Speed of Stroke Treatment Lags for Most in U.S.

BY MITCHEL L. ZOLER

FROM THE INTERNATIONAL STROKE CONFERENCE

LOS ANGELES – Barely more than a quarter of all U.S. acute stroke patients eligible for treatment with intravenous tissue plasminogen activator received the drug within an hour after arriving at the hospital, according to a registry of more than 1,000 U.S. hospitals dedicated to evidence-based stroke care during 2003-2009.

Only 7% of the hospitals achieved a door-to-needle time of 60 minutes or less in most of their patients.

DR. FONAROW

Among the 641 hospitals in the registry that treated at least 10 stroke patients with intravenous tPA within 3 hours of symptom onset, only 7% of the hospitals achieved a door-to-needle time of 60 minutes or less in a majority of their patients, Dr. Gregg C. Fonarow said at the conference. U.S. guidelines call for administering tPA to eligible stroke patients within an hour of their arrival at primary or comprehensive stroke centers.

The analysis also showed that the patients who appropriately received IV tPA within an hour of hospitalization had a significant 1.8% absolute reduction in in-hospital mortality, from 10.4% in patients whose tPA dose was delayed beyond 1 hour to 8.6%. The results "identify substantial opportunities for improvement in the speed of tPA therapy," said Dr. Fonarow, professor of medicine and associate chief of cardiology University of California, Los Angeles.

Further analysis showed that after adjustment for possible confounders, every 15-minute reduction in the door-to-needle time for tPA linked with a significant 5% relative reduction in in-hospital mortality.

Patients who received intravenous tPA within an hour of arrival also had a significantly higher rate of discharge to a rehabilitation facility and a reduced rate of needing discharge to a nursing facility or another hospital, and significantly fewer tPA complications, including a 0.9% reduction in symptomatic intracranial hemorrhages, from 5.6% in patients who received tPA beyond 1 hour to 4.7% in those treated within 1 hour.

The analysis used data collected during April 2003–September 2009 on nearly 600,000 patients with an acute ischemic stroke admitted to one of 1,259 U.S. hospitals participating in the Get With the Guidelines stroke registry of the American Heart Association and the American Stroke Association.

The analysis included only the 25,504 patients who received tPA within 3 hours of their symptom onset at 1,082 hospitals in the registry. Throughout the 6.5 years of the study, the door-to-needle time averaged 79 minutes, with 6,790 patients (27%) receiving tPA within an hour. During the study period, average door-to-needle time improved modestly, from 85 minutes in 2003 to 75 minutes in 2009.

Concurrent with Dr. Fonarow's report, the results were published online (Circulation 2011 Feb. 10 [doi:10.1161/CIRCULATIONAHA.110.974675]).

Dr. Fonarow has been a consultant to Pfizer, Merck, Schering Plough, Bristol Myers Squibb, and Sanofi-Aventis. He is an employee of the University of California, which holds a patent on retriever devices for treating acute stroke. ■

VIEW ON THE NEWS

Blunt Motivators May Speed tPA Use

It's a mistake to think that there is a one-size-fits-all intervention that will improve and speed up tPA use at all hospitals. The big stick approach stands a better chance of working, one that involves regulatory agencies or payers. If there were a stroke DRG (diagnosis-related group) that said stroke patients should receive tPA within 30 minutes, hospitals would figure out how to do it pretty quickly.

The 1.8% improved in-hospital mortality that Dr. Fonarow reports for patients treated with tPA within an hour of arriving at the hospital is significant, but I suspect the mortality improvement did not completely result from faster tPA treatment. Faster tPA use may be a marker for hospitals that are better organized and do a lot of things better for their stroke patients, which together maximize the stroke patients' survival.

WILLIAM J. MEURER, M.D., is a neurologist and emergency medicine physician at the University of Michigan in Ann Arbor. He reported having no disclosures.

MRI Can Guide Treatment in Unclear-Onset Stroke

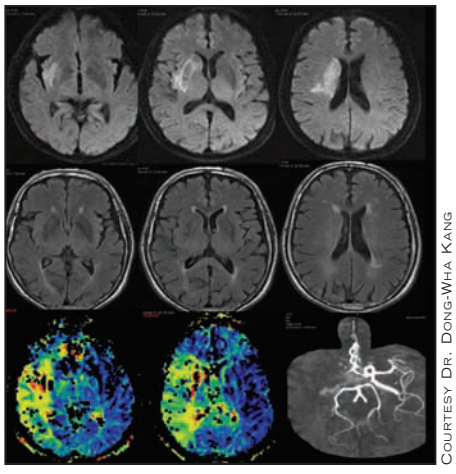
BY SHERRY BOSCHERT

FROM THE INTERNATIONAL STROKE CONFERENCE

LOS ANGELES – Physicians may have moved one step closer to identifying patients with stroke of unclear onset who might benefit from treatment, a prospective multicenter study suggests.

About 25% of ischemic strokes occur in people who don't know, or are unable to communicate, when their stroke began. Guidelines call for intravenous thrombolysis to be given within 4.5 hours of symptom onset, and patients with unclear-onset stroke traditionally have been excluded from thrombolytic therapy.

The study of 430 patients with unclear-onset stroke showed that basing treatment on MRI evaluation is feasible, with safety and efficacy similar to what was seen in pivotal trials of thrombolytic therapy, Dr. Dong-Wha Kang said at the meeting. The current study lacked a control group of comparable patients who did not receive therapy, however, making the true effect of treatment in these patients difficult to assess.



COURTESY DR. DONG-WHA KANG

Large perfusion-diffusion mismatch and no FLAIR changes within a DWI lesion made this patient a good candidate for treatment.

The 10 patients who were treated at two centers with little previous experience in thrombolysis for unclear-onset stroke were 11 times more likely to have poor clinical outcomes than were the patients treated at four centers where interventionists already had been selecting patients empirically for treatment of unclear-onset stroke. This difference in clinical outcomes "might be related to the expertise or the skill of the interventionists," Dr. Kang said at the meeting, sponsored by the American Heart Association

He and his associates screened consecutive patients with unclear-onset stroke who presented at six university hospitals in South Korea within 6 hours of symptom detection. They used multimodal MRI to look for sizable areas with live brain tissue despite lack of blood flow, and to exclude patients from therapy who were at higher risk of serious bleeding from thrombolytic therapy or who were past the time of tissue death.

Patients qualified for reperfusion therapy if MRI findings showed the presence of greater than a 20% perfusion-diffusion mismatch, absence of extensive early infarct (with "extensive" defined as infarct in more than a third of middle cerebral artery territory) on diffusion-weighted imaging, and absence of well-developed parenchymal hyperintensity on fluid-attenuated inversion-recovery (FLAIR) imaging or T2 images.

A total of 83 patients (19% of the cohort) received reperfusion therapy, which included IV tissue plasminogen activator (tPA) with or without intra-arterial urokinase within 3 hours, or intra-arterial urokinase within 6 hours from symptom detection. (Urokinase is approved in Korea but not in the United States.) The study also allowed mechanical clot disruption or stenting. In all, 57 patients were treated using an endovascular approach (69%), 9 patients were treated with IV tPA only (11%), and both approaches were used in 17 patients (21%). (Percentages were rounded.)

In the 83 patients who underwent reperfusion therapy, 37 had a good clinical outcome (45%), defined as a score of 0-2 on the modified Rankin scale at 3-month follow-up, reported Dr. Kang of the University of Ulsan, Seoul, South Korea, and 24 patients (29%) had excellent clinical outcomes.

Eight patients developed symptomatic intracranial hemorrhage, five with neurological decline (6%) and three with at least a four-point increase in the National Institutes of Health Stroke Scale (NIHSS) score within 48 hours after treatment.

Poor clinical outcomes were nine times more likely in women than in men and 11% more likely in patients with higher baseline NIHSS scores. The treated patients had a mean age of 67 years and a median baseline NIHSS score of 14.

The investigators compared the clinical results with separate data from 156 similar patients whose stroke onset times were known. The percentage of patients who had good outcomes did not differ significantly between those groups, he said. ■

VITALS

Major Finding: Using MRI to decide which patients with stroke of unclear onset should get treatment produced outcomes similar to those for patients with known onset at centers experienced in thrombolysis for unclear-onset stroke.

Data Source: Prospective study of 430 patients with unclear-onset stroke at six university hospitals in South Korea.

Disclosures: The investigators reported having no relevant conflicts of interest.