Comparing mechanical clot removal and standard medical therapy for severe stroke

February 8 2013

Results of the first randomized controlled study to evaluate a procedure that removes blood clots in the brain from patients experiencing severe strokes will be presented at the International Stroke Conference in Honolulu, Hawaii on Feb. 8. The study also evaluates if imaging techniques were helpful in identifying patients who potentially would benefit most from clot removal.

In addition to the presentation, the full study, led by Chelsea Kidwell, M.D., professor of neurology and director of the Stroke Center at Georgetown University Medical Center, will be published online in New England Journal of Medicine on Feb. 8.

Currently, the only proven effective treatment for a stroke caused by a blood clot (ischemic) is tPA (tissue plasminogen activator). The treatment, administered in the hospital, must be given within the first few hours after stroke symptoms appear. For patients who don't meet the timeline for treatment or whose clots do not respond to tPA, an interventional procedure to remove the clot is another option.

The study, named MR RESCUE (Mechanical Retrieval and REcanalization of Stroke Clots Using Embolectomy), was conducted at 22 institutions in the U.S. The trial evaluated outcomes in 118 patients at an average age of 65.5 who had suffered a severe ischemic stroke in one of the large blood vessels carrying blood to the front of the brain, the most common location for this type of stroke.

By removing the clot within the first eight hours of having the stroke, researchers hypothesized that the procedure would restore blood flow to the affected area of the brain. Prior to conducting the procedure, the patients received an array of MRI or CT scans, including a blood flow study, to help identify those with viable brain tissue who presumably would benefit if the clot was removed and blood flow restored.

After imaging studies were processed using study-specific software to determine if substantial salvageable brain tissue was present, the patients were randomized to receive either standard medical treatment (aspirin or other medicine) or clot removal with a special device. Patients who received tPA were allowed to enroll in the study if the treatment failed. Tools used to remove the clot included the MERCI Retriever (a tiny corkscrew-like device) or the Penumbra System (an aspiration device).

The researchers measured survival outcomes, the level of disability 90 days after the stroke and symptomatic brain bleeds. The researchers also compared results based on imaging results.

Reza Jahan, M.D., associate professor of interventional neuroradiology at the University of California, Los Angeles, is co-principal investigator of the study. Other authors include: Jeffrey Gornbein, Dr.P.H.; Jeffry R. Alger, Ph.D.; Val Nenov, Ph.D.; Zahra Ajani, M.D.; Lei Feng, M.D., Ph.D.; Brett C. Meyer, M.D.; Scott Olson, M.D.; Lee H. Schwamm, M.D.; Albert J. Yoo, M.D.; Randolph S. Marshall, M.D., M.S.; Philip M. Meyers, M.D.; Dileep R. Yavagal, M.D.; Max Wintermark, M.D.; Judy Guzy, R.N.; Sidney Starkman, M.D.; and Jeffrey L. Saver, M.D.

Provided by Georgetown University Medical Center