



Chinese herbal medicine to treat urolithiasis in a patient with right flank pain and hematuria: A case report

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ARTICLE INFO

Keywords:

Urolithiasis
Hydronephrosis
Extracorporeal shock wave lithotripsy
Chinese herbal medicine

ABSTRACT

Objective: Urolithiasis is a common medical condition affecting the urinary tract. Typical symptoms reported by patients include colic pain and hematuria. Some patients may undergo surgical intervention or lithotripsy to remove the stones. In this case, we demonstrated that Chinese herbal medicine (CHM) was an effective modality to remove stones in a patient with urolithiasis.

Clinical features and outcome: A 47-year-old man suffered from right flank pain and hematuria for three months and was diagnosed with an upper third ureteral stone obstruction with right hydronephrosis. He had received extracorporeal shock wave lithotripsy (ESWL) three times before his first CHM visit, but it was unsuccessful. Therefore, he sought CHM for further intervention. His symptoms subsided, and the image study showed complete removal of the ureteral stone after regular therapy with Zhi Bai Di Huang Wan (知柏地黄丸) combined with *Lygodii spora* (海金沙), *Curcumae radix* (鬱金), *Endothelium Corneum Gigeriae Galli* (雞內金), *Lysimachiae herba* (金錢草), *Orthosiphon stamineus* (化石草) for approximately four months. Neither complications nor side-effects were noted during the CHM treatment.

Conclusions: In this case, we concluded that CHM may be an effective alternative therapy for the treatment of ureteral stones, and furthermore, may also be applied as an option to salvage failed ESWL procedures.

1. Introduction

Urolithiasis is a common problem seen in primary care practice.¹ Patients often suffer from the typical symptoms associated with urolithiasis, including colic pain and intermittent hematuria. Other symptoms may include nausea, abdominal pain, flank pain, as well as abnormal frequency, urgency, or difficulty with urination. The colic pain may radiate to the ipsilateral testicle or labium in the case of lower ureteral obstruction. Symptomatic control is usually suggested for uncomplicated cases. The most common treatments for managing urolithiasis include percutaneous drainage, ureteral stenting, ureteroscopy, and extracorporeal shock wave lithotripsy (ESWL), depending on the size and location of the stones.

Based on the Chinese herbal medicine (CHM) theory, stones are pathological products derivative from rheum, phlegm or static blood. In our clinical practice, kidney diseases all fall into the category of kidney vacuity. Kidney vacuity influences the harmony of genitourinary system and causes the deposit of pathologic product, urolithiasis. As a result, the main treatment would focus on the supplement of kidney vacuity. On the other hand, the removing of stone depends on the diuretic effect

and inhibition of urinary calcium oxalate stone formation. Recently, Kasote et al. indicate that herbal remedies are in practice until today for the treatment and cure urinary stone diseases.² Some patients suffering from urolithiasis may have to undergo repetitive surgical interventions for stone removal due to frequent recurrences.³ In such cases, Chinese herbal medicine (CHM) could be a viable alternative treatment for urolithiasis. Herein, we present the case of a 47-year-old male with right ureteral calculi and hydronephrosis, treated solely with CHM. After approximately four months of CHM treatment, all symptoms and signs were resolved and the stone removed.

2. Case report

A 47-year-old previously, and otherwise healthy man, reported suffering from right flank pain and hematuria for a period of three months. The patient had no evidence of trauma, fever, nausea and vomiting, or skin rash, and was not taking any medication to manage the condition at the time.

He suffered from paroxysmal right flank pain for three months prior to his first Chinese medicine visit. He reported the most severe right

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Table 1

The urinary analysis series data before and after CHM treatment.

Date	Pre-TCM treatment Aug. 29. 2016	Pre-TCM treatment Oct. 20. 2016	Post-TCM treatment Jun. 29. 2017
color	Yellow	light yellow	yellow
appearance	Hazy	clear	clear
sed. WBC	0–5	16	0–5
sed. RBC	Numerous	172	3–5
Epith. Cell	0–5	0	0–5

Before CHM treatment, the urinary analysis series showed numerous red blood cells (RBCs) indicating hematuria. After CHM treatment, the RBCs in urinary analysis was subsided within the normal range (RBC < 5/uL; normal range < 17).

upper flank pain associated with radiation to the bilateral low back. The pain sensation decreased slightly when leaning forward but increased with any other movements. The pain scale was evaluated, and found that the score of each attack was between 5 and 8 on a scale of 0–10 (wherein 0 is no pain and 10 is the most severe pain).⁴ The pain was sharp and paroxysmal, lasting 30–60 min and accompanied by gross hematuria. The pain scale was checked by every visit in our TCM clinic and recorded by the therapist. The description of “score between 5 and 8” on the first visit was registered by patient’s recall with a visual analogue scale picture for him to point out his best description of pain sensation.

The urine routine examination demonstrated severe hematuria without pyuria (RBC: Numerous), as shown in Table 1. As treatment, he consequently received three separate sessions of ESWL, but with no effect. Unfortunately, the paroxysmal right flank pain and hematuria persisted. The follow-up intravenous pyelography (IVP) and kidney, ureter, and bladder X-ray (KUB) showed right hydronephrosis with an upper third ureteral obstruction and radiopaque lesion at the right side L3-4 area (Fig. 1A and C). Therefore, with no improvement of his condition, he sought CHM treatment for further management on 2016/11/10.

Upon examination, the patient was alert and oriented. He presented a deep fine pulse and a pink tongue with thin white coating. Urine routine examination demonstrated hematuria (RBC: 172), as shown in Table 1. We prescribed Zhi Bai Di Huang Wan (ZBDHW), in addition to *Lygodii spora*, *Curcumae radix*, *Endothelium Corneum Gigeriae Galli*, *Lysimachiae herba*, and *Orthosiphon stamineus*, three times daily dosage by oral administration during the course of the treatment. Each powder package contained 2.33 g of ZBDHW and 0.5 g of the following herbs *Lygodii spora*, *Curcumae radix*, *Endothelium Corneum Gigeriae Galli*, *Lysimachiae herba*, and *Orthosiphon stamineus*. All of the herbal medications were concentrated herbal extracts in powder form that had been sprayed to a dried powder product from a hot-water extract of the constituent raw herbs. These CMH powders are made by Good Manufacturing Practice (GMP)-certified pharmaceutical companies. Throughout the course of the entire CHM treatment, the patient denied receiving any other medication apart from occasional analgesia for pain management.

After a four-month treatment period, he claimed decreased frequency and extent of right flank pain. The pain score was down to 1 and 2 on a scale of 0–10. The routine KUB follow-up examination showed the passage of the ureter stone (Fig. 1D). After four months of treatment, he reported no more flank pain. There was no hematuria noted, as shown in Table 1. On IVP follow-up examination, the right side moderate hydronephrosis and hydroureter had subsided (Fig. 1B). The KUB showed no presence of the right lower third ureter stone (Fig. 1E). We have obtained written informed consent from the patient for publication of this case in print form for scientific purposes. This study was approved by the Institutional Review Board of China Medical University Hospital (CMUH106-REC-008).

3. Discussion

While the typical symptoms of ureteral stones are colic pain and intermittent hematuria, most ureteral stones are silent.⁵ Stones may be observed accidentally by an abdominal plain film, intravenous pyelogram (IVP), ultrasonography, non-contrast helical Computed Tomography (CT), or Magnetic Resonance Imaging (MRI). The non-contrast helical CT and ultrasound are both considered as initial diagnostic imaging tools in patients with obvious symptoms with the CT being the most sensitive. Ultrasound poses no danger of exposure to radiation and offers the flexibility to be performed at the bedside.⁶ IVP is an alternative option if CT and ultrasonography are unavailable. Abdominal plain film (KUB) is another reasonable initial study option for use on patients who are suspected to have urolithiasis. In this case, the patient suffered from a ureteral stone associated with hydronephrosis, as detected by IVP, and ultrasonography initially.

In acute renal colic, pain control and hydration are the first management tools. Asymptomatic ureteral stone or newly diagnosed ureteral stone < 10 mm without obvious symptoms are suggested to be managed initially by periodic evaluation. Overall, 31.8% of patients with ureteral stones are symptomatic; whereas approximately 26.5% of them require urological intervention, and 26.5% require therapeutic lithotripsy.⁵ There are several medical treatment options available, including antispasmodic agents, calcium channel blockers, and alpha blockers to increase the passage rate of ureteral stones, depending on the stone size.^{7–10} In this case, the patient had already received ESWL three times without alleviation of symptoms or stone dismissal. Therefore, he sought CHM treatment as an alternative.

Based on Traditional Chinese Medicine (TCM) theory, syndrome differentiation is the major process used to analyze the clinical information originating from patients. This consists of four primary procedures: observation, listening, questioning, and pulse detection. Collectively, the diagnosis of this particular patient with a ureteral stone was that deficiencies of the liver and kidney yin were causing an up-flaming vacuity fire. The vacuity fire would dry the body fluid and create damp heat in the lower-jiao. The long-term damp heat in the lower-jiao resulted in a urolithiasis formation. The Zhi Bai Di Huang Wan (ZBDHW) is a derivative formula from Liu Wei Di Huang Wan, which is commonly used for treating liver and kidney yin deficiency and up-flaming vacuity fire. The ZBDHW formula consists of 8 Chinese herbs: *Rehmannia glutinosa*, *Cornus officinalis*, *Dioscorea polystachya*, *Poria cocos*, *Cortex Moutan Radicis*, *Alisma plantago-aquatica*, *Anemarrhena asphodeloides*, *Phelloendron amurense Rupr.* The ZBDHW can balance yin and yang, reconcile the five internal organs, and can be used long-term for the treatment of liver and kidney yin deficiencies. Recently, the ZBDHW formula has been demonstrated as an effective treatment in 58.6% of patients suffering from urolithiasis and other traits of kidney deficiency.¹¹ Consequently, we chose ZBDHW as the main formula to balance yin-yang and harmonize the patient’s constitution. The main component, *Alisma plantago-aquatica*, can drain dampness and resolve phlegm-fluid, based on TCM theory. *Alisma plantago-aquatica* has also been demonstrated as having diuretic, anti-urolithiatic, anti-nephritic, anti-atherosclerotic, immune-modulatory, and hepatoprotective activities.¹² It could act to inhibit urinary calcium oxalate stone formation through down-regulation of bikunin (messenger RNA) mRNA expression, as demonstrated in rat urolithiasis models.^{13,14}

San-Jin decoction (SJD) consists of *Lygodii spora*, *Lysimachiae herba*, *Endothelium Corneum Gigeriae Galli*. It is a well-known and effective CHM prescription for the treatment of ureterolithiasis. An efficacy rate of between 55 percent and 75 percent has been reported for stones smaller than 10 mm.^{15–17} In this case, we added *Curcumae radix*, called Si-Jin decoction, to facilitate the stone removal.¹⁸ *Lygodii spora* decreases the levels of urinary calcium, oxalate and uric acid, as well as increases the levels of urinary citrate associated with decreased kidney peroxides to prevent and treat nephrolithiasis in animal models.¹⁹

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