Analysis of hematoma morphology and related factors in patients with cerebral hemorrhage Prognosis Analysis of Different Treatment Schemes for Intracerebral Hemorrhage research proposal

Research direction：Cerebrovascular disease

Submission date：September 19, 2022

1. Integrity Statement

The investigators of this trial earnestly implemented the "Clinical Trial Quality Management Standard" and the protocol, which can ensure that the operation is strictly in accordance with the trial procedures and the authenticity of the data records.

There is no personal interest between the researcher and the subjects of this trial

2. Research topics

Analysis of related factors of hematoma morphology in patients with cerebral hemorrhage and prognosis analysis of different regimens for cerebral hemorrhage 3.

3.Version number of the research proposal

V1.0

4. Source of funds

National Natural Science Foundation of China（81971126）

5. Execution table of research items

Project	Test preparation	Starting time	End Time
1	Project preparation, literature reading	2022.09.01	2023.05.31
2	Data collection and follow-up	2023.06.01	2024.05.31
3	Data collation and analysis	2024.06.01	2024.12.31
4	Summarize	2025.01.01	2025.05.31

6. Research Background

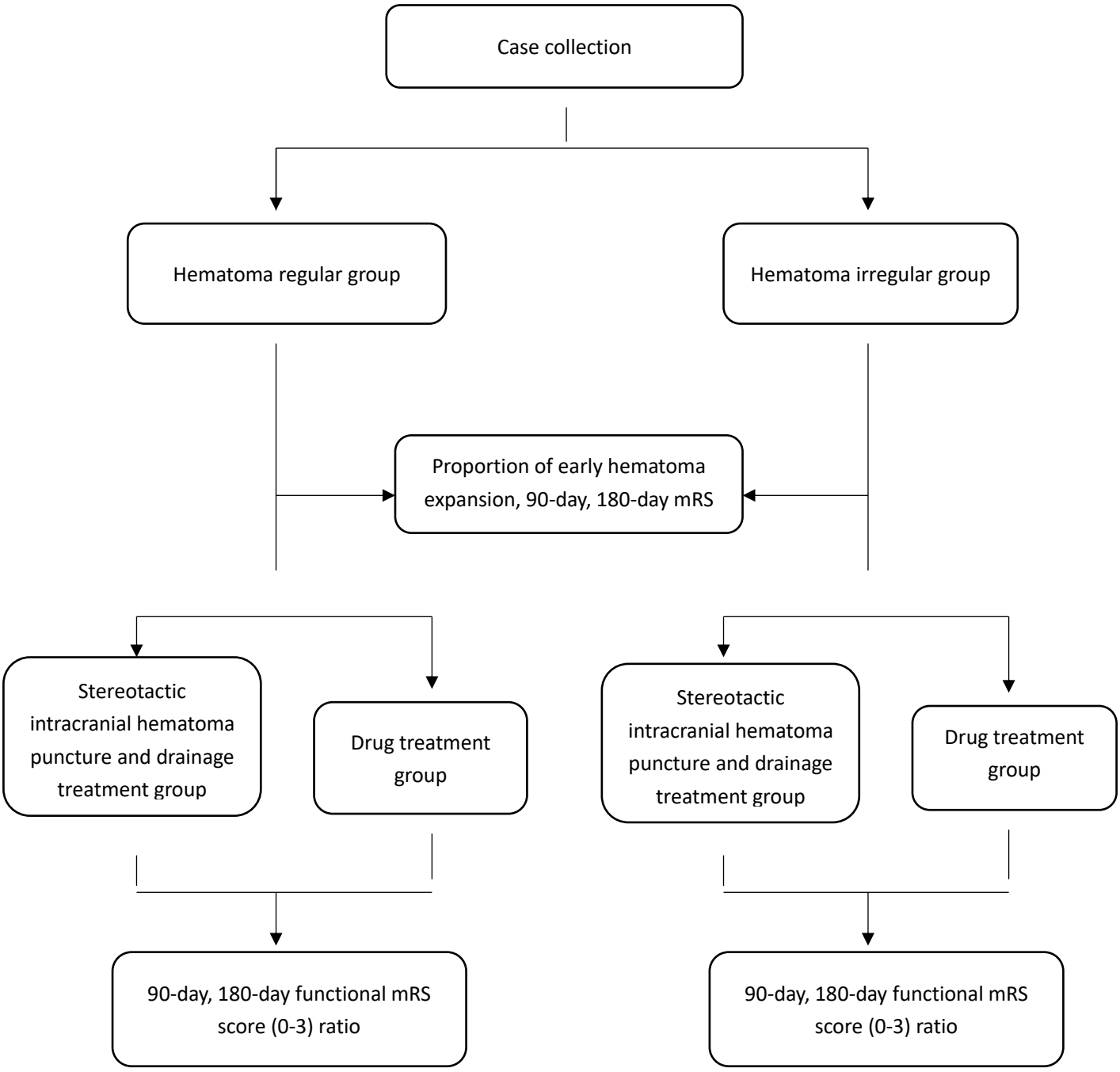
Intracerebral hemorrhage refers to the hemorrhage caused by the rupture of blood vessels in the non-traumatic brain parenchyma, accounting for 20% to 30% of all strokes, with an acute mortality rate of 30% to 40%. Different degrees of movement disorders, language disorders, etc. will be left behind. It is of great clinical significance to deeply explore the relevant factors and effective treatment plans for the evolution of cerebral hemorrhage. 30% of hematomas can still have active bleeding within 20 hours of onset. The INTERACT test defines hematoma expansion as 24-48 hours of repeated non-enhanced CT. The increase in hematoma

volume >12.5ml or 33% of the original volume is the cause of neurological deterioration and abnormality. An important cause of poor prognosis, studies have confirmed that irregular hematoma morphology is a strong predictor of hematoma expansion. Treatment of cerebral hemorrhage currently includes medical treatment and surgical treatment. Surgical treatment has become an important method for the treatment of ICH due to its advantages of rapid removal of hematoma, relief of high intracranial pressure, and release of mechanical compression. However, whether surgery can reduce the mortality of patients with cerebral hemorrhage and improve neurological damage is still controversial. Surgical operations include decompressive craniectomy and minimally invasive surgery. Currently, there are large randomized controlled trials at home and abroad on minimally invasive hematoma evacuation. The treatment of spontaneous intracerebral hemorrhage is safe, but the effectiveness of minimally invasive surgery is unclear due to inconsistent bleeding volume, surgical trauma, and hematoma morphology.

9.Design scheme, design pattern diagram

Taking patients with cerebral hemorrhage as the main research object, a single-center, retrospective case-control study was used to collect inpatients in the emergency neurology department of the Affiliated Hospital of Guizhou Medical University from January 1, 2014 to August 31, 2022. The included cases were divided into a regular hematoma group and an irregular hematoma group. The proportion of early hematoma expansion was compared between the two groups, and the 90-day and 180-day prognosis of the two groups were compared to explore the factors affecting the prognosis of patients with cerebral hemorrhage.

The patients in the hematoma rule group were divided into the stereotactic intracranial hematoma puncture and drainage treatment group and the drug treatment group according to different treatment methods, and the prognosis of the two groups was compared; the hematoma irregular group was divided into stereotactic intracranial hematoma according to the same method. The puncture and drainage treatment group and the drug treatment group were used to explore the best treatment plan for patients with cerebral hemorrhage.



10. Sample Size Estimation

Based on the assumption that 38% of ICH patients would have an mRS score of 0-3 after sMIS, we estimated that 180 participants would provide 95% power with an alpha level of 0.05. The allowable error β is 0.1, and the detection efficiency is 0.9.

The sample size calculation formula is as follows:

$$N = \frac{z^2_{\alpha} p(1-p)}{\delta^2}$$

11. Methods of random and covert grouping

none.

12. Blind method

This study was retrospective and did not require blinding.

13. Measurement indicators

main indicators:

Hematoma expansion ratio within 24 hours of onset;

90-day, 180-day mRS score;

Secondary indicators:

in-hospital mortality;

90-day, 180-day GCS score, mortality;

14. Definition of Validation of Participants

main indicators:

The hematoma did not expand within 24 hours of onset;

90 days, 180 days mRS score ≤ 3 points;

Secondary indicators:

did not die during hospitalization;

90 days, 180 days GCS score > 12 points, no death;

15.Definition, identification method and management system of adverse events and adverse reactions

Definition

Refers to an adverse medical event that occurs after a patient or clinical experimenter receives a drug or device, but does not necessarily have a causal relationship with the treatment;

Determination of the severity of adverse events:

Mild: does not affect daily activities;

Moderate: affects the patient's daily activities;

Severe: loss of ability to perform daily activities;

Serious: Refer to Serious Adverse Events.

Determination of serious adverse events

Death
life-threatening
Longer length of hospital stay
Permanent or severe disability
Causes congenital deformities and defects
Reporting system

Any serious adverse reaction, whether related to the drug or not, that occurred during the course of the clinical trial or within 30 days of the last treatment, should be reported immediately by telephone to the clinical team leader (PI) and within 24 hours. Ethics committee report, and the sponsor reports to the State Drug Administration.

16. Ethical considerations

This study was approved by the Human Ethics Committee of Guizhou Medical University
Ethics Committee: Ethics Committee of Affiliated Hospital of Guizhou Medical University
Approval procedure: Fill out the ethics approval application form and attach relevant approval materials.
Informed consent: Before each patient is enrolled in this study, the research physician is responsible for fully and comprehensively introducing the purpose of this study, the performance of the drug, its possible toxic and side effects and possible risks to the patient. Patients should be informed of their rights, risks and benefits to be assumed. Patients should sign an informed consent form before enrollment.
Ethical norms: This clinical trial must comply with the Declaration of Helsinki (2000 edition), the Good Clinical Practice for Drugs (GCP) promulgated by the SFDA, and related regulations. Before the start of the trial, the study could be started only after the protocol was approved by the ethics committee of the lead unit. Any modification of the trial protocol during clinical research should be reported to the ethics committee and filed.
Registration time: 2017.11
Registration institution: Affiliated Hospital of Guizhou Medical University
Approval number: 2019 Ethical Review No. (114)

17. Recruitment of participants

In this retrospective study, patients admitted to the emergency neurology department of the Affiliated Hospital of Guizhou Medical University from January 1, 2014 to August 31, 2022 were collected. Patients with cerebral hemorrhage were

collected according to the head CT at the time of admission.

18. Baseline Indicators and Observations

Baseline data included admission blood pressure, baseline intracerebral hemorrhage score, Glasgow Coma Scale (GCS) score, National Institutes Of Health Stroke Scale (NIHSS) score, Time to baseline CT scan, hematoma volume on admission, whether there was rupture into the ventricle, Grabe score (oGS), modified Grabe score (mGS), and presence of obstructive hydrocephalus. Through telephone follow-up, the patients' premorbid disability, 90-day and 180-day clinical prognosis were assessed using the modified Rankin scale. An mRS score of 0-3 was classified as good prognosis and 4-6 as poor prognosis.

19. Standard Operating Procedures

Drug treatment group: ①General treatment: Based on high-level nursing care and close and continuous attention to the patient's vital signs, the patient was instructed to stay in bed continuously, inhaled oxygen, and instructed the patient to avoid emotional agitation, etc. ②Special treatment: use hemostatic drugs, control blood pressure to prevent rebleeding, control blood sugar, control body temperature, anti-epilepsy, prevent infection, dehydration and lower intracranial pressure, etc. Multisystem complications such as tract hemorrhage should be actively managed.

Stereotactic intracranial hematoma puncture surgery group: On the basis of drug therapy, minimally invasive surgery was performed. Minimally invasive surgery: check the CT slice of the patient's brain, find out the patient's largest hematoma level, measure the coordinates of the puncture center, locate and mark the skull surface according to the measured coordinates, select the puncture point under the stereotaxic instrument, Mainly avoid important blood vessels, nerves and functional areas. Use an electric drill to drill the puncture needle into the center of the hematoma, and slowly aspirate the hematoma from the side hole until the suction stops when there is resistance. The residual hematoma in CT and the location of the drainage tube were determined, and the position of the puncture needle was adjusted for the situation of brain CT. After the operation, according to the re-examination of cranial CT, urokinase was injected into the hematoma cavity through the drainage tube to dissolve the residual hematoma, and the operation process strictly followed aseptic operation. The patients in the operation group were also given medical drug treatment after the operation, and the complications occurred during the course of the disease were treated actively.

20. Statistical analysis methods

Statistical analysis was performed using SPSS 25.0 software (SPSS, Chicago, IL, USA).

Categorical variables, such as gender, drinking history, smoking history, hypertension history, diabetes history, baseline intraventricular hemorrhage, early hematoma expansion, in-hospital mortality, 90-day mortality, etc., were expressed as percentages. If continuous variables conform to a normal distribution, such as age, admission systolic blood pressure, and admission diastolic blood pressure, they are expressed as mean ± SD; if continuous variables do not conform to a normal distribution, such as admission GCS score, admission NIHSS score, baseline ICH volume, incidence Time to CT, oGS score, mGS score, 90-day mRS score, etc., were expressed as the median (inter-quartile range [IQR]). Differences between groups were assessed using the chi-square test, Fisher's exact test, Student t test, or Mann-Whitney U test (depending on data type). The level of significance was set at P value < 0.05.

21. Management system for participants

1. The researcher collects the patient's name, ID number, home address, contact information and other personal information in a timely manner, as well as current illness history, past history, auxiliary examination results and other information;
2. Arrange follow-up visits for patients, and complete various examinations in strict accordance with the regulations;
3. Inform the patient to keep the research method confidential, and at the same time require the patient not to disclose the experimental research data at will;

22. Specimen management system

(1) Collection of specimens
1. Specimens are collected by medical staff who have received training on specimen collection, preservation and transportation knowledge and sent to the laboratory;
2. Collect blood samples with a vacuum tube, and deliver the blood samples to the laboratory two hours after collection. After centrifugation, use a disposable pipette to draw serum or plasma into a 1.5ml centrifuge tube sterilized by autoclaving, and enter the patient's basic information and serial number;
3. All the above containers for clinical specimen collection, such as test tubes or centrifuge tubes, should be autoclaved and sealed before use.
(2) Transportation of specimens
After the specimens are collected, they should be sealed, labelled (posted) with the name, date of collection, and whether there is any infectious disease pathogen. If the delivery time is more than two hours, it must be sent to the laboratory in an ice box.
(3) Receipt of specimens
Strictly check and double-sign all kinds of samples, check and check in a timely

manner, and all samples that do not meet the requirements will be returned with written records. All specimens involving infectious diseases must be marked with the name of the infectious disease and the source of the sample. and the person submitting the inspection;

The staff should carefully check the name, contact number, hospital number, ward bed number, inspection items, etc., and label the samples. Those who do not meet the requirements should be recorded and contacted with the applying physician.

(4) Handling of specimens

Specimen processing is strictly carried out in accordance with the operation instructions of each test item. Experimenters entering the experimental area must wear special work clothes, gloves, masks, hats, and shoes. The sample should be marked with the serial number, date, user, and detailed experimental records and usage records.

(5) Preservation of specimens

Destroy the remaining biological samples and the biological samples after inspection in accordance with the relevant provisions of the "Medical Waste Management Regulations" and "Medical Waste Management Measures for Medical and Health Institutions".

23. Drug and equipment management system

Store the medicines with reference to the instructions of the medicines, and check and confirm before administration;

The surgical instruments shall be disinfected and sterilized according to relevant regulations after each use;

Dispose of single-use items after use and cannot be reused.

24. Treatment and management of participants after the trial

The trial was a retrospective study, participants continued treatment according to their disease, and the researchers followed up regularly.