Diagnostic Classification of Stroke in Traditional Mongolian Medicine: A Review

Buda SU[1△], Lantuya WU[2△], Chula SA[1], Limuge CHE[1], Li MEI[3], Lechaolu BAO[1,3*], Lin SONG[1,3*]

1. Medical Innovation Center for Nationalities, Inner Mongolia Medical University, Hohhot 010110, China; 2. Department of Pulmonary, Inner Mongolia International Mongolian Medicine Hospital, Hohhot 010020, China; 3. College of Mongolian Medicine, Inner Mongolia Medical University, Hohhot 010110, China

Abstract This review elucidates the diagnostic classification of stroke in Traditional Mongolian Medicine (TMM). Rooted in the balance of "Three Roots" (Khii, Shar, Badgan), TMM classifies stroke into two primary types: "Gal" (hot) and "Wusu" (cold), corresponding to hemorrhagic and ischemic stroke in modern medicine, respectively. Furthermore, modern clinical practice within TMM refines this into five distinct syndromes (Khii, Shar, Badgan, Qisu, Shar Wusu) based on detailed analysis of symptoms, pulse, tongue, and urine. This systematic and holistic framework addresses the heterogeneity of stroke presentations and enables personalized therapeutic adjustments. By integrating TMM diagnostic principles with neuroimaging techniques, this review provides a valuable reference for clinicians and researchers, aiming to incorporate evidence-based TMM into contemporary stroke care, and facilitating more precise and patient-centric treatment strategies.

Key words Stroke, Traditional Mongolian medicine, Clinical diagnostics, Diagnostic classification

1 Introduction

Stroke is an acute cerebrovascular disease, known as "SA" disease in traditional Mongolian medicine (TMM)[1]. The TMM theory emphasizes the balance of three basic essences (that are "Khii", "Shar" and "Badgan") of human body, while external environmental factors such as changes in diet, behavior, seasons, climate, and accidents affect the normal growth of human body's five essences, which makes the three basic elements out of balance and induces diseases[2]. The "Khii" is associated with dynamic and lightweight characteristics, and is believed to control the movement and circulation within the body. The "Shar" is associated with heat and metabolic processes and is believed to manage digestion and energy production. The "Badgan" is related to stability and lubricity, and is crucial for maintaining tissue structure and moisture[3].

In modern medicine, stroke belongs to the type of cardiovascular and cerebrovascular diseases, including transient ischemic attack, cerebral infarction, cerebral hemorrhage, cerebral embolism, and lacunar infarction. Whereas, TMM believes that stroke pathogenesis is closely related to the factors of "Khii", "Shar", "Badgan". When "Qisu (stagnant/extravasated blood) & Shar" are hyperactive, they suddenly rush to the brain, which may lead to the rupture of the black pulse (referring to the vascular system) of the brain and bleeding, and then penetrate into the brain and damage the white pulse (referring to the nervous system). Then this situation is similar to the cerebral hemorrhage mentioned by modern medicine. Or because "Badgan" mucus surged, it blocked the pulse orifices, resulting in poor "Khii & Qisu" circulation, which is similar to cerebral infarction in modern medicine.

2 Traditional classification of stroke diagnosis

In the 8th century AD, the famous traditional medical expert, Yutog · Yangdangangbu, divided "SA" disease into two types in his classic medical work *Four Medical Classics*: *Secret Book*: "Gal (hot)" type and "Wusu (cold)" type (Table 1)[4].

2.1 "Gal (hot)" type The "Gal (hot)" type stroke is mainly caused by excessive "Qisu" and "Shar", which suddenly rushes to the brain, causing the black pulse of the brain to rupture and bleed, infiltrating into the brain, and damaging the white pulse of the patient. Modern medicine elucidates that this type stroke leads to sudden paralysis, serious and rapid development of illness, and induces pain mainly on the right side of body, high blood pressure and body temperature, accompanied by fever, severe headache, blushing, dry lips and red rash on the skin; the pulse is thin and tight, the tongue coating is yellow and thick, and the urine is yellow. In severe cases, there is hemiplegia, crooked and stiff tongue, dysarthria, limbs spasm and pain. Therefore, "Gal (hot)" stroke belongs to the category of hemorrhagic stroke[5].

2.2 "Wusu (cold)" type The "Wusu (cold)" type stroke is caused by the rapid increase of "Badgan" mucus which to obstruct arteries and veins, and induces damage to the white pulse and block to circulation of "Khii & Qisu". It has the disease characteristics of slow onset and mild symptom, and it is more common sufferers who are excessively "Khii & Badgan" and the elderly.

Received: March 3, 2026 Accepted: May 24, 2026

Supported by the National Key Research and Development Program, Key Special Project of "Modernization of Traditional Chinese Medicine" in 2023 (2023YFC3503100); the Research on the Improvement of Diagnostic and Treatment Theory of Mongolian Medicine in Treating Coronary Heart Disease and Integrated Evaluation Technology (2023YFC3503104); the Second Batch of National Excellent Talents Training Program for Ethnic Minority Medicine (Mongolian Medicine).

△These authors contributed equally to this work.

Buda SU, assistant researcher, doctoral degree. Lantuya WU, chief physician, master's degree. *Corresponding author. Lechaolu BAO, professor, doctoral degree. Lin SONG, professor, doctoral degree.

The factors that lead to this disease are chronic fatigue, excessive consumption of greasy and cold foods, and exposure to cold conditions. Modern medicine explains that its onset is slow, with pain mostly on the left body, dizziness, pale complexion, limbs becoming cold and sluggish, obesity, delayed pulse, white tongue coating, limpid and odourless urine. In severe cases, there may be numbness in the half-body, dampness and weakness throughout the body, dull complexion, dizziness and drowsiness, and speech impediment or speechless. Patients often experience headaches, dizziness, unclear consciousness, pale yellow complexion, limb paralysis on the affected side, crooked mouth corners, poor language fluency, urinary and fecal incontinence, choking on drinking water, and difficulty eating. Therefore, "Wusu" type stroke belongs to ischemic stroke[6].

Table 1 Types, treatment factors, diagnostic methods, and treatment principles of stroke in traditional Mongolian medicine

Traditional types of stroke	Cause of disease	Pathogenic factor	Symptom	Pulse condition	Tongue picture	Urine elephant	Principles of treatment	Type of stroke
"Gal (hot)" type	"Qisu" and "Shar"	Easy to get excited, easily angry or overly happy, extremely tired, long-term smoking and drinking, weak and sickly, exposed to cold	Sudden paralysis, serious and rapid development of illness, and induces pain mainly on the right side of body, high blood pressure and body temperature, accompanied by fever, severe headache, blushing, dry lips and red rash on the skin	Thin and tigh pulse	Yellow and thick	Yellow	Dredging the white pulse, regulating "Khii and Qisu", restoring white pulse function, purifying the blood, clearing "Shar" heat,	Hemorrhagic stroke
"Wusu (cold)" type	"Khii" "Badgan"	wind and chill, fond of oily food	The onset is slow, with main pain in the left side of the body, crooked corners of the mouth, drooling, dizziness, pale complexion, cold and weak limbs, and even numbness	Delayed pulse	White	Limpid and odourless	strengthening stomach fire, suppressing "Badgan"	Ischemic stroke

NOTE The "Qisu" is associated with the stagnant/extravasated blood; the "Khii" is associated with dynamic and lightweight characteristics, and is believed to control the movement and circulation within the body; the "Shar" is associated with heat and metabolic processes, and is believed to manage digestion and energy production; the "Badgan" is related to stability and lubricity, and is crucial for maintaining tissue structure and moisture; the white pulse is associated with nervous system pathways.

3 Classification of stroke diagnosis in modern clinical practice

According to the *Clinical Practice Guidelines of Mongolian Medicine in Rehabilitation Medicine*, stroke is not only classified into two disease types (cold syndrome and heat syndrome) but also further divided into five symptom subtypes ("Khii", "Shar", "Badgan", "Qisu", and "Shar Wusu"), as detailed in Table 2[7].

3.1 "Khii" type The condition of the "Khii" type is unstable and prone to recurrent attacks. It symptoms that spasms, convulsions and numbness are common in the hemiplegic limbs, more often on the left side, accompanied by dizziness, tinnitus, slurred speech, abnormal sleep (insomnia), dreaminess, palpitations, unstable blood pressure with large variability, weak and slow pulse, thin and white tongue coating, and whitish urine with a lot of foam. What is called "facial paralysis" and "transient ischemic attack" in modern medicine is included in the category of "Khii" type stroke[8].

3.2 "Shar" type The "Shar" type has some disease attributes as a sudden occurrence, a relatively severe condition, rapid progression and a poor prognosis. The pain in the hemiplegic limbs is mainly on the right side, accompanied by general fever, elevated body temperature, severe headache, relatively high blood pressure, flushed face, dry throat and mouth, aphasia or unclear speech, disturbance of consciousness, deep and slow breathing with snoring sounds, dilated pupils on the affected side, restlessness, loss of appetite, epistaxis, nausea and vomiting, occasional hematemesis, sometimes accompanied by red dots all over the body, incontinence of urine and feces, forceful pulse, yellow and thick tongue coating, and yellow and smelly urine[9].

3.3 "Badgan" type The "Badgan" type has a slow onset and recovery. The affected body side is mostly manifested as sluggish hemiplegia, more often on the left side, accompanied by obesity, dull complexion, hemiplegia with numbness, cold and weak body, dizziness, lethargy, slow response, memory decline, slow pulse, enlarged tongue, thin white tongue coating, clear urine like water.

3.4 "Qisu" type The "Qisu" type has the characteristics of a sudden onset, a critical condition and a poor prognosis. Hemiplegia on the right side is more common, accompanied by flushed and purplish complexion, loss of appetite, nausea and vomiting, epistaxis and hematemesis, fever, headache, elevated blood pressure, aphasia, coma, yellow and thick tongue coating, large pulse, and reddish-yellow urine[10].

3.5 "Shar Wusu" type The "Shar Wusu" type has a slow onset, mild symptoms and a good prognosis. There is pain and swelling in the paralyzed joint parts, general itching, coldness in the affected limb, muscle soreness, sometimes rashes, unstable blood pressure, weak and slippery pulse, white and thin tongue coating, and slightly yellowish urine with a strong odor[11].

Table 2 Traditional stroke type, symptom, diagnostic methods in traditional Mongolian medicine

Traditional types of stroke	Symptom	Pulse condition	Tongue picture	Urine elephant
"Khii"	The onset is unstable and prone to recurrent attacks, spasms, convulsions and numbness are common in the hemiplegic limbs, more often on the left side, accompanied by dizziness, tinnitus, slurred speech, abnormal sleep (insomnia), dreaminess, palpitations, unstable blood pressure with large variability	Weak and slow pulse	Thin and white	Whitish urine with a lot of foam
"Shar"	The pain in the hemiplegic limbs is mainly on the right side, accompanied by general fever, elevated body temperature, severe headache, relatively high blood pressure, flushed face, dry throat and mouth, aphasia or unclear speech, disturbance of consciousness, deep and slow breathing with snoring sounds, dilated pupils on the affected side, restlessness, loss of appetite, epistaxis, nausea and vomiting, occasional hematemesis, sometimes accompanied by red dots all over the body	Forceful pulse	Yellow and thick	Yellow and smelly urine
"Badgan"	The affected body side is mostly manifested as sluggish hemiplegia, more often on the left side, accompanied by obesity, dull complexion, hemiplegia with numbness, cold and weak body, dizziness, lethargy, slow response, memory decline	Slow pulse	Enlarged tongue and thin white tongue coating	Clear urine like water
"Qisu"	The characteristics of a sudden onset, a critical condition and a poor prognosis. Hemiplegia on the right side is more common, accompanied by flushed and purplish complexion, loss of appetite, nausea and vomiting, epistaxis and hematemesis, fever, headache, elevated blood pressure, aphasia, coma	Large pulse	Yellow and thick tongue coating	Reddish-yellow urine
"Shar Wusu"	A slow onset, mild symptoms and a good prognosis. There is pain and swelling in the paralyzed joint parts, general itching, coldness in the affected limb, muscle soreness, sometimes rashes, unstable blood pressure	Weak and slippery pulse	White and thin tongue coating	Slightly yellowish urine with a strong odor

4 Conclusions and prospects

In Mongolian medicine clinical practice, a comprehensive diagnosis of stroke is achieved through the integration of TMM diagnostic methods, including pulse diagnosis, facial and tongue examination, and detailed inquiry of symptoms and medical history with advanced neuroimaging techniques such as the computed tomography and magnetic resonance imaging. A key advantage of TMM lies in its dynamic and patient-centric approach to syndrome differentiation and treatment. By conducting regular assessments to monitor changes in symptom manifestations, disease progression, and constitutional status, TMM enables personalized therapeutic adjustments, with tailored selection of medicines and interventions based on real-time clinical data.

Within the TMM, stroke is systematically classified into two primary categories (cold and hot types) based on core symptomatic patterns, with further stratification into five distinct syndromes (Khii, Shar, Badgan, Qisu, and Shar Wusu). This hierarchical classification system provides a structured foundation for precise diagnosis, addressing the inherent heterogeneity of stroke presentations. By synthesizing these insights, this paper establishes a reference framework for researchers and clinicians seeking to integrate evidence-based TMM principles into contemporary stroke care, facilitating the development of more holistic and personalized treatment strategies.

References

[1] WEI L, CHEN S, DENG X, *et al.* Metabolomic discoveries for early diagnosis and traditional Chinese medicine efficacy in ischemic stroke[J]. Biomarker Research, 2024, 12(1): 63.

[2] BAO X, SI T, BAO S, *et al.* Basic philosophy of three essences theory in traditional Mongolian medicine[J]. History and Philosophy of Medicine, 2024, 6(4): 20.

[3] BAI L, FU M. Traditional Mongolian medicine: Past, present and future [J]. Chinese Herbal Medicines, 2022, 14(3): 343 -344.

[4] JIMUSI. Effect analysis of Mongolian medicine Eerdun Wurile in the treatment of ischemic stroke[J]. Journal of Medicine & Pharmacy of Chinese Minorities, 2023, 29(3): 4 -6. (in Chinese).

[5] SAREN T, TEMüREL, MANDA, *et al.* Observation on the diagnostic value of transcranial Doppler (TCD) blood flow spectrum combined with Mongolian medicine's SA disease syndromes[J]. World Latest Medicine Information, 2019, 19(97): 175, 178. (in Chinese).

[6] LIU E. Clinical efficacy observation of 43 cases of SA disease (stroke) treated with Mongolian medicine Eerdun Wurile[J]. Chinese Journal of Ethnomedicine and Ethnopharmacy, 2014, 23(23): 2 -5. (in Chinese).

[7] WULAN T, XIN H, WEN R, *et al.* Mongolian medicine rehabilitation clinical practice guidelines: Cerebral infarction[J]. Rehabilitation Medicine, 2021, 31(4): 271 -278. (in Chinese).

[8] SHANDAN, TEMUQILE. Overview of the treatment of "SA" disease in Mongolian medicine[J]. Journal of Medicine & Pharmacy of Chinese Minorities, 2016, 22(3): 69 -71. (in Chinese).

[9] JIN H, BAO J, XING Z. Efficacy observation of Mongolian medicine in the treatment of SA disease[J]. Journal of Medicine & Pharmacy of Chinese Minorities, 2017, 23(2): 27 -28. (in Chinese).

[10] WULAN Q, SUYILA B. Clinical experience of treating 50 cases of SA disease (ischemic cerebral infarction) with Mongolian medicine[J]. Journal of Medicine & Pharmacy of Chinese Minorities, 2013, 19(2): 14 -15. (in Chinese).

[11] TEMUQILE. Inheritance of Professor Agula's academic thoughts and clinical research on the treatment of Wusun SA disease[D]. Beijing: Beijing University of Chinese Medicine, 2012. (in Chinese).