Analysis of Clinical Characteristics and Comorbidities of Gout Inpatients from 2020 to 2025

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Abstract [**Objectives**] The clinical characteristics of hospitalized gout patients, including the distribution of TCM (Traditional Chinese Medicine) syndrome types, comorbidities, types of infections, and characteristics of organ involvement were analyzed. [**Methods**] Clinical data of 413 inpatients with gout admitted to the Rheumatology Department of Wuxi Traditional Chinese Medicine Hospital from January 2020 to December 2025 were collected. Descriptive statistical methods were used to analyze gender distribution, TCM syndrome types, underlying diseases, concurrent infections, and organ complications. [**Results**] Among the 413 patients, 81.60% were male and 18.40% were female. The most common TCM syndrome type was damp-heat blockage syndrome (66.10%), followed by phlegm-blood stasis blockage syndrome (16.95%). 96.85% of the patients had comorbidities, with the top three being hypertension (79.5%), cerebral infarction (26.5%), and heart disease (24.0%). The rate of concurrent infections was 23.73%, primarily pulmonary infections (38.78%). Among the organ complications, renal insufficiency accounted for the highest proportion (33.17%), followed by interstitial lung disease (17.75%) and osteoporosis (12.5%). [**Conclusions**] Inpatients with gout are primarily diagnosed with the syndrome of damp-heat and blockage, often accompanied by hypertension, cardiovascular and cerebrovascular diseases, and renal dysfunction. Clinical attention should be paid to comorbidity management and organ protection.

Key words Gout, TCM syndrome type, Comorbidity, Hospitalized patient

1 Introduction

Gout is a metabolic and inflammatory/immune disease caused by high blood uric acid levels. Uric acid crystals can deposit in joints, bones, tendons, bursae, and other tissues, causing various damages. This disease exhibits strong heterogeneity, with some patients having a familial genetic predisposition, and often coexisting with conditions such as hypertension, diabetes, and cardiovascular and cerebrovascular diseases, seriously affecting patients' quality of life and prognosis.

In recent years, with changes in lifestyle and an aging population, the prevalence of gout has shown an upward trend, becoming one of the common chronic non-communicable diseases. This study analyzed the clinical data of inpatients with gout admitted to the Rheumatology Department of Wuxi Traditional Chinese Medicine Hospital from 2020 to 2025, exploring the distribution of TCM (Traditional Chinese Medicine) syndrome types, characteristics of comorbidities, and organ involvement, aiming to provide a reference for clinical individualized diagnosis and treatment as well as chronic disease management.

2 Materials and methods

2.1 Basic information From January 2020 to December 2025, a total of 413 gout inpatients admitted to the Rheumatology Department of Wuxi Traditional Chinese Medicine Hospital were collected, including 76 females (18.40%) and 337 males (81.60%).

2.2 Diagnostic and inclusion criteria

2.2.1 Diagnostic criteria. Diagnosis is confirmed according to the 1987 ACR classification criteria or the 2010 EULAR classification criteria.

2.2.2 Laboratory examination equipment. Multi-slice spiral CT: Siemens, model: Difinition AS +; Joint ultrasound: Siemens ACUSON S3000 (USA); Electromyography: Tonica Elektronik A/S KEYPOINT (Denmark); Bone density: Hologic Inc (USA); Cardiac ultrasound: GE LOGIQ E9; Electronic upper gastrointestinal endoscope, electronic colon endoscope: PENTAX EPK-i5000 (HOYA Corporation, Japan).

2.2.3 Diagnostic criteria based on syndrome differentiation in traditional Chinese medicine. The gout-related syndrome differentiation and typing criteria are referenced in the "Guidelines for the Diagnosis and Treatment of Rheumatoid Arthritis Based on Syndrome Differentiation" published by the Rheumatology Branch of the China Association of Traditional Chinese Medicine in 2018.

2.2.4 Inclusion criteria. From 2020 to 2025, gout patients who were admitted to the Rheumatology Department of Wuxi Traditional Chinese Medicine Hospital with a clear diagnosis. The underlying diseases include: hypertension, diabetes, cerebral infarction, circulatory system lesions (heart failure, coronary heart disease, arrhythmia, stenting, *etc.*), thyroid-related diseases (hypothyroidism, thyroid nodules, hyperthyroidism, thyroid tumors, Hashimoto's disease, *etc.*), respiratory system diseases (bronchiectasis, bronchitis, tuberculosis, respiratory failure, emphysema, bronchial asthma, *etc.*), digestive system diseases (chronic gastritis, digestive ulcer, gastrointestinal bleeding, gastrointestinal erosion, gastroesophageal reflux, *etc.*), and neurological lesions

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(peripheral nerve lesions, autonomic nerve lesions, ulnar nerve lesions, lumbar plexus nerve lesions, median nerve lesions, *etc.*).

2.2.5 Exclusion criteria. Gout with unclear diagnosis; complicated with active tuberculosis; transferred due to sudden cerebrovascular disease.

2.3 Observation indicators The gender distribution, TCM (Traditional Chinese Medicine) syndrome types, previous underlying diseases, types of concurrent infections, and organ involvement were observed in 413 inpatients with gout.

2.4 Statistical methods Descriptive statistical analysis was conducted using SPSS 22.0 software, and enumeration data were presented as case numbers (percentage).

3 Results and analyses

3.1 Gender distribution and comorbidity of underlying diseases Among the 413 inpatients with gout, 81.60% were male and 18.40% were female (Table 1). The male-to-female ratio was 4.43∶1, indicating that gout inpatients are predominantly male.

Table 1 Gender distribution of gout

Gender	Number of cases//Cases							Proportion//%
	In 2020	In 2021	In 2022	In 2023	In 2024	In 2025	Total	
Male	21	23	8	8	10	6	76	18.40
Female	62	52	50	73	49	51	337	81.60

According to the data on underlying diseases (Table 2), 96.85% of patients had comorbidities, while only 3.15% had no underlying diseases. This indicates that almost all gout inpatients are accompanied by other chronic diseases, and clinical management needs to pay attention to comorbidity factors.

Table 2 Combined conditions of underlying diseases

Items	Number of cases//Cases							Proportion//%
	In 2020	In 2021	In 2022	In 2023	In 2024	In 2025	Total	
Complicated with underlying diseases	79	73	54	80	58	56	400	96.85
No underlying diseases	4	2	4	1	1	1	13	3.15

3.2 Distribution of TCM syndrome types In the distribution of TCM syndrome types, the syndrome of damp-heat blockage accounts for the highest proportion (66.10%), significantly higher than other syndrome types; the syndrome of phlegm-blood stasis blockage follows closely (16.95%), while the syndrome of wind-damp blockage (7.75%) and the syndrome of liver and kidney deficiency (7.26%) have relatively low proportions (Table 3). This distribution suggests that hospitalized gout patients are mostly in the acute attack phase, with damp-heat accumulation as the main pathogenesis, which is consistent with the clinical characteristics of acute gout attacks.

Table 3 Distribution of TCM syndrome types in gout patients

Traditional Chinese medicine syndrome	Number of cases//Cases							Proportion//%
	In 2020	In 2021	In 2022	In 2023	In 2024	In 2025	Total	
Rheumatic obstruction	2	9	6	7	4	4	32	7.75
Liver and kidney deficiency	6	8	5	3	0	8	30	7.26
Phlegm and blood stasis obstruction	28	16	5	15	2	4	70	16.95
Dampness-heat obstruction	46	41	41	56	51	38	273	66.10

3.3 Distribution of underlying diseases Among the underlying diseases, hypertension ranks first (79.5%), with over three-quarters of patients having comorbid hypertension; cerebral infarction (26.5%), heart disease (24.0%), and diabetes (19.5%) are also common comorbidities. Digestive system diseases (14.75%), thyroid diseases (10.5%), and neuropathy (10.0%) also have a certain proportion (Table 4). The above results indicate that gout highly overlaps with cardiovascular and metabolic diseases, and the cardiovascular and cerebrovascular risk assessment of hospitalized gout patients should be a routine diagnostic and treatment procedure.

3.4 Co-infection status According to Table 5, 98 patients (23.73%) had concurrent infections, with pulmonary infections accounting for the highest proportion (38.78%), followed by skin and soft tissue infections (16.33%), other infections (16.33%), urinary tract infections (14.29%), and upper respiratory tract infections (13.27%). Bone infections were less common (1.02%). Nearly a quarter of hospitalized gout patients were infected, with respiratory infections being the most prominent, suggesting that gout patients may have abnormal immune function. Clinical attention should be paid to infection screening and prevention.

Table 4 Distribution of underlying diseases in gout patients

Underlying diseases	Number of cases//Cases							Proportion//%
	In 2020	In 2021	In 2022	In 2023	In 2024	In 2025	Total	
Hypertension	65	54	42	65	47	45	318	79.50
Cerebral infarction	32	16	15	21	11	11	106	26.50
Heart disease	16	19	15	20	9	17	96	24.00
Diabetes	10	12	15	22	10	9	78	19.50
Thyroid disease	18	19	3	2	0	0	42	10.50
Respiratory disease	3	3	2	9	5	8	30	7.50
Diseases of the Digestive system	11	9	10	5	15	9	59	14.75
Neuropathy	12	7	3	8	8	2	40	10.00

Table 5 Distribution of infection types in gout patients

Infection types	Number of cases//Cases							Proportion//%
	In 2020	In 2021	In 2022	In 2023	In 2024	In 2025	Total	
Upper respiratory tract	3	1	0	1	3	5	13	13.27
Lung	9	5	4	10	8	2	38	38.78
Intestine	0	0	0	0	0	0	0	0
Urinary tract	4	5	1	2	1	1	14	14.29
Skin and soft tissue	4	6	6	0	0	0	16	16.33
Bone	0	0	0	0	1	0	1	1.02
Other	3	0	5	6	0	2	16	16.33

3.5 Organ involvement As can be seen from Table 6, in terms of organ involvement, renal insufficiency accounts for 33.17%, making it the most common complication, significantly higher than interstitial lung disease (17.75%) and osteoporosis (12.5%). The above results suggest that gout not only affects the joints but also frequently damages the kidneys. Long-term hyperuricemia should be a key clinical monitoring item due to its potential harm to renal function. Additionally, interstitial lung disease and osteoporosis also occur with a certain frequency. For patients with related symptoms, lung high-resolution CT and bone density examinations should be conducted in a timely manner.

Table 6 Organ involvement in gout patients

Complication	Number of cases//Cases							Proportion//%
	In 2020	In 2021	In 2022	In 2023	In 2024	In 2025	Total	
Renal insufficiency	25	26	21	30	19	16	137	33.17
Interstitial lung disease	17	15	7	17	7	8	71	17.75
Osteoporosis	3	12	11	6	12	6	50	12.50

4 Discussions

Severe gout can be complicated by cardiovascular and cerebrovascular diseases, renal failure, and ultimately may endanger life. Gout is an independent risk factor for the development of diabetes, metabolic syndrome, dyslipidemia, chronic kidney disease, and stroke[1].

Among the 413 inpatients with gout in this group, 81.60% were male and 18.40% were female, with a male-to-female ratio of 4.43∶1, consistent with literature reports indicating that gout primarily affects males. Since the subjects of this study were inpatients with relatively severe conditions, the proportion of female patients was slightly higher than some literature reports, which may be related to the increased uric acid levels in postmenopausal women and stricter hospitalization criteria.

In terms of TCM (Traditional Chinese Medicine) syndrome types, the highest proportion of patients in this group was damp-heat syndrome (66.10%), followed by phlegm-blood stasis syndrome (16.95%), while the proportions of wind-damp syndrome (7.75%) and liver-kidney deficiency syndrome (7.26%) were relatively low. This distribution suggests that the majority of gout patients admitted to our department are in the acute attack phase, with damp-heat accumulation as the core pathogenesis. This is consistent with the syndrome type statistics of 356 gouty arthritis patients by Yang Yuzhu *et al.*[2] and the literature analysis results by Li Daofang *et al.*[3], further confirming that damp-heat accumulation is the main syndrome type during the acute attack phase of gout. The proportion of patients with comorbidities in this group was as high as 96.85%, with hypertension (79.5%), cerebral infarction (26.5%), heart disease (24.0%), and diabetes (19.5%) being the most common. This indicates a high overlap between gout and cardiovascular and metabolic diseases, consistent with literature reports[4-7], suggesting that routine cardiovascular and cerebrovascular risk assessments should be performed for gout patients admitted to hospital.

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It is noteworthy that renal dysfunction accounted for a high proportion of 33.17% in this group of patients, making it the most common organ complication, significantly higher than interstitial lung disease (17.75%) and osteoporosis (12.5%). This is closely related to long-term hyperuricemia, prolonged disease duration, and comorbidities such as hypertension and other metabolic diseases[8]. Therefore, routine monitoring of renal function and early intervention should be implemented in clinical practice. In addition, the rate of co-infection is 23.73%, primarily involving pulmonary infections (38.78%). Patients with gout have increased susceptibility to infections due to immune dysfunction[9], and attention should be paid to infection screening and differentiation during hospitalization. The detection rate of interstitial lung disease (17.75%) deserves attention, and high-resolution CT examination is recommended for patients with respiratory symptoms. Gout has been confirmed as an independent risk factor for osteoporosis, which may be related to chronic inflammation and long-term medication use[10]. Bone density testing should be performed in a timely manner.

In summary, gout often affects the kidneys, cardiovascular system, and metabolism, and forms complex pathological interconnections with underlying diseases such as hypertension, cerebral infarction, and diabetes. Clinical diagnosis and treatment urgently need to shift from "single acid-lowering" to "precision-optimized treatment based on organ involvement", adjusting medication according to the functional status of the specific damaged organs, strengthening the whole-cycle management of chronic diseases, and ultimately improving patient prognosis and reducing the risk of disability.

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