MERCI Registry Outcomes Mirror Trial Results

BY MICHELE G. SULLIVAN

FROM THE INTERNATIONAL STROKE CONFERENCE

LOS ANGELES – Results of the MERCI patient registry appear to uphold findings from the device's two pivotal trials of patients with acute ischemic stroke, which demonstrated that successful recanalization is significantly associated with good outcomes.

But audience members who spoke at the conference following the presentation of the registry results emphasized – to the applause of others in the audience – that the MERCI device lacks randomized data proving its safety and efficacy, and that reported outcomes for patients have not been stratified according to intubation status.

The registry is a large, nonrandomized case series documenting the postapproval use of the devices, whereas the two pivotal trials (MERCI and Multi MERCI) had strict inclusion and exclusion criteria and protocols but did not compare the device to medical therapy. Device-treated patients in the trials were instead compared with a placebo group from a randomized medical trial, called PROACT II (Prolyse in Acute Cerebral Thromboembolism).

At the conference, Dr. Marilyn Rymer presented the 90-day outcomes of 1,000 patients with acute ischemic stroke in the registry who were treated with the MERCI clot retriever embolectomy device. The MERCI (Mechanical Embolus Removal in Cerebral Ischemia) and Multi MERCI studies examined embolectomy with the device in similar patient groups, with a total of 305 patients.

"The registry is designed to answer the question, 'What does the real-world, unrestrained treatment of ischemic stroke with this device look like?'" said Dr. Rymer, a medical director of the Brain and Stroke Institute at St. Luke's Hospital in Kansas City, Mo. However, she noted that because the registry consists of nonrandomized cases, the efficacy implied in it "can't be compared to a medical therapy."

The participating sites included every consecutive patient who was treated with the device. Treatment remained a clinical decision guided by each site's general practice. The inclusion criteria were a diagnosis of acute ischemic stroke and at least one pass with the tool.

The primary end point was revascularization with a TICI (Thrombolysis in Cerebral Infarction) scale grade of 2a or higher; there was also a secondary functional outcome, which was the modified Rankin Scale (mRS) score at 90 days. The final analysis included 872 patients as a result of excluding 4 with insufficient procedural data and 90 who were disabled before their stroke with an mRS of 2 or more, as well as losing 34 to follow-up.

The patients' median age was 68 years, compared with the median age of 72 in the trials. There was wide intersite variability with regard to age: At one site, the median age of patients treated was 58, and at another the median age of patients treated was 72.

"We saw the same kind of variation in terms of baseline National Institutes of Health Stroke Scale [NIHSS] score," Dr. Rymer said at the conference, which was sponsored by the American Heart Association. "The median in the registry was 17, while it was 21 in the trials." Median NIHSS scores also varied across the registry sites (range, 14-21), she said.

Overall, 305 patients received intravenous thrombolytic therapy, "But there was an incredible variation among sites" in the use of thrombolytics in conjunction with embolectomy (range, 0%-71%). Intra-arterial thrombolytic therapy also varied widely: Some 47% of patients overall received it, but the intersite rate varied from 7% to 100%.

Overall, 63% of patients were intubated, with the rate varying from 12% to 100%. "Several sites used intubation routinely in 100% of their patients, and some intubated only for airway protection. This becomes important as we begin to understand that intubation is associated with a worse outcome," Dr. Rymer said.

Most sites treated fewer than 19% of patients with angioplasty or stenting in addition to clot retrieval, but one site employed these additional treatments in 64% of patients.

The time from symptom onset to groin insertion was 6.3 hours, compared with 4.5 hours in the MERCI trials. Most patients (71%) were treated 3-8 hours after symptom onset.

Overall in the registry, 80% of patients were successfully recanalized, which was significantly more than in the two MERCI trials combined (65%). Similar numbers of patients had good 90-day outcomes (32% in both the registry and combined trials). Mortality at 90 days also was not significantly different between the registry and the trials (33% and 38%).

Symptomatic brain hemorrhage in the registry was 7% overall, not significantly different from the 8.8% seen in the MERCI trials, Dr. Rymer said. "It is notable that in the patients who were well recanalized (those with a TICI grade of 2b to 3), the symptomatic hemorrhage rate was lower (3.7% in TICI 2b and 5.4% in TICI 3)."

When the investigators examined the rate of good 90-day outcome (defined as an mRS of 0-2), they found the best outcomes in patients with the lowest baseline NIHSS scores. "As the stroke became more severe, the likelihood of good outcome went down," she said. In cases with NIHSS scores lower than 16, "the outcomes were excellent," she said, with up to 70% of those with a TICI grade of 2b or 3 experiencing a good outcome. TICI 2a provided only modest benefit, but it was consistent across the whole range of NIHSS scores, she added.

Age and recanalization status also affected mortality. "Age was a predictor of worse outcome, but recanalization did provide benefit across all ages except for the very young, who had low mortality rates in any case," she said.

A multivariate analysis identified several factors that significantly affected mortality both negatively and positively, including advancing age (odds ratio, 1.05); worse baseline NIHSS score (OR, 1.08); revascularization to a TICI grade of 2a, 2b, or 3 (OR, 0.33); heart failure (OR, 2.85); blood glucose above 140 mg/dL (OR 2.0); and intubation during the revascularization procedure (OR, 2.20)

The same multivariate model also identified factors that negatively impacted good 90-day outcomes, including worse baseline NIHSS score (OR, 0.88), advancing age (OR, 0.96), intubation during the procedure (OR, 0.43), longer duration of procedure (OR, 0.66), and a blood glucose level of 140 mg/dL or greater (OR, 0.59).

During the discussion period, several audience members questioned the relationship between intubation and poor outcomes. Dr. Joseph Broderick, chair of the department of neurology at the University of Cincinnati, said that the intubation data were interesting but could throw a statistical kink into the risk analysis. "There is always a risk of selection bias unless you compare the [sites] that always intubated against those that did not. Otherwise, you might be including people who were intubated because they looked dead, had heart failure, or weren't breathing."

"We don't know what all the facts are" in relation to intubation, Dr. Rymer said. "We can only speculate." ■

VITALS

Major Finding: Use of the MERCI clot retrieval device resulted in successful recanalization in 80% of patients, good 90-day functional outcomes in 32%, and 33% mortality.

Data Source: The MERCI patient registry of 1,000 patients with acute ischemic stroke who were treated consecutively at 37 U.S. centers.

Disclosures: Concentric Medical, the manufacturer of the MERCI device, sponsored the MERCI registry. Dr. Rymer reported being on the speakers bureau of the company. The five other coauthors reported varying relationships with Concentric, including being consultants or medical advisers, and having an ownership interest in Concentric.

Clinical Trial Validates First Pediatric Stroke Severity Scale

BY SHERRY BOSCHERT

FROM THE INTERNATIONAL STROKE CONFERENCE

LOS ANGELES – For the first time, a pediatric stroke severity scale has been validated in a prospective clinical trial.

The study in 15 North American medical centers showed excellent interrater reliability when neurologists used a pediatric version of the National Institutes of Health Stroke Scale for adults to examine children aged 2-18 years with acute arterial ischemic stroke.

The neurologists used the Pediatric NIH Stroke Scale (PedNIHSS) on 113 patients examined daily from admission to discharge, or through day 7 of hospitalization. Interrater reliability was tested in a subset of 25 patients who were examined simultaneously by two pediatric neurologists. Characteristics of the subgroup were similar to those of the entire cohort, Dr. Rebecca N. Ichord reported.

The simultaneous raters' scores were identical in 60% of ratings and were within a 1-point difference in 84% of ratings (Stroke 2011;42:613-7).

A pediatric stroke scale is 'absolutely needed and wanted right now by clinicians on the front line.'

DR. ICHORD

Research into potential ways of preventing or treating childhood stroke has been stymied in the past by the lack of a validated and reliable pediatric stroke scale. The PedNIHSS provides a way to index the severity of a child's stroke, to make comparisons across treatment groups, and to get a baseline for predicting outcome, said Dr. Ichord, director of the pediatric stroke program at the Children's Hospital of Philadelphia.

Clinicians, too, have been hungering for such a scale. "I have been asked over and over again [for a pediatric stroke scale] by clinicians who want to have a method of describing the severity of a child's stroke," she said at the meeting, which was sponsored by the American Heart Association. "It's absolutely needed and wanted right now by clinicians on the front line."

Characteristics of the patients and the strokes in the study were similar to those reported in previous pediatric stroke cohort studies, which suggests the current findings are generalizable and the PedNIHSS should be applicable in other settings.

The PedNIHSS was drafted by a consensus panel of pediatric and adult stroke experts. Dr. Ichord and one of her associates in the study are on the clinical event committee for the Berlin Heart Trial for pediatric ventricular assist devices. ■