

# Research on Correlation between TCM Syndrome Distribution Characteristics and Prognosis of Hypertensive Intracerebral Hemorrhage Operation

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## Abstract

**Objective:** This study is to analyze correlation between traditional Chinese medicine (TCM) syndrome distribution characteristics and prognosis of hypertensive intracerebral hemorrhage (HICH) operation. **Methods:** In this study, a total of 150 patients who had received HICH operation from April, 2017 to December, 2020 in our hospital and conformed to inclusion standards were selected. According to classification of TCM syndromes, amount of bleeding of patients was recorded through multiple radiological technologies, baseline information was collected, and prognosis was investigated. The final event was long-term follow-up visit of all-cause mortalities. Moreover, correlation between prognosis and TCM syndromes was analyzed. **Results:** It found through investigations that there are no statistically significant differences in composition ratio of TCM syndromes among patients with different genders and different age ranges ( $P > 0.05$ ). Among so many TCM syndromes, bleeding amount of patients with declining vitality and distraction is the highest, while bleeding amount of patients with stirring wind due to yin deficiency is the lowest. With respect NIHSS scores, the patients with declining vitality and distraction show the highest NIHSS scores at admission and 10 d of the course of the disease, followed by patients with upward disturbance of wind-fire. There are statistically significant differences among these two groups ( $P < 0.05$ ). In this study, follow-up visits are performed to all 150 patients and the average follow-up visit time ranges within 2 - 15 months. A total of 13 deaths are reported. Number of all-cause deaths has statistically significant differences among different syndromes ( $P < 0.05$ ). **Conclusions:** Evolutionary characteristics of TCM syndromes of HICH are manifested by

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development from evidence-based symptoms to deficiency syndromes. Different syndromes are correlated with prognosis of patients. On the one hand, this can be used as an objective index for TCM syndrome classification. On the other hand, this is conducive to judge prognosis recovery of patients and to apply the corresponding symptomatic treatment.

## Keywords

HICH, TCM Syndromes, Distribution Characteristics, Prognosis, Correlation

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## 1. Introduction

Hypertensive intracerebral hemorrhage (HICH) generally refers to patients who have spontaneous Intracerebral Hemorrhage combined with hypertension. It is characteristic of relatively high morbidity, disability rate and fatality, and it is a great threat to physical health and quality of life of patients [1]. Currently, operation is still an effective treatment to HICH. Researches on prognosis of patients with HICH attract key attentions in clinics. However, correlation between distribution characteristics of TCM syndromes and prognosis of patients with HICH still remains unknown [2] [3]. In this study, 150 patients who received HICH operation from April, 2017 to December, 2020 in our hospital and conformed to inclusion criteria were selected and classified according to TCM syndromes. Whether there's a correlation between distribution characteristics of TCM syndromes and prognosis of patients was determined through a statistical analysis of clinical data. Results were conducive to make reasonable prognosis of patients after assessment and provide new ideas and theories for treatment of HICH. Results are introduced in the following text.

## 2. Data and Methodology

### 2.1. General Information

A total of 150 patients who received HICH operation from April, 2017 to December, 2020 in our hospital and conformed to inclusion criteria were reviewed. Among them, there were 89 males and 61 females. They aged between 41 - 85, averaging at  $(77.84 \pm 1.52)$ . All patients had hypertension for 5 - 18 years,  $(11.75 \pm 1.85)$  years in average.

#### 2.1.1. Inclusion Criteria

Patients who meet following items were included: 1) *Chinese Guidelines for Diagnosis and Treatment of Cerebral Hemorrhage* [4] in 2015 and *Experts' Consensus on Chinese Traditional Medicine and Western Medicine Combined Diagnosis and Treatment of Hypertensive Intracerebral Hemorrhage in Acute Stage* in 2016 [5], *Stroke Diagnosis and Assessment Criteria of Curative Effect (Trial)* in Traditional Chinese Medicine [6], accompanied with evident history of hypertension; 2) scores of Glasgow Coma Scale [7] (GCS)  $\geq 8$ ; 3) Volunteered to

join in the experiment and signed the agreement; 4) approved by Ethics Committee of the hospital.

### **2.1.2. Exclusion Criteria**

Patients who meet one of following items were excluded: 1) intracerebral hemorrhage caused by other brain diseases or trauma; 2) patients combined with surgical contraindications; 3) patients with cerebrovascular malformation.

## **2.2. Methodology**

### **2.2.1. Acquisition of General Clinical Data**

Baseline data of all patients were collected, including name, age, gender, admission number (AD), etc. Relevant clinical data were collected, including disease status at admission, duration from morbidity to admission, brain CT report and bleeding amount at admission, and clinical National Institute of Health stroke scale (NIHSS) [8]. If NIHSS < 4, patients were diagnosed as mild neurologic impairment. If NIHSS is between 4 - 15, patients were diagnosed as moderate impairment. If NIHSS > 15, patients were diagnosed sever impairment. All patients were assessed by professional physicians at admission and 10 d of the course of the disease.

### **2.2.2. Follow-up Visit and Judgment of Stroke Outcome**

In this study, follow-up visit started from the first diagnosis as stroke to all-cause death. All-cause death includes cardiovascular death and deaths for other reasons. Finally, patients were confirmed by senior neurological physicians with rich experiences according to radiological and direct medical proofs. Medical documents and certificate of deaths of died patients were checked.

## **2.3. Statistical Processing**

All collected data were analyzed and processed by SPSS19.0. Enumeration data were expressed by percentage and checked by Chi-square test. Measurement data were expressed by  $\bar{x} \pm s$  and checked by t-test.  $P < 0.05$  indicates statistically significant differences.

## **3. Results**

### **3.1. Effects of Demographic Characteristics on Distribution Characteristics of TCM Syndromes**

According to investigation, there's no statistically significant difference in distribution characteristics of TCM syndrome among patients with different genders and different age ranges ( $P > 0.05$ ). Results are shown in **Table 1**.

### **3.2. Comparison of Bleeding amount and NIHSS Score among Different Syndromes**

Among so many TCM syndromes, patients with declining vitality and distraction show the highest bleeding amount, while patients with stirring wind due to

**Table 1.** Effects of demographic characteristics on distribution characteristics of TCM syndromes [n (%)].

Data	Number of cases	Closed Heart due to phlegm-heat	Qi deficiency and blood stasis	Closed mind due to phlegmatic hygrois	Declining vitality and distraction	Upward disturbance of wind-fire	Stirring wind due to yin deficiency
Gender	Males	89	18 (20.22)	14 (15.73)	28 (31.46)	13 (14.61)	6 (6.74)
	Female	61	14 (22.95)	7 (11.48)	20 (32.79)	11 (18.03)	4 (6.56)
Age	40 - 49	24	4 (16.67)	3 (12.50)	6 (25.00)	7 (29.17)	2 (8.33)
	50 - 59	32	7 (21.88)	5 (15.63)	10 (31.25)	5 (15.63)	2 (6.25)
	60 - 69	58	12 (20.69)	6 (10.34)	19 (32.76)	8 (13.79)	5 (8.62)
	>70	36	9 (25.00)	7 (19.44)	13 (36.11)	4 (11.11)	1 (2.78)

yin deficiency show the lowest bleeding amount. In term of NIHSS score, patients with declining vitality and distraction achieve the highest NIHSS score at admission and 10d of the course of the disease, followed by patients with upward disturbance of wind-fire. There are statistically significant differences between these two syndromes in term of NIHSS score ( $P < 0.05$ ). Results are shown in **Table 2**.

### 3.3. Comparison of Follow-up Visit Time and All-Cause Deaths among Different Syndromes

Follow-up visits were performed to all 150 patients. The average follow-up visit time ranged between 2 - 15 months, and 13 deaths were reported. There are statistically significant differences among different syndromes in term of number of all-cause deaths ( $P < 0.05$ ) (**Table 3**).

## 4. Discussions

HICH is a serious complication of hypertension and it has high morbidity in the group aged between 50 - 70 [9]. With the intensifying aging degree of national residents, number of patients with HICH is increasing continuously. People suffer HICH suddenly and the disease worsens quickly, accompanied with high disability rate and fatality rate [10]. Therefore, disclosing the correlation between distribution characteristics of TCM syndromes and prognosis of patients has important clinical significance to explore new ideas for treatment to HICH. TCM believes [11] that HICH belongs to the scope of “stroke” and TCM has accumulated abundant experiences in treatment to stroke. Moreover, the theory of “abnormal flow of the blood is extravasated blood” was proposed, which advocated simultaneous address both symptoms and root causes. However, key attentions shall be paid to eliminating symptoms in the acute period. Nowadays, HICH still lacks of evidence-based medicine. Therefore, this study focused on patients after HICH operation.

According to survey results, patients with closed mind due to phlegmatic hygrois accounted for the highest proportion (32.00%, 48/150) among the selected 150 cases, followed by patients with closed Heart due to phlegm-heat (21.33%,

**Table 2.** Comparison of bleeding amount and NIHSS score among different syndromes at admission.

TCM syndromes	Number of cases	Bleeding amount	NIHSS	
			Admission	10d
Closed Heart due to phlegm-heat	32	56.21 ± 13.25	36.73 ± 1.98	21.21 ± 13.28
Qi deficiency and blood stasis	21	45.12 ± 12.46	32.26 ± 3.16	16.12 ± 12.32
Closed mind due to phlegmatic hygrois	48	34.45 ± 13.37	25.73 ± 2.98	14.21 ± 13.28
Declining vitality and distraction	24	66.67 ± 12.26	49.26 ± 3.18	32.12 ± 12.32
Upward disturbance of wind-fire	15	48.16 ± 13.28	41.73 ± 2.96	28.21 ± 13.28
Stirring wind due to yin deficiency	10	33.35 ± 12.41	19.26 ± 1.17	12.12 ± 12.32

**Table 3.** Comparison of follow-up visit time and all-cause deaths among different syndromes [n (%)].

TCM syndromes	Number of cases	Follow-up visit time (months)	All-cause deaths
Closed Heart due to phlegm-heat	32	2 - 15	2 (6.25)
Qi deficiency and blood stasis	21	2 - 14	1 (4.76)
Closed mind due to phlegmatic hygrois	48	2 - 14	1 (2.08)
Declining vitality and distraction	24	3 - 15	5 (20.83)
Upward disturbance of wind-fire	15	2 - 13	4 (26.67)
Stirring wind due to yin deficiency	10	3 - 14	0 (0.00)

32/150). Both of these two syndromes have a major symptom of coma. This might be because intracranial pressure increases quickly due to the high bleeding amount of patients after morbidity and the neurological functions affected and lost for temporary. Additionally, patients with declining vitality and distraction accounts for a relatively high proportion after HICH operation, which might be related with vital impairment and unsmooth air flow in organs after long time in bed [12]. Besides, effects of gender and age on TCM syndromes of patients with HICH were investigated, finding no evident influences. However, the morbidity rate of HICH reaches the peak in the age group of 60 - 69, which might be interpreted by cerebral arteriosclerosis under long-term hypertension in the old [13] [14]. Effects of bleeding amount and NIHSS score on TCM syndromes of patients with HICH were further investigated. It found that patients with declining vitality and distraction show the highest bleeding amount, while patients with stirring wind due to yin deficiency show the lowest bleeding amount. Moreover, patients with declining vitality and distraction present the highest NIHSS score at admission and 10d of the course of the disease, followed by patients with upward disturbance of wind-fire. There are statistically significant differences between these two syndromes in term of NIHSS score ( $P < 0.05$ ). Obviously, disease conditions of patients with declining vitality and distraction and patients with upward disturbance of wind-fire are relatively complicated and serious,

who deserve high clinical attentions. In prognosis follow-up visits, 13 deaths were reported. There are statistically significant differences among different syndromes in view of all-cause deaths ( $P < 0.05$ ). This reveals that TCM syndromes are complicated, changing and personalized in a series of processes from onset to development. Judging syndrome characteristics of patents timely and accurately and mastering their evolutionary laws are vital to correct treatment based on syndromes and full development of strong advantages of TCM in HICH treatment [15].

## 5. Conclusion

To sum up, TCM syndromes of HICH develop from evidence-based symptoms to deficiency syndromes. Syndromes are related with disease condition and prognosis of patients. On the one hand, this can be an objective indicator of TCM syndrome classification. On the other hand, this is beneficial to judge prognosis recovery of patents and adopt corresponding symptomatic treatment. However, this study involves a small sample size and the follow-up visit was limited within 1 year after the operation, resulting in unconvincing conclusions. Future studies are considered to expand sample size and prolong follow-up visit period.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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