

## Short Review

### A Short Review Based on the Article Entitled “Acupuncture Treatment as an Adjuvant Therapy to Promote Urinary Stone Passage Rate: A Systematic Review and Meta-analysis”

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This article [1] presents a comprehensive meta-analysis of 13 Randomized Controlled Trials (RCTs) to examine the effects of acupuncture treatment on the rate of urinary tract stone passage and the common acupuncture points used in urolithiasis. The meta-analysis reveals that the odds ratio for urinary stone passage rate is significantly higher as 1.872 (95% CI: 1.485-2.360) in the treatment group with acupuncture therapy (70.53%) compared to the control group without acupuncture treatment (57.92%) ( $P < 0.05$ ). The findings suggest that acupuncture, when combined with traditional Chinese medicine or western medicine, has a higher success rate in promoting urinary stone passage.

#### Overview of Research Background and Purpose

The prevalence of urinary tract stones varies worldwide, affecting 1% to 20% of the population [2]. Recurrence of stones is influenced by various factors such as geography, climate, ethnicity, genetics, gender, occupation, age, diet, and fluid intake [2]. Both western medicines and surgical interventions have been employed for the treatment of urolithiasis [3]. Traditional Chinese medicine, including acupuncture and herbal medicine, has also demonstrated positive effects in treating stone symptoms, especially for pain relief [4], and promoting stone discharge [5,6]. Many studies have proved that acupuncture can

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relieve the colic pain of kidney stones [4], but there is no mention of whether it can promote the discharge of stones. This article focuses on acupuncture as an adjuvant treatment for urinary tract stones, aiming to evaluate its efficacy in facilitating stone passage.

Urinary tract stones refer to stones that occur in the kidneys, ureters, bladder, urethra, etc., which are caused by the high concentration of crystals such as minerals, acid and salt, clumping together with deposition in the urine. Urinary tract stones are more likely to occur in adults aged 40-60, men more commonly than women, 10.6% vs. 7.1% [7], and clinical manifestations vary from asymptomatic to intermittent renal colic, abdominal pain, nausea, vomiting, hematuria, dysuria, even infection etc.

About 80% of patients with urolithiasis can discharge stones undergoing treatment. At present, the most treatment methods include western medications and surgical intervention. Western medical treatments include intravenous fluid or oral water hydration, symptomatic treatment with analgesics, antibiotics or muscle relaxants, which are mostly used for stones less than 1cm for passage rate about 40-60%. Surgical interventions include Extracorporeal Shock Wave Lithotripsy (ESWL), Ureteroscopic Lithotripsy (URSL), Percutaneous Nephrolithotripsy (PCNL), and Retroperitoneal Ureterolithotripsy (RPUL), depending on the size and location of the stones [2,3].

Urinary tract stones belong to the category of “Shih-Lin”, “Sha-Lin” and “Sie-Lin” in traditional Chinese medicine, which believe that it is mostly caused by overeating spicy and fatty food, excessive alcohol drinking, emotional depression, stagnation of Qi and blood stasis, or long-term lack of drinking water for outdoor works leading to the accumulation of damp and heat, resulting in insufficient Qi production and imbalance of bladder Qi transformation, which in turn leading to the formation of stones. In traditional Chinese medicine, compound prescriptions such as Shih-Wei Powder, Tong Lin Pai Shi Decoction etc are used to clear away heat and dampness, freeing strangury, activating Qi flowing, and removing blood stasis [5,6]. For the pain caused by urinary calculi (renal colic), acupuncture can be used to achieve rapid pain relief, reduce the use of analgesic drugs as effective as positive treatment method [4,8]. In Taiwan, the treatment of urinary calculi is mainly based on western medicine or surgical intervention. Acupuncture, as a treatment modality, has been used for pain relief and is gaining popularity among patients who prefer non-pharmaceutical or non-surgical approaches. This article reviews the literature on acupuncture in the treatment of urinary tract stones and investigates its effectiveness in promoting stone excretion.

#### Research Summary and Outlook

A systematic literature search was conducted in various databases, including PubMed, Embase, Cochrane Library, and China Academic Journals Full-Text Database, from inception to December 2018. A total of 245 articles were identified, and after a rigorous screening process, 13 randomized controlled trials were selected for analysis. These studies included 1,537 cases, predominantly male patients with an average age of approximately 41.09 years old. The most common location for stones was the ureter, with diameters ranging from 0.5 cm to 2.14 cm.

The meta-analysis demonstrated a significantly higher stone passage rate of 70.53% in the treatment group with acupuncture, showing significant effect with both no images of stones on x-rays and asymptomatics clinically, compared to 57.92% in the control group without acupuncture. The odds ratio for stone passage rate was 1.872 (95% CI: 1.485-2.360,  $P < 0.05$ ), indicating a higher efficacy of acupuncture in facilitating stone excretion. It is particularly worth noting that comparison acupuncture plus ESWL with monotherapy as ESWL. In one article of our study, the success rates were 96.25% and 90%, respectively, which were significant higher than the average value, revealing that the success rate of stone excretion was quite high after only ESWL therapy, but it can still increase after adding acupuncture treatment. Recent meta-analysis study [8] demonstrated insignificant stone-free rate (RR: 1.11, 95% CI: 1.00-1.25), possibly due to the high stone excretion rates observed in both groups.

Regarding the size and time of stones passage, it was mentioned in the literature that the maximum diameter of stones excretion was 1.8 cm; the average number of days for stone excretion in the treatment group was 7.90 days, and that in the control group was 9.69 days. It was concluded that stone excretion rate and time in treatment group with acupuncture were better than those of the control group. In addition, the stones with recorded sizes are all larger than 0.5cm in diameter, which demonstrate that the treatment of acupuncture with traditional Chinese medicine or western medicine is not limited to stones below 0.5cm.

Among the acupoints used in statistical articles, Bl-23 (Shenshu) and SP-6 (Sanyinjiao) are used in 10 articles; St-28(Shuidao), Ren-4 (Guanyuan), and Gb-25(Jingmen) are used in 8 articles; Bl-58(Feiyang), Ren-6 (Qihai), and Ren-3(Zhongji) are used in 6 articles; SP-9 (Yinlingquan) and Bl-28 (Pangguangshu) are used in 5 articles; Gb-34(Yanglingquan) and St-36 (Zusanli) are used in 4 articles.

Notably, five of the articles adopt the same acupuncture treatment approach with using the next two groups of acupoints to treat sequentially. The first group is Bl-23 (Shenshu), Gb-25 (Jingmen), Gb-34 (Yanglingquan), Bl-58 (Feiyang) and the second group is Ren-4 (Guanyuan), St-28 (Shuidao), SP-9 (Yinlingquan), SP-6 (Sanyinjiao). The first group of acupoints are used to regulate the Qi-flowing of the bladder and kidney meridians, combined with Yanglingquan via the Gallbladder Meridian to go through ribs to promote Qi-flowing and relieve pain, followed by using the second group of acupoints to promote diuresis, relieve dampness and free strangury. Besides, there are four articles suggesting that if hematuria and dysuria, adding SP-10(Xuehai), Liv-3 (Taichong); if fever, adding Li-11(Quchi), DU-14 (Dazhui); if body deficiency, adding St-36 (Zusanli); if kidney deficiency, adding Kd-3 (Taixi). These above treatment approaches could serve as a reference for the clinical management of urinary tract stones.

One article conducted a comparison between monotherapy with acupuncture and Chinese herbal medicine without adding any other western medicine treatment. The success rates of stone passage were 59.09% and 56.92%, respectively, indicating that monotherapy with acupuncture treatment slightly higher than monotherapy with Chinese herbal medicine treatment, but lower than the treatment group (70.53%) of acupuncture adding on traditional Chinese medicine or western medicine. Therefore, acupuncture is a useful adjuvant therapy, but further studies are needed to determine whether monotherapy with acupuncture treatment still having effectiveness on urinary stone excretion.

Although the meta-analysis yielded significant results, certain limitations were identified. These include the homogeneity of the analyzed articles, potential publication bias, limited international representation, lack of detailed methodological information, and incomplete blinding and follow-up procedures.

To further validate the effects of acupuncture treatment in promoting urinary stone passage, high-quality clinical RCTs with larger sample sizes and more rigorous methodologies are necessary.

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