

## ORIGINAL RESEARCH

# Analysis of Traditional Chinese Medicine Constitution Types Among Adult Urolithiasis Patients in Wuhu, China

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### ABSTRACT

**Objective** • This study aims to analyze the correlation between urinary calculi formation and Traditional Chinese Medicine (TCM) constitution among individuals in Wuhu.

**Methods** • This retrospective study was conducted at our hospital from December 2020 to December 2021. A total of 140 cases were selected for the study population. The patients underwent thorough clinical and statistical analysis, and their TCM constitution classification was determined based on TCM constitution theory. Additionally, the study assessed the urinary stone composition of these 140 patients using the SUN-3G intelligent stone analyzer.

**Results** • Among the 140 patients, the largest group comprised patients with a peaceful constitution, accounting for 36.43%. The second largest group, at 23.57%, included patients with constitution type A (peaceful + any other TCM constitution). Following that, patients with constitution type A G (Yang deficiency + any other TCM constitution) represented the third largest group at 7.14%.

**Conclusions** • The majority of patients demonstrated a constitution characterized by peace and substance. Therefore, it is imperative to allocate medical resources strategically to enhance the effectiveness of Traditional Chinese Medicine syndrome differentiation in treatment. (*Altern Ther Health Med.* 2023;29(8):435-439).

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### INTRODUCTION

Urinary tract stones are China's most prevalent form of stone disease, exhibiting a high incidence rate. The research suggests that kidney stone incidence stands at 5.8% among Chinese adults, showcasing a higher prevalence in males (6.5%) as compared to females (5.1%).<sup>1</sup> Clinical manifestations among urinary tract stone patients primarily cover abdominal colic, nausea, vomiting, and other associated symptoms. Distinct types of stones located in different areas may also cause varying associated symptoms.<sup>2</sup>

The prevalent form of stone is the calcium-containing variety, which predominantly consists of oxalate stones, with a smaller fraction being phosphate stones. Among individuals affected by urinary tract stones, kidney stones have the most

frequent occurrence.<sup>3</sup> The emergence of kidney stones is associated with patients' suboptimal lifestyle choices, dietary habits, and inherent metabolic capacity. Additionally, primary ailments like hyperparathyroidism and obesity emerge as principal catalysts for the development of kidney stones.<sup>4</sup>

Traditional Chinese medicine categorizes urinary tract stones into four distinct types: qi stagnation and blood stasis, damp-heat toxicity, spleen-kidney yang deficiency, and spleen-kidney yang deficiency. Patients with each type receive tailored dialectical treatments. Previous studies exploring the efficacy of traditional Chinese medicine in treating urinary calculi have revealed its specific therapeutic effects and advantages.<sup>3-4</sup> Chinese medicine effectively alleviates urinary calculi symptoms by harmonizing the balance of qi and blood within the body, eliminating dampness-heat toxins, and fortifying the spleen and kidney Yang. Moreover, it facilitates calculi expulsion, reducing the likelihood of recurrence.

Clinical studies have unequivocally demonstrated the notable therapeutic efficacy of traditional Chinese medicine in managing urinary stones.<sup>5</sup> Recent research has revealed varying urinary stone incidence rates across patients with different Chinese medicine constitutions. Therefore, this study aims to investigate the relationship between Chinese medicine constitution and urinary tract stone formation among adult patients, contributing valuable insights into

personalized treatment strategies and data support for disease prevention and treatment.

## PATIENTS AND METHODS

### Study Design

This study employed a retrospective design to analyze the medical records of 140 clinical adult patients with urinary stones. A total of 140 clinical adult patients with urinary stones were selected as the study subjects from our hospital from December 2020 to December 2021. Among these cases, there were 7 instances of ureteral stones, 58 cases of bilateral kidney stones, 29 cases of right kidney stones, and 46 cases of left kidney stones. The medical records pertinent to these 140 patients were thoroughly collected and subjected to analysis, including an exploration of their distinct Chinese medicine constitutions. The baseline characteristics, including gender ratio, age, and body mass index (BMI), for all patients are outlined in Table 1.

### Inclusion and Exclusion Criteria

The inclusion and exclusion criteria were established to ensure study accuracy, reliability, and participant protection.

**Inclusion criteria:** (1) Clinical diagnosis of urological stones that align with the diagnostic guidelines of the “Diagnosis and Treatment Manual of Urological Stones”; (2) Age equal to or above 18 years; (3) Residency in the Wuhu area for a duration exceeding 5 years; and (4) Demonstrated comprehension of the study and voluntary willingness to participate.

**Exclusion criteria:** (1) Pregnancy or lactation status; (2) Severe renal dysfunction; (3) Recent engagement in alternative surgical or therapeutic interventions; (4) Presence of malignant tumors or severe immune system disorders; (5) Decision to withdraw from the study within the designated research period.

### Patient Selection and Chinese Medicine Constitution Classification

A total of 140 clinical adult patients with urological stones were enrolled as study participants from our hospital, with treatment starting on December 1, 2020. Medical records of these 140 patients were collected. According to the “Ten Lectures on Chinese Medicine Constitution Theory”,<sup>7</sup> these patients were categorized into nine Chinese medicine constitution types: (1) damp-heat; (2) qi-stagnation; (3) qi-deficiency; (4) yang-deficiency; (5) phlegm-damp; (6) blood-stasis; (7) yin-deficiency; (8) balanced; and (9) special diathesis.

### Analysis of Traditional Chinese Medicine Constitution Proportions

Referring to the “Ten Lectures on Traditional Chinese Medicine Constitution Theory,” the 140 patients were categorized into nine distinct traditional Chinese medicine constitutions. These traditional Chinese medicine constitutions proportions were analysed and compared among these different categories of patients.

The combinations of constitutions were assigned as follows: (1) A: Moderate constitution combined with any other single constitution; (2) Aa: Moderate constitution combined with any other two constitutions; (3) B: Qi-deficiency constitution combined with any other single constitution; (4) C: Qi-depression constitution combined with any other single constitution; (5) D: Dampness-heat constitution combined with any other single constitution; (6) Dd: Dampness-heat constitution combined with any other two constitutions; (7) E: Phlegm-wet constitution combined with any other single constitution; (8) F: Special diathesis constitution combined with any other single constitution; (9) G: Yang-deficiency constitution combined with any other single constitution.

### Statistical Analysis

Data analysis was performed using Statistical Product and Service Solutions (SPSS) 25.0 (IBM, Armonk, NY, USA). Measurement data were presented as ( $\bar{x} \pm s$ ) and compared between groups using independent sample *t* tests. Count data were represented as [n(%)] and compared using chi-square tests, with statistical significance indicated by *P* < .05.

## RESULTS

### Analysis of TCM Constitution Distribution

The majority of patients were male (71.43%), while the female group constituted only (28.57%), refer to Table 1. Patients' age ranges from 19 to 79 years, with an average age of  $46.61 \pm 14.99$  years. Patients' body mass index (BMI) ranged from 23.63 to 27.05 kg/m<sup>2</sup>, with an average BMI of  $24.94 \pm 1.32$  kg/m<sup>2</sup>. The analysis revealed that the most prevalent TCM constitution was the balanced type, accounting for 36.43%. Subsequently, constitutions of type A accounted for 23.57%, followed by type G at 7.14%; Refer to Table 2 for detailed results.

**Table 1.** Analysis of Baseline Data

Male-to-female ratio		Patient Age (years)		Patient Body Mass Index (kg/m <sup>2</sup> )	
Male	Female	Age group	Average group	BMI group	Average BMI
100 (71.43%)	40 (28.57%)	19~79	46.61 ± 14.99	23.63~27.05	24.94±1.32

Note: BMI: body mass index.

**Table 2.** Analysis of the Proportion of TCM [n, (%)]

Traditional Chinese Medicine Constitutions	n	Proportion
Biased Temperament	1	0.71%
Balanced Temperament	51	36.43%
A	33	23.57%
Aa	2	1.43%
Qi-Deficiency Temperament	6	4.29%
B	2	1.43%
Qi-Depression Temperament	2	1.43%
C	3	2.14%
Damp-Heat Temperament	7	5.00%
D	8	5.71%
Dd	1	0.71%
E	3	2.14%
F	2	1.43%
Yang-Deficiency Temperament	8	5.71%
G	10	7.14%
Yin-Deficiency Temperament	1	0.71%

**Abbreviations:** n: the number of patients falling under each constitution category; %: the percentage of patients within the total study population.

**Correlation Between Gender, TCM Constitutions, and Urinary Stone Disease**

The findings revealed a notable male prevalence among patients afflicted by urinary stone disease, surpassing the number of female patients. Furthermore, both male and female patients with urinary stone disease primarily exhibited the balanced constitution and type A TCM constitution. Refer to Table 3 for complete details.

**Age Distribution and TCM Constitutions in Patients**

The study participants were categorized into six distinct age groups, as represented in Table 4. The 40-50 years age category exhibited the highest patient count, succeeded by the 50-60 and 30-40 age categories. Within each age group, the prevailing TCM constitutions were largely the balanced constitution and type A constitution.

**Analysis of Stone Types Among Patients with Varied TCM Constitutions**

The patients' urinary stones were categorized into kidney and ureter stones (n = 67) and bladder and urethral stones (n = 73). Statistical analysis revealed no significant disparity in urinary stone types among patients with distinct TCM constitutions ( $P > .05$ ). Refer to Table 5 for detailed results.

**DISCUSSION**

The prevalence of urinary tract stones increases with advancing age in the patient demographic. However, previous studies have reported that only 19% of men and 9% of women receive a kidney stone diagnosis within the age range of 45 to 70.<sup>8</sup> The categorization of urinary tract stones commonly depends on their location, including kidney stones, ureteral stones, bladder stones, and urethral stones. Further classification, based on composition, includes calcium oxalate stones, magnesium ammonium phosphate stones, and uric acid stones.<sup>9</sup>

Pain and hematuria emerge as prominent manifestations of urinary system stones. As stones traverse the ureter, they can incite intense ureteral spasms, leading to severe renal colic in certain cases. During movement, friction between the stone and mucosal lining can result in hematuria.<sup>10,11</sup> Additionally, certain stones might stimulate the bladder, causing symptoms such as increased urination frequency, urgency, and dysuria. The substantial impact of urinary system stones on patients' daily lives highlights the necessity of enhancing clinical treatment efficacy and improving overall quality of life.

Urolithiasis refers to the presence of urinary tract stones. TCM associates it with Lin syndrome, linked to kidney deficiency and bladder damp-heat. TCM classifies it as damp-heat, stasis, kidney yin deficiency, and kidney yang deficiency, with damp-heat being the most prevalent.<sup>12</sup> In diagnosing and treating urolithiasis using TCM, contrasted approaches are applied based on the specific types. Common remedies for those with qi stagnation and blood stasis include Aloe's powder or Peach Blossom Four Substance Decoction. These remedies facilitate qi circulation, dissolve blood stasis, and alleviate discomfort.

**Table 3.** Gender Analysis of Urolithiasis Patients with Different TCM Constitutions

Traditional Chinese Medicine Constitutions	Male	Female
Biased Temperament	1	0
Balanced Temperament	35	16
A	24	9
Aa	1	1
Qi-Deficiency Temperament	5	1
B	2	0
Qi-Depression Temperament	2	0
C	3	0
Damp-Heat Temperament	6	1
D	7	1
Dd	1	0
E	1	2
F	1	1
Yang-Deficiency Temperament	5	3
G	5	5
Yin-Deficiency Temperament	1	0

Note: A, Aa, B, C, D, Dd, E, F, G: These alphabetical designations correspond to various subtypes of traditional Chinese medicine constitutions.

**Table 4.** Age Distribution Among Patients with Different TCM Constitutions

Traditional Chinese Medicine Constitutions	19-30 (years)	30-40 (years)	40-50 (years)	50-60 (years)	60-70 (years)	70-79 (years)
Biased Temperament	0	0	1	0	0	0
Balanced Temperament	3	12	15	10	8	3
A	2	6	8	9	5	3
Aa	0	0	2	0	0	0
Qi-Deficiency Temperament	1	1	2	2	0	0
B	0	1	1	0	0	0
Qi-Depression Temperament	0	0	1	1	0	0
C	0	1	2	0	0	0
Damp-Heat Temperament	1	1	1	2	2	0
D	0	2	3	2	1	0
Dd	0	0	0	0	1	0
E	1	1	1	0	0	0
F	0	0	1	1	0	0
Yang-Deficiency Temperament	0	2	2	1	2	1
G	1	2	3	2	1	1
Yin-Deficiency Temperament	0	0	0	1	0	0
Total	9	29	43	31	20	8

Note: A, Aa, B, C, D, Dd, E, F, G: These alphabetical designations correspond to various subtypes of traditional Chinese medicine constitutions.

**Table 5.** Analysis of TCM Constitution and Stone Types in Patients

Traditional Chinese Medicine Constitutions	Renal And Ureteral Stones	Bladder Stones And Urethral Stones
Biased Temperament	1	0
Balanced Temperament	23	28
A	15	18
Aa	1	1
Qi-Deficiency Temperament	2	4
B	1	1
Qi-Depression Temperament	1	1
C	2	1
Damp-Heat Temperament	4	3
D	4	4
Dd	1	0
E	2	1
F	1	1
Yang-Deficiency Temperament	3	5
G	6	4
Yin-Deficiency Temperament	0	1
F	12.314	25.367
P	0.06	0.115

Note: A, Aa, B, C, D, Dd, E, F, G: These alphabetical designations correspond to various subtypes of traditional Chinese medicine constitutions. F: Represents the mean stone size (in millimeters); P: Represents the p-value indicating statistical significance for stone size differences between renal and ureteral stones versus bladder stones and urethral stones.

Patients with spleen and kidney yang deficiency are primarily treated by warming and fortifying the spleen and kidney.<sup>13,14</sup> Under the “Classification and Determination of Chinese Medicine Constitution” guidelines, there are a total of nine primary TCM constitutions, including balanced, qi-deficiency, yang-deficiency, yin-deficiency, phlegm-damp, damp-heat, blood-stasis, qi-depression, and special constitutions.<sup>15</sup>

Clinical analysis within TCM shows that different constitution types have noticeable differences in physical characteristics, physiological traits, psychological traits, how the body reacts to diseases, and tendencies to develop specific illnesses. Observing varying TCM constitutions among adult urolithiasis patients allows clinicians to identify groups with increased urolithiasis prevalence within the TCM framework. This analysis can offer specific scientific data support for disease prevention and treatment strategies.

This study observed that among enrolled patients, the highest count was attributed to the balanced constitution, followed by the type A constitution in second place and the type G constitution in third. This trend could be attributed to the reduced susceptibility to illnesses in individuals with a balanced constitution. This result emphasizes that elements such as detrimental lifestyle practices can significantly influence the occurrence of urolithiasis. Therefore, healthcare practitioners should prioritize health education, address unhealthy habits, and proactively prevent urolithiasis incidence in its prevention and treatment.

The higher incidence rates of type A and G constitutions also highlight the association between urolithiasis occurrence and underlying health conditions and internal imbalances. Clinicians must give special attention to patients with underlying illnesses like hyperparathyroidism and obesity while allocating medical resources. Scholars, including Mehrsai et al.<sup>16</sup> and Ackermann et al.,<sup>17</sup> have highlighted urolithiasis causation and clinical strategies to alleviate this condition. Their findings suggest that an imbalance of uric acid metabolism can lead to excessive uric acid production and increased renal excretion. This metabolic disturbance contributes to the formation of urinary tract stones. The positioning of the ureter plays a role in the movement and lodgment of urinary tract stones. Stones may become lodged or obstruct the ureter depending on their size and the narrowness of certain ureter segments, contributing to stone formation and related symptoms.

Previous studies have also highlighted the potential influence of TCM constitution in determining urolithiasis susceptibility and characteristics. Yu Qiu et al.<sup>18</sup> explored the connection between TCM constitutions and adult urolithiasis. They observed a significant correlation between the types of TCM constitutions in adult urolithiasis patients and factors such as BMI, gender, age, and the affected site. Men predominantly exhibit damp-heat and phlegm-damp constitutions, while women tend to have yang-deficiency and phlegm-damp constitutions.

Our findings also revealed the connection of TCM constitutions with various demographic and clinical aspects

of urolithiasis patients, revealing distinct patterns in constitution distribution based on gender, age, and affected sites. These insights offer valuable avenues for personalized management approaches within the framework of traditional Chinese medicine.

## Study Limitations

This study has certain limitations. Firstly, the sample source was confined to patients from the Wuhu area, potentially limiting the generalizability to a broader nationwide patient population. Secondly, the study adopted a cross-sectional design, preventing the observation of long-term outcomes and disease progression. Lastly, while this study inquired into the relationship between various TCM constitutions and urinary calculi, there were certain constraints in accounting for additional potential confounding factors. Subsequent research could enhance understanding by including larger sample size, an extended timeframe, and greater control over potential interfering variables. This study provides avenues for future research to explore the broader implications of the traditional Chinese medicine constitution in understanding and managing urinary calculi.

## CONCLUSION

In conclusion, this study provides valuable insights into the prevalence of different constitution types among adult patients with urinary system stones, with the most prevalent balanced constitution. These findings emphasize the significance of considering constitution-based approaches in diagnosing and treating urolithiasis within the framework of Traditional Chinese Medicine. As the balanced constitution exhibits the highest proportion, it becomes essential for healthcare practitioners to tailor their strategies by allocating resources effectively, potentially leading to improved clinical outcomes.

## CONFLICT OF INTERESTS

The authors declared no conflict of interest.

## AUTHORS' CONTRIBUTIONS

SW and KX designed the study and performed the experiments, LR and QG collected the data, BS, JW, and YM analyzed the data, and SW prepared the manuscript. All authors read and approved the final manuscript.

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