
The most common reason for withholding intravenous thrombolysis in acute stroke patients who are otherwise eligible is the presence of mild or rapidly improving symptoms. To characterize treatment complications and short-term outcomes of thrombolysis in patients with mild stroke (National Institutes of Health Stroke Scale score [NIHSS] ≤5) treated within 4.5 hours of symptom onset, the authors conducted a retrospective analysis of the Get With the Guidelines-Stroke registry, 2010 to 2012.

Among patients with mild stroke who arrived at the hospital within 4.5 hours from symptom onset, 13.5% received recombinant tissue-type plasminogen activator. Among 33,995 patients treated with tissue-type plasminogen activator, 22.4% had NIHSS ≤5 and 5910 had complete data for analysis. Treatment complications after thrombolysis included symptomatic intracranial hemorrhage (intracranial hemorrhage [ICH], 1.8%), life-threatening or serious systemic hemorrhage (0.2%), other serious complications (1.8%), and complications of undetermined cause (2.4%). In-hospital mortality was 1.3%. At discharge, ≈1 in 3 patients could not ambulate independently and 1 in 3 patients could not go directly home. Three quarters of patients had a length of stay ≥3 days. There were no significant differences in outcomes among those treated 0 to 3 hours versus 3 to 4.5 hours from symptom onset, except for a lower rate of complications of undetermined cause in the 0- to 3-hour window.

Factors independently associated with in-hospital mortality included heart failure and altered consciousness on arrival. Factors associated with symptomatic ICH included older age, history of carotid stenosis, and altered consciousness on arrival; dyslipidemia and care in a stroke unit were associated with lower odds of symptomatic ICH. Factors associated with inability to be discharged home or inability to ambulate included older age, black race, history of diabetes mellitus, arrival by ambulance, arrival at off hours, worse stroke severity, and hemiparesis. The poor functional outcomes at discharge could potentially be explained by disabling symptoms such as aphasia or weakness at presentation and stuttering, progressive or recurrent symptoms not captured by Get With the Guidelines (which only collects baseline NIHSS).

This large observational study of patients with mild stroke who received thrombolysis has several limitations, some of which are inherent in retrospective analyses of registry data in general, including lack of a control arm and selection bias (hospitals participating in Get With the Guidelines Stroke with complete data), and others which reflect limitations of the Get With the Guidelines data set (1 NIHSS assessment and lack of long-term outcomes). Ongoing randomized controlled clinical trials such as Potential for Tissue-Type Plasminogen Activator to Improve Stroke With Mild Symptoms (PRISMS) study, will help clarify whether individuals presenting with mild stroke benefit from intravenous thrombolysis.


A nihilistic attitude toward ICH, limiting medical support for patients with moderate to large hemorrhage, can inadvertently lead to a self-fulfilling prophecy of poor outcomes for these patients. Morgenstern et al conducted a prospective, observational cohort study to determine 30- and 90-day mortality and functional outcomes after ICH among adults aged ≥18 years with nontraumatic ICH (Glasgow Coma Scale score, ≤12) who received at least 5 days of intensive supportive ICH treatment after symptom onset.

One hundred nine subjects with ICH (mean age, 62 years; median Glasgow Coma Scale score, 7; and mean hematoma volume, 39 cm³) were enrolled. On the basis of ICH Score, the predicted 30-day mortality rate was 50%; however, observed mortality was substantially lower at 20.2%. At 90 days, 1 in 3 patients had good functional outcome (modified Rankin Scale score, 0–3) and 1 in 5 patients had moderately severe disability (modified Rankin Scale score, 4). The study demonstrates that avoidance of early do-not-resuscitate orders during ICH care resulted in substantially lower mortality than predicted from ICH score.

Although prediction models such as the ICH Score are useful in stratifying patients based on initial severity on a population level, this study elucidates the dangers of...
using such predictive tools for counseling and decision making in individual situations. Furthermore, the ICH Score was developed over 10 years ago and improvements in neurocritical care may make the instrument less informative today. Strengths of the study include prospective enrollment, a priori sample size calculations to ensure adequate power, and a diverse demographic and clinical ICH population. The study was limited by selection bias; individuals with early do-not-resuscitate orders who were excluded from the study tended to be older and had lower Glasgow Coma Scale scores than those included in the study. Furthermore, the selection of 5-day treatment period was arbitrary and may not be long enough to adequately predict long-term prognosis. Finally, the study did not have a contemporaneous control group. Nevertheless, this study reinforces concerns about using a tool, which did not account for the effect of early withdrawal of care and highlights the need for developing tools to better assess prognosis among individuals with ICH, so that families can make appropriate decisions about goals of care.
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Michelle P. Lin and Amytis Towfighi

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