Journal of Clinical and Nursing Research, 2025, Volume 9, Issue 5
http://ojs.bbwpublisher.com/index.php/JCNR
Online ISSN: 2208-3693
Print ISSN: 2208-3685

Clinical Observation on the Efficacy of TCM Syndrome Differentiation in Treating Gouty Nephropathy

Bin Wang, Shu Li

Hospital of Harbin University of Science and Technology, Harbin 150080, Heilongjiang, China

Abstract: *Objective:* To investigate the clinical efficacy of traditional Chinese medicine (TCM) syndrome differentiation in the treatment of patients with gouty nephropathy. *Methods:* From June 2023 to December 2024, 80 patients with gouty nephropathy were selected as samples and randomly divided into two groups: group A received TCM syndrome differentiation treatment, while group B received conventional treatment. The efficacy, laboratory indicators, symptom scores, and safety were compared between the two groups. *Results:* The efficacy of group A was higher than that of group B ($P < 0.05$). The uric acid, blood urea nitrogen, serum creatinine, and 24-hour urinary protein levels in group A were lower than those in group B ($P < 0.05$). The symptom score of group A was lower than that of group B ($P < 0.05$). The adverse reactions of gouty nephropathy in group A were lower than those in group B ($P < 0.05$). *Conclusion:* TCM syndrome differentiation treatment for gouty nephropathy can alleviate symptoms, protect renal function, and is highly effective and feasible.

Keywords: Gouty nephropathy; TCM syndrome differentiation treatment; Efficacy

Online publication: June 5, 2025

1. Introduction

Gouty nephropathy is related to abnormal uric acid metabolism and increased uric acid production, which can induce hyperuricemia, aggravate kidney damage, and cause edema, uric acid stones, and other symptoms. It is a metabolic disease. Additionally, abnormal purine metabolism in the human body can increase the risk of chronic tophus and acute arthritis, involving the kidneys, which can lead to the deposition of uric acid crystals in areas such as renal tubules and interstitium, thereby inducing gouty nephropathy. As gouty nephropathy progresses, the glomerular filtration rate decreases, which can aggravate renal function damage, manifesting as proteinuria, hematuria, hypertension, etc. Symptomatic intervention with Western medicine cannot achieve both symptomatic and root treatment effects [1]. TCM believes that gouty nephropathy is related to an insufficient innate endowment and weakness of spleen and kidney functions, coupled with external factors such as wind and cold, irregular diet,

and emotional distress. Over time, phlegm and blood stasis are generated, leading to impaired renal function. TCM often treats gouty nephropathy with dialectical programs, planning medication based on the patient's etiology, constitution, and symptom manifestations, correcting Yin-Yang disorders, and accelerating the resolution of gouty nephropathy [2]. This study explores the efficacy of TCM syndrome differentiation treatment using 80 patients with gouty nephropathy who visited from June 2023 to December 2024 as samples.

2. Materials and methods

2.1. Materials

Eighty patients with gouty nephropathy who visited from June 2023 to December 2024 are selected as samples and randomly divided into groups. The baseline data of patients with gouty nephropathy in group A are compared with those in group B ($P > 0.05$), as seen in **Table 1**.

Table 1. Baseline data analysis of gouty nephropathy

Group	n	Gender(%)		Age (years)		Syndrome differentiation (%)			
		Male	Female	Range	Mean	Damp-heat obstruction type	Liver and kidney Yin deficiency type	Stasis and turbidity blockage type	Kidney deficiency and stone strangury type
Group A	40	21(52.50)	19(47.50)	34–77	54.91 ± 2.11	11(27.50)	12(30.00)	11(27.50)	6(15.00)
Group B	40	22(55.00)	18(45.00)	34–78	54.89 ± 2.08	12(30.00)	11(27.50)	10(25.00)	7(17.50)
X^2/t	-	0.0503		0.0427		0.0811			
P	-	0.8226		0.9661		0.9434			

2.2. Inclusion and exclusion criteria

The inclusion criteria of the study are: (1) Presence of urate deposition, hyperuricemia, and other related symptoms; (2) Disease duration exceeding 1 year; (3) Absence of acute infection, renal insufficiency, and other diseases.

Meanwhile, the exclusion criteria are: (1) Liver or heart disease; (2) Allergy to traditional Chinese medicine; (3) Not taking anti-gouty nephropathy medication before enrollment.

2.3. Treatment methods

2.3.1. Group A

Differential medication based on syndromes: For damp-heat obstruction syndrome, Ganlu Xiaodu Pill was administered, containing honeysuckle, *Hedyotis diffusa*, and talc (15g each); *Angelica sinensis* and *Patrinia* (12g each); and various other herbs (10g each). For liver and kidney Yin deficiency syndrome, Zhibai Dihuang Decoction was given, consisting of Chinese yam (30g); cortex lycii, *Rehmannia glutinosa*, moutan bark, and *Cornus* (15g each); and other herbs. For blood stasis and turbidity obstruction syndrome, Shentong Zhuyu Decoction was prescribed, which includes dandelion (20g); honeysuckle and *Patrinia* (15g each); and various other herbs. For kidney deficiency and stone strangury syndrome, Er Miao San and Shi Wei San were combined, containing *Vaccaria* seed (12g); white peony root, *Pyrrosia*, and *Poria* (15g each); and other herbs.

The herbs in the prescriptions are adjusted according to symptoms, boiled, and 300ml of the decoction was

taken warm in the morning and evening. The medication was administered for 3 months.

2.3.2. Group B

Patients in Group B received sodium bicarbonate tablets (0.5g each) from Tianjin Lisheng Pharmaceutical Co., Ltd., taking 1g three times a day, and febuxostat tablets (40mg each) from Jiangsu Wanbang Biochemical Pharmaceutical Group Co., Ltd., taking 40mg once a day. Medication is administered for 3 months.

2.4. Observation indicators

(1) Efficacy: Symptom score reduction of > 70% (joint pain and swelling almost disappeared), 30–70% (joint pain and swelling significantly relieved), and < 30% (no change in joint pain and swelling), noted as markedly effective, effective, and ineffective, respectively.

(2) Laboratory indicators: Fully automated biochemical analyzer is used to detect uric acid, blood urea nitrogen, serum creatinine, 24-hour urinary protein, and other indicators.

(3) Symptom scoring: Joint swelling and pain, nocturia, fatigue, and low back and spine pain are scored from 0 to 3 based on the degree of severity (none, mild, moderate, severe).

(4) Adverse reactions: The number of patients with diarrhea, nausea and vomiting, and liver function impairment are recorded.

2.5. Statistical analysis

Data are processed using SPSS 23.0. Count data are tested using the X^2 test (% recorded), and measurement data are tested using the t-test ($\overline{x} \pm s$ recorded). There was a comparative difference with $P < 0.05$.

3. Results

3.1. Efficacy of treatment for gouty nephropathy

The efficacy of Group A was higher than that of Group B ($P < 0.05$), as shown in **Table 2**.

Table 2. Analysis of the efficacy of treatment for patients with gouty nephropathy (n,%)

Group	Marked effect	Effective	Ineffective	Effective rate
Group A (*n*= 40)	31(77.50)	8(20.00)	1(2.50)	39(97.50)
Group B (*n*= 40)	23(57.50)	10(50.00)	7(17.50)	33(82.50)
X^2	-	-	-	5.0000
P	-	-	-	0.0253

3.2. Laboratory indicators

After medication, the levels of uric acid, blood urea nitrogen, serum creatinine, and 24-hour urinary protein in Group A were all lower than those in Group B ($P < 0.05$), as shown in **Table 3**.

Table 3. Analysis of laboratory indicators for patients with gouty nephropathy ($\bar{X} \pm s$)

Group	Uric acid(μmol/L)		Blood urea nitrogen(mmol/L)	
	Before treatment	After treatment	Before treatment	After treatment
Group A (*n*= 40)	474.29 ± 2.43	407.26 ± 1.85	14.11 ± 0.25	5.71 ± 0.36
Group B (*n*= 40)	474.31 ± 2.48	416.88 ± 1.91	14.16 ± 0.31	8.49 ± 0.91
t	0.0364	22.8811	0.7941	17.9664
P	0.9710	0.0000	0.4296	0.0000
Group	**Blood creatinine(μmol/L)**		**24h urinary protein(g/24h)**	
	Before treatment	**After treatment**	**Before treatment**	**After treatment**
Group A (*n*= 40)	143.22 ± 1.88	108.43 ± 0.48	1.51 ± 0.32	0.78 ± 0.12
Group B (*n*= 40)	143.25 ± 1.91	111.69 ± 0.99	1.54 ± 0.31	0.88 ± 0.16
t	0.0708	18.7398	0.4259	3.1623
P	0.9437	0.0000	0.6714	0.0022

3.3. Symptom scores

The symptom scores in Group A were lower than those in Group B, with $P < 0.05$. The results are shown in **Table 4**.

Table 4. Analysis of symptom scores for patients with gouty nephropathy ($\bar{X} \pm s$)

Group	Joint swelling and pain (score)		Nocturia increase (score)	
	Before treatment	After treatment	Before treatment	After treatment
Group A (*n*=40)	2.36 ± 0.43	0.68 ± 0.21	2.41 ± 0.36	0.71 ± 0.15
Group B (*n*=40)	2.39 ± 0.44	1.37 ± 0.29	2.43 ± 0.37	1.39 ± 0.33
t	0.3084	12.1881	0.2450	11.8643
P	0.7586	0.0000	0.8071	0.0000
Group	**Fatigue and weakness (score)**		**Lumbar and spinal cold pain (score)**	
	Before treatment	**After treatment**	**Before treatment**	**After treatment**
Group A (*n*=40)	2.36 ± 0.45	0.71 ± 0.23	2.43 ± 0.44	0.73 ± 0.28
Group B (*n*=40)	2.38 ± 0.46	1.36 ± 0.36	2.44 ± 0.42	1.37 ± 0.33
t	0.1966	9.6230	0.1040	9.3528
P	0.8447	0.0000	0.9175	0.0000

3.4. Adverse reactions

The adverse reactions in Group A were lower than those in Group B for gouty nephropathy, with $P < 0.05$. The results are shown in **Table 5**.

Table 5. Analysis of adverse reactions for patients with gouty nephropathy (n,%)

Group	Diarrhea	Nausea and vomiting	Liver function damage	Incidence rate
Group A (*n*=40)	1(2.50)	0(0.00)	0(0.00)	1(2.50)
Group B (*n*=40)	3(7.50)	2(5.00)	1(2.50)	6(15.00)
X^2	-	-	-	3.9139
P	-	-	-	0.0479

4. Discussion

Patients with gouty nephropathy have large amounts of urate crystals deposited in their renal tubules and renal interstitial areas, which can block the urinary tract and induce inflammatory responses. Coupled with the effects of oxidative stress, endothelin, and lipid disorders, the incidence of gouty nephropathy has been increasing year by year [3]. In the early stages of gouty nephropathy, patients often present with azotemia, hypertension, urinary tract infections, and uric acid stones. As the disease progresses to the intermediate stage, persistent proteinuria appears, and a few patients may develop complications such as hypoproteinemia, lumbar soreness, and hypertension. In the later stages, secondary anemia may occur, and some patients may even develop renal failure. Western medicine often stimulates the body to metabolize uric acid and reduce uric acid production through symptomatic drugs, but the overall management and control quality is limited.

Therefore, it is necessary to explore other treatment options [4]. In traditional Chinese medicine theory, there is no disease name for “gouty nephropathy”. Based on initial joint pain symptoms, it can be categorized under the scopes of “severe joint pain” or “obstruction syndrome”. Later renal manifestations can be included in the categories of “lumbar pain” or “strangury syndrome” [5]. Traditional Chinese medicine classifies gouty nephropathy based on symptom manifestations and pathological types. It can be divided into the following pathological types: Invasion of damp-heat pathogen can cause spleen and stomach dysfunction, or damp-heat accumulation can lead to poor blood circulation and joint obstruction, or damage to the kidney meridian caused by damp-heat pathogen, all of which can trigger damp-heat obstruction type of gouty nephropathy. Treatment should focus on relieving pain, dredging meridians, and promoting urination. For those with congenital deficiency, liver and kidney Yin deficiency, inability to nourish blood, or internal heat generation, body fluid can be boiled to produce blood stasis and phlegm turbidity, which flows downward to the kidneys, causing liver and kidney Yin deficiency type of gouty nephropathy.

Treatment should aim to clear heat, nourish Yin, nourish the liver, and tonify the kidneys. Blood stasis, phlegm turbidity, and damp-heat can cause meridian obstruction, or toxic turbidity accumulated in the kidneys can damage the kidney meridians, leading to the turbid blood stasis type of gouty nephropathy. Treatment should be focused on dispelling blood stasis, dredging meridians, and promoting blood circulation. Kidney deficiency can cause water and fluid metabolism disorders, internal dampness and turbidity generation, or kidney meridian damage leading to liver failure, which can trigger kidney deficiency and stone strangury type of gouty nephropathy with stones. Treatment should be aimed at promoting strangury, expelling stones, promoting urination, and nourishing the kidneys [6].

Based on the data analysis in this study, the efficacy of Group A is higher than that of Group B, with $P < 0.05$. According to traditional Chinese medicine theory, kidney deficiency, blood stasis, turbid phlegm, dampness-heat, and other synergistic effects exacerbate kidney disease. Therefore, dialectical administration based on the overall concept of regulation and treatment is required to control the patient’s condition through multiple pathways and targets, such as accelerating uric acid metabolism and inhibiting uric acid production, resulting in excellent

efficacy [7]. Another set of data indicates that the uric acid, blood urea nitrogen, serum creatinine, and 24-hour urinary protein levels in Group A are lower than those in Group B, and the symptom score is also lower than that of Group B, with $P < 0.05$.

During dialectical administration, Mannitol disinfectant treats dampness-heat obstruction type patients. Radix of *Scutellaria baicalensis* (Radix Scutellariae), *Artemisia scoparia*, *Hedyotis diffusa*, and *Talcum* can eliminate stones, promote urination, remove dampness, and clear heat. *Belamcanda chinensis*, *Patrinia*, and *Lonicera japonica* can relieve pain, reduce swelling, dissipate stagnation, and detoxify. The roots of *Clematis chinensis* and *Angelica sinensis* can eliminate stagnation, promote blood circulation, and relieve pain. *Agastache rugosa*, *Stephania tetrandra*, *Fritillaria thunbergii*, and *Poria cocos* can dissipate stagnation, eliminate phlegm, and strengthen the spleen. *Anemarrhena* can harmonize Yin and Yang [8]. The medicines in the prescription can work together to benefit the kidneys, strengthen the spleen, eliminate phlegm, and remove dampness.

Zhibai Dihuang Decoction treats patients with liver and kidney Yin deficiency. The bark of *Phellodendron chinense* (Phellodendron Bark) and *Anemarrhena* can clear heat, reduce fire, and nourish Yin. *Smilax glabra* and *Alismatis rhizoma* can promote urination and drain heat. Rhizome of *Ligusticum chuanxiong* (Chuanxiong Rhizoma), Radix Paeoniae Rubra, and Cortex Moutan can relieve pain, dredge meridians, eliminate stagnation, and promote blood circulation. The dried fruit of *Ligustrum lucidum* (Fructus Ligustri Lucidi), *Dioscoreae rhizoma*, and *Cornus officinalis* can nourish the roots, nourish the liver, and nourish the kidneys. Nidus Vespae, *Scutellariae barbatae*, and Cortex Lycii can detoxify, clear heat, and eliminate stagnation. The medicines in the prescription can work together to eliminate stagnation, promote blood circulation, reduce fire, and nourish Yin.

Shen Tong Zhu Yu Tang treats patients with stagnation and turbidity obstruction. The root of *Gentianae macrophyllae* and *Notopterygium incisum* can relieve pain, dredge meridians, eliminate dampness, and dispel wind. The root of *Angelicae sinensis*, *Persicae Semen*, *Carthamus tinctorius* (Flos Carthami) and the rhizome of *Ligusticum chuanxiong* can dissipate stagnation, eliminate stagnation, and promote blood circulation. *Eupolyphaga steleophaga* and *Commiphora myrrha* (Myrrha) can promote tissue regeneration, reduce swelling, relieve pain, and promote blood circulation. *Curcuma zedoaria* and *Sparganium stoloniferum* can promote Qi circulation and break blood stagnation. *Scutellaria barbata*, *Patrinia*, *Lonicera japonica*, and *Taraxacum mongolicum* can reduce swelling, resist inflammation, detoxify, and clear heat. The medicines in the prescription can work together to detoxify, clear heat, eliminate stagnation, and promote blood circulation.

Ermiao Powder combined with Shiwei Powder treats patients with kidney deficiency and stone stranguria. Pyrrosiae Folium, Atractylodis Rhizoma, and the bark of *Phellodendron chinense* (Phellodendron Bark) can promote urination, detoxify, and dry dampness. The seeds of *Malva verticillata* (Malvae Semen), Alismatis Rhizoma, and *Poria cocos* can reduce swelling, promote urination, benefit water, and strengthen the spleen. The seeds of *Vaccaria segetalis* (Vaccariae Semen), Radix Paeoniae Alba, and the root of *Angelica sinensis* can relieve pain, dissipate stagnation, and dredge meridians. *Dianthus superbus* can repair the stomach meridian, promote urination, and eliminate stones. *Glycyrrhiza uralensis* (Glycyrrhizae Radix et Rhizoma) can benefit Qi and harmonize the overall efficacy of the prescription [9]. The medicines in the prescription can work together to benefit water, strengthen the spleen, dry dampness, clear heat, dredge meridians, and promote blood circulation.

The final set of data indicates that the adverse reactions of gouty nephropathy in Group A are lower than those in Group B, with $P < 0.05$. According to the analysis, traditional Chinese medicine dialectical treatment often chooses Chinese herbal medicines or animal medicines, which are natural ingredients and have mild side effects in the treatment of patients with gouty nephropathy. In addition, traditional Chinese medicine emphasizes the concept

of "preventive treatment of disease," and dialectical treatment of gouty nephropathy can dialectically regulate the patient's physical condition, strengthen their resistance, and reduce adverse reactions [10].

5. Conclusion

In summary, the dialectical treatment of gouty nephropathy using Traditional Chinese Medicine (TCM) demonstrates significant clinical benefits by alleviating patient discomfort and preserving renal function. Given its efficacy and patient-centered methodology, the integration of TCM into standard care protocols for gouty nephropathy should be further promoted and researched to optimize long-term outcomes for affected individuals.

Disclosure statement

The authors declare no conflict of interest.

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