*, 2013) did study on treating genital infections by doxycycline hydrochloride combined with azithromycin, and concluded that this method was with the value of promotion for its remarkable curative effect and less adverse reactions. Besides, doxycycline hydrochloride combined with asimi was effective in the treatment of genital Uu infections (Chunchu and Xueyun, 2011). Practitioner of Chinese medicine thought the pathogenesis

of Uu infections was damp and heat accumulation and choking. The main bodies of internally taken Chinese medicine were grifola, rhizoma alismatis, plantago seed and poria cocos, which did good in dehumidification and diuresis. While herba artemisiae capillaris, golden cypress, cape jasmine ranked second with functions of killing or purging intense heat and detoxication. Tree peony bark and radix paeoniae rubra aimed to transform stasis, and fructus kochia, fructus meliae toosendan and angelica root were used to kill pains. Thus the complete medicine was for heat and pain killing, and for detoxication and dampness. As for external, golden cypress played the major role for purging intense heat and detoxication, followed by isatis root and herba andrographis. Besides, radix bupleuri, angelica root, fructus kochia and radix gentiana were functioned by eliminating dampness and relieving itching. In conclusion, the purpose of complete medicine was purging intense heat and detoxication, as well as eliminating dampness and relieving itching.

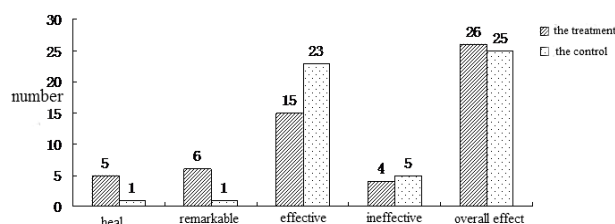


Fig. 1: Curative effect comparisons between two groups

Doxycycline acted positively in resisting Ct and Uu, whose absorbing was fast and complete with 95% absorptivity. Once taken, CMAX reached about 2 hours later, and what next was half value period lasting for 16-18 hours. Doxycycline stayed for a long time in blood and tissues. Compared to the effect of tetracycline in treating NGU (non-gonococcal urethritis) and mucopurulent cervicitis, the curative effect of doxycycline was more positive and identical. If genital infection was treated only by antibiotics, the great adverse effects would be accompanied with long period. What displayed in this research was that the combined treatment of Chinese and Western medicine deserved popularity since this was convenient and safe. Besides, the treatment effect was positive and identical with less drug-resistant strains.

## CONCLUSION

Based on above discussions, the conclusion came out that Chinese medicine combined with doxycycline are remarkably effective in treating genital Ct and Uu infections. The treatment was convenient and safe with less drug-resistant strains, which should be publicized.

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