# Emergency Nursing Experience of Intravenous Thrombolysis for Acute Ischemic Stroke: A Case Report

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## Abstract

Acute cerebral infarction is a common condition in emergency internal medicine, characterized by a therapeutic "time window" and high disability rates. Early activation of the "stroke green channel" and early initiation of "intravenous thrombolysis"therapy are critical for reducing patient disability and safeguarding long-term quality of life. This article reviews the thrombolysis nursing process of a patient with acute cerebral infarction and summarizes the experience of standardized stroke thrombolysis nursing care.

## Full Text

### Emergency Nursing Experience of Intravenous Thrombolysis in a Patient with Acute Cerebral Infarction

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**Abstract:** Acute cerebral infarction is a common disease in emergency medicine, characterized by a narrow therapeutic "time window" and high disability rates. Early activation of the "stroke green channel" and prompt implementation of intravenous thrombolysis are critical for reducing disability and ensuring patients' quality of life. This article reviews the thrombolysis nursing process for a patient with acute cerebral infarction and summarizes the experience of standardized thrombolysis nursing for stroke.

**Keywords:** Acute cerebral infarction; Intravenous thrombolysis; Nursing care

Acute cerebral infarction refers to a condition of localized ischemic softening or necrosis of brain tissue resulting from cerebral circulation impairment due to various causes, leading to prolonged hypoxia and ischemia. Clinically known as ischemic stroke, it accounts for over 80% of all stroke cases and is a common cerebrovascular disease with extremely high rates of disability and mortality [1]. Intravenous thrombolysis involves administering thrombolytic drugs via intravenous injection to dissolve occlusive thrombi, restore blood flow through blocked vessels, and salvage viable cells [2]. Currently, early thrombolysis is the primary treatment for acute cerebral infarction with demonstrated efficacy, but it must be complemented by scientific and standardized nursing interventions to ensure optimal therapeutic outcomes and prognosis. This article aims to analyze the clinical nursing experience of emergency care provided during intravenous thrombolysis for acute cerebral infarction.

## 1. Case Information

The patient was a 60-year-old female who presented to our emergency department at 00:55 on May 2, 2023, with a chief complaint of "left-sided limb weakness for 1.5 hours." The patient reported that she was bathing at 22:48 on May 1, began experiencing pallor and fatigue at 23:30, followed by dizziness and progressive weakness of the left limbs with decreased muscle strength in the right upper limb. She consumed a piece of chocolate and Coca-Cola, vomited once, and took an Angong Niuhuang pill.

Upon admission, vital signs were as follows: temperature 36°C, pulse 72 beats/min, respiration 18 breaths/min, blood pressure 137/71 mmHg, and oxygen saturation 100%. Physical examination revealed clear consciousness, fair mental status, clear speech with coherent responses, bilateral pupils equal and round at 3 mm diameter, dizziness, normal swallowing sensation, no rotational vertigo, clear breath sounds in both lungs without obvious moist rales, no chest tightness or pain, no abdominal distension or diarrhea, soft abdomen without tenderness, rebound tenderness, or muscle rigidity, no edema in lower extremities, dark red tongue with white greasy coating, and deep thready pulse. Past medical history included hospitalization for cerebral infarction two months prior, with no history of drug allergies.

Neurological examination showed left limb muscle strength grade 2, right limb muscle strength grade 5, normal muscle tone, decreased tactile sensation on the right face, normal eyelid closure, symmetric nasolabial folds, and midline tongue protrusion. The patient could not hold objects with the left upper limb and had difficulty walking due to left lower limb weakness. Cranial CT scan performed at 01:13 showed no obvious hemorrhage. Laboratory tests including complete blood count, coagulation profile, and emergency renal function and electrolytes were all normal. Electrocardiogram showed occasional supraventricular premature beats.

**Traditional Chinese Medicine diagnosis:** Stroke (phlegm-stasis obstructing

collaterals type)
**Western Medicine diagnosis:** Acute cerebral infarction.

## 2. Clinical Treatment

The "stroke green channel" was immediately activated. The stroke specialist on call was contacted at 01:10, and informed consent for thrombolysis was obtained from the family. Thrombolysis was initiated at 01:38 and completed at 02:38. Post-thrombolysis examination revealed grade 5 muscle strength in the left upper limb distal extremity and left lower limb. The patient received alteplase 61 mg (6 mg intravenous bolus within 1 minute, followed by 55 mg via intravenous pump within 1 hour), compound sodium chloride injection 500 ml intravenous drip twice daily, butylphthalide sodium chloride 25 mg intravenous drip twice daily, and 0.9% sodium chloride injection 250 ml plus Danhong 40 ml intravenous drip once daily. Outcome: On May 2 at 8: [text incomplete]

## 3. Emergency Triage

Upon receiving the patient' s chief complaint, the emergency triage nurse immediately assessed vital signs and consciousness status using the Face, Arm, Speech, Time (FAST) scale [3]. The FAST scale is a simple, rapid, and accurate screening tool for suspected stroke patients that can be completed within two minutes. If any of the three signs (facial drooping, arm weakness, or speech difficulties) are found to have sudden onset, acute stroke is highly suspected, and the emergency physician must be notified immediately. The triage nurse can activate the stroke green channel, provide the patient with a green channel identifier, and ensure all examinations are processed through the green channel.

## 4. Nursing Care

**4.1 Pre-Thrombolysis Care** The optimal time window for intravenous thrombolysis in acute cerebral infarction is within 3-4.5 hours of onset. During the emergency visit, the triage nurse must rapidly assess the patient' s condition. In this case, the patient was immediately transferred to a thrombolysis bed in the resuscitation room, and the emergency physician was promptly notified. A comprehensive review of the patient' s medical history and contraindications for thrombolysis was conducted, and the patient was accompanied for cranial CT examination to exclude intracerebral hemorrhage [4]. Immediate measures included cardiac monitoring, oxygen administration, assessment of vital signs, pupils, and limb movement, and establishment of intravenous access. Blood samples were collected per physician orders for glucose, coagulation profile, complete blood count, and emergency biochemical tests, all processed according to green channel standards. The nursing team accurately evaluated thrombolysis indications and contraindications while providing psychological support to alleviate anxiety and negative emotions in both the patient and family members. The fundamental purpose and key points of thrombolysis were

explained to gain the patient' s trust and cooperation, thereby strengthening their confidence in treatment [4-6].

**4.2 During Thrombolysis** Intravenous access was promptly established, and alteplase was administered per physician orders. During thrombolysis, the nursing team monitored vital signs, consciousness changes, and signs of oral or gingival bleeding. Blood pressure was measured every 15 minutes. If nausea, headache, elevated blood pressure, or agitation occurred, the physician was immediately notified, and thrombolysis was suspended. A specialized thrombolysis team provided dedicated nursing care, closely observing for hemorrhage while maintaining readiness for emergency interventions [4,7].

**4.3 Post-Thrombolysis Care** Vital signs monitoring continued with blood pressure measurements every 10 minutes during alteplase infusion. Once blood pressure stabilized, the frequency was adjusted to every 1 hour on the first day and every 2 hours on the second day, with meticulous documentation. Basic nursing interventions were intensified, requiring absolute bed rest during the acute phase with regular turning to prevent pressure ulcers. The diet consisted of easily digestible, light foods low in cholesterol and fat but rich in vitamins and dietary fiber; patients unable to feed themselves received nasogastric tube feeding [4,8]. Complication surveillance focused on intracranial hemorrhage, which most commonly occurs within 12 hours of treatment. The nursing team observed for petechiae on skin and mucous membranes, hematuria, and melena while avoiding unnecessary invasive procedures [4]. Any abnormal changes in condition prompted immediate symptomatic management. Psychological support was enhanced, and early limb functional rehabilitation exercises were initiated with appropriate assistance in daily living activities [9].

**4.4 Effect Evaluation** Post-thrombolysis treatment efficacy was assessed based on muscle strength recovery and NIHSS scores [10]. In this case, the patient demonstrated remarkable improvement, with left-sided muscle strength recovering to grade 5.

**Table: Pre- and Post-Thrombolysis Effect Evaluation** - **Pre-thrombolysis:** Left limb muscle strength grade 2, right limb muscle strength grade 5 - **Post-thrombolysis:** Left limb muscle strength grade 5, right limb muscle strength grade 5

Acute cerebral infarction is fundamentally a neurological disorder, also known as ischemic stroke, primarily caused by impaired cerebral circulation due to various factors, resulting in prolonged hypoxia and ischemia that lead to localized ischemic softening or necrosis of brain tissue. With extremely high disability and mortality rates, it poses a serious threat to patients' lives [11]. The choice of treatment and its effectiveness during the acute phase directly impact prognosis, necessitating rational, effective, and scientific therapeutic approaches. Research has confirmed that thrombolysis is the optimal treatment

for acute cerebral infarction, as it rapidly restores blood flow to the infarcted area, ensures early reperfusion, and alleviates neurological deficits caused by focal cerebral ischemia. However, thrombolysis carries significant risks of intracranial hemorrhage, reperfusion injury, and re-occlusion, underscoring the critical importance of meticulous nursing care [12-13].

Thrombolysis nursing extends beyond simply executing physician orders; it is constrained by limitations in time, staffing, and expertise, making standardized care difficult to achieve. Therefore, comprehensive nursing should be prioritized for acute cerebral infarction patients undergoing intravenous thrombolysis. Experienced medical staff should develop structured nursing protocols to deliver targeted, phased, and quantified care according to the thrombolysis timeline. Simultaneous performance of different nursing procedures by multiple nurses ensures completion of all required interventions within designated timeframes, preventing omissions or oversights due to individual limitations and thereby enhancing nursing efficiency, quality, and shortening recovery time [4,14-16].

For this patient with acute cerebral infarction, correct and timely thrombolysis was administered within 45 minutes of admission. Through thorough understanding of thrombolysis indications and timing, intensive observation, and meticulous comprehensive nursing care, the patient' s clinical symptoms improved significantly, neurological deficits were markedly reduced, and no thrombolysis-related complications occurred, resulting in successful recovery and favorable prognosis. Analysis of this case demonstrates that optimizing the in-hospital "stroke green channel" process and standardizing "intravenous thrombolysis nursing" not only secures precious "golden time" for stroke patients but also reduces disability rates and safeguards patients' lives.

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*Note: Figure translations are in progress. See original paper for figures.*