Traditional Chinese Medicine for Treatment of Urinary Tract Infection in Acute Phase—A Case Report

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Abstract: **Rationale:** According to the literature reports and clinical studies on urinary tract infection (UTI) from 2009 to 2019, most clinical treatments have been oral drugs as Antibiotics. At present, Bacterial resistance is often related to a higher recurrence rate, Antibiotics therapy has been widely used in UTI, but there are various side effects such as long treatment cycle, gastrointestinal discomfort and repeated illness. We present a case report describing a traditional medicine treatment for UTI that uses a decoction, a kind of Traditional Chinese Medicine, namely, Guizechejin decoction. **Diagnoses:** A diagnosis of UTI was made in the Department of traditional Chinese medicine, The first Affiliated Hospital of Guangxi University of Chinese Medicine. **Interventions:** The patient was treated with the Guizechejin decoction, a Chinese medicine prescription, for 7 consecutive days. **Outcome:** After seven days of TCM treatment at home, the patient reported no urinary symptoms, including dull pain in the lower abdomen and dysuria, and the results of urinalysis turned to be normal. The patient remained under observation for 7 days without recurrence. **Lessons:** The Guizechejin decoction can be an effective in patients with UTI.

Keywords: Urinary tract infection, Traditional Chinese Medicine, Guizechejin decoction.


1. **Introduction**

Urinary tract infection (UTI) is an infection from pathogens, mostly bacteria, that invade the mucosa or any part of the urinary tract (the kidneys, bladder, and ureters)[1]. It is also confirmed as the most common clinical bacterial infection. Women are prone to suffer from UTI versus men, over half of whom will have at least one UTI in their lifetime[2]. Currently, the prevalence of UTI is up to 150 million new cases worldwide each year[1], and this figure keeps growing. In the United States, about 1.515 million women were diagnosed with UTI in the emergency department in 2007, of whom 391,000 were over 65 years old[3]. Antibiotics are a routine treatment against UTI. The 1999 American Society of Infectious Diseases (IDSA) clinical guideline for the treatment of acute uncomplicated cystitis and pyelonephritis introduced antibiotics as the approach to the patients[4]. However, antibiotic resistance has been frequently reported since then with growing evidence questioning the efficacy of the recommended antibiotic agents[5]. Bacterial resistance is often related to a higher recurrence rate and a secondary infection rate of UTI, posing physical and economic threats to the patients. But for complicated UTI, elder populations, or diabetic cases, postmenopausal women, and those with urinary catheters, antibiotic therapy not only offers unsatisfactory efficacy but also links to a high recurrence rate due to fast-emerging bacterial resistance. Traditional Chinese medicine (TCM) that allows the combination of several anti-bacterial herbs can remarkably lower the chance of bacterial resistance, which is superior in this sense. Here we reported a case of acute UTI in an elderly woman who presented with acute urinary symptoms, especially dysuria, for two days but declined antibiotic therapy. After seven days of treatment with the Chinese medicine compound recipe Guizechejin decoction, her clinical symptoms and urine test results were ameliorated greatly.

2. **Case Report**

A 74-year-old woman visited the Department of traditional Chinese medicine, The first Affiliated Hospital of Guangxi University of Chinese Medicine, on December 12, 2020, and complained of dull abdominal pain and painful urination. She denied a family history of UTI and other relevant diseases. On physical examination, there was significant abdominal Suprapubic tenderness. However, concerning financial strains, the woman declined Doppler ultrasonography and the complete blood count test apart from urinalysis (Urine leukocyte, Urine occult blood, pyocye is positive and Microscopic examination of red blood cells is 20, Microscopic examination of leucocyte is 28). No abnormalities in color and other indices were detected in the urinalysis. Ultimately, the TCM compound recipe Guizechejin decoction was prescribed for the woman,
consisting of Cinnamomum cassia Presl (15g), Atractyloides lancea (15g), green tangerine peel (Citrus reticulata, 15g), Pinellia ternata (20g), Poria cocos (20g), Alisma orientalis (15g), Plantago asiatica (30g), Lysimachia christinae (30g), Lygodium japonicum (30g), Dianthus superbus (15g), Phragmites australis (15g), Paeonia lactiflora (15g), Fructus crataegi cuneatae (20g), and Rhizoma Imperatae (20g). The 14 herbs were immersed in 1000 mL of drinking water and decocted together for 45 min. The decoction was obtained after residues were filtered and taken 1 h after meals. After seven days of TCM treatment at home, the patient reported no urinary symptoms, including dull pain in the lower abdomen and dysuria, and the results of urinalysis turned to be normal (Urinal leukocyte, Urine occult blood, pyocyte is negative and Microscopic examination of red blood cells, Microscopic examination of leukocyte is normal.). Besides, informed consent for publication was obtained. The patient remained under observation for 7 days without recurrence.

3. Discussion

UTI is commonly diagnosed in clinic that results from several pathogenic components: pathogenic bacteria infection, lower host immunity, urethral mucosal damage, and intestinal endogenous bacterial translocation[6,7]. The growing prevalence of UTI may be associated with the widespread development of new techniques, such as minimally invasive interventions, and hormones and immunosuppressive agents that have been frequently used, which are worthy of more attention[8,9]. Antibacterial drugs are the mainstream UTI therapy. Recent studies reported the antibiotic resistance of extended-spectrum β-lactamase (ESBL) production, Enterobacteriaceae, and class C cephalosporinase (AmpC)- and carbapenemase-producing Enterobacteriaceae after abuse of antibiotics[10], and that patients with drug-resistant UTI had longer hospital stays, higher costs, and higher risks of septic shock and death[11].

Numerous evidence has confirmed that PGE2 (a pro-inflammatory mediator) synthesis via the synergistic action of COX-2 and mPGES-1 at the site of inflammation and the resultant sensitization of pain receptors are the primary mechanisms of inflammation and pain[12,13], especially hyperalgesia[14]. Nguyen et al. have also identified EP3 as a key player that facilitates mast cell degranulation, priming cytokine release to enhance the inflammatory response.

Compound formulas of TCM are commonly used in practice. The formulas recorded in Treatise on Febrile Diseases for acute UTI treatment are well-known for their satisfactory efficacy. There is preexisting evidence that Chinese herbal formulas can significantly reduce the bacterial count of urinary pathogens and renal colonization and inhibit neutrophil infiltration[15,16]. Some studies ascertained that TCM formulas exerted pronounced diuretic, anti-inflammatory, antipyretic, anti-inflammatory, and analgesic effects via suppressing the activities of E. coli and S. aureus[17,18]. The herbal medicinal product Canephron® N has also been confirmed to down-regulate PGE2 levels in animals with enzymatic peritonitis[19]. Therefore, the TCM formula used for this case offers satisfactory anti-inflammatory effects, with significant relief in acute urinary symptoms, probably through immune system-mediated PGE2 regulation. Further clinical or experimental validations are needed to elucidate the specific mechanism.

Conflict of Interest

The authors have no conflicts of interest to disclose.

Acknowledgement

We would like to thank the Key Research and Development Program of Guangxi Science and Technology Department (AD18281094), Guangxi Key Laboratory of Chinese Medicine Foundation Research Project (K201137906, KJT19004) and Guangxi University of Chinese Medicine 2019-2021 Guangxi First-class discipline construction open project (2019XK024).

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