New Device Helps Stroke Patients

According to the National Stroke Association, stroke is the third leading cause of death in America and the number one cause of adult disability. Time is of the essence when it comes to treating stroke. Many people do not realize that they are having a stroke; the average stroke patient waits more than 12 hours before going to the emergency room, and some never go to the hospital at all. Brain clots are currently treatable with intravenous administration of the drug tPA within three hours of stroke onset and with intra-arterial tPA up to six hours. Now a new mechanical clot retrieval device adds critical time, up to eight hours, in the race to treat a patient experiencing ischemic stroke (85% of strokes are ischemic). The device is also an alternative for those stroke patients who fail to achieve recanalization with the intravenous or intra-arterial treatment.

Mount Sinai was designated a Stroke Center by the New York State Department of Health in the fall of 2005. The designation is an effort by the state to improve the standard of, and access to, care for patients with stroke. Stroke centers are more effective than hospitals that do not have stroke neurologists and endovascular capabilities and are known as being more effective in administering treatment for acute stroke, including the use of thrombolytic (clot-busting) drugs. When these drugs are given to patients intravenously within the required time-frame, the patients may have good outcomes. If given later, however, the risks outweigh the benefits.

Now Mount Sinai has also added a mechanical means of restoring blood flow to the brain. In an effort to improve outcomes further, Mount Sinai is one of only a handful of hospitals in the country to offer the new minimally invasive procedure, under the direction of Aman Patel, MD, Assistant Professor of Neurosurgery and Radiology and Director of Neuroendovascular Surgery.

The new Merci Retrieval System, which was approved by the FDA in 2004, uses a long catheter that ensnares and extracts the clot in the brain by way of a small incision in the femoral artery in the groin. The principle is straightforward: reach inside an artery and clear it out. “This is the first device to come on the market that mechanically removes a clot like this,” says Dr. Patel, who performs the procedure with David M. Johnson, MD, Assistant Professor of Radiology and Neurosurgery. “You’re actually going in and pulling out the clot. In the past, we had to rely on thrombolytic drugs like t-PA (tissue plasminogen activator) to break up a clot.” The device provides a tool for rapid revascularization of ischemic brain tissue.

The clot is first located using angiography or x-rays of the blood vessels. After determining the position of the clot, the physicians maneuver the catheter through the blood vessels to near the site of the blockage; then they deploy an even smaller, hair-like corkscrew-shape device. This “retriever” emerges from its sheath, grapples the clot and draws it into the larger catheter. The entire procedure takes about two to three hours. “The efficacy rate of this procedure is comparable to the current gold standard, which is t-PA,” Dr. Patel explains. When the device was first tested, awaiting FDA approval, in a trial of 114 patients, the device successfully achieved revascularization in 61 of them—
and of those, 20 recovered dramatically, many of them right on the table. One patient, treated after the device was approved, reported an immediate result once the clot was removed: “And then once they got the clot out, it was like somebody threw a switch--it was almost magical. All of a sudden, I was able to move my arm. It was instantaneous, from no movement at all to go to almost complete movement on my left side. It’s a wonderful feeling.”

The Merci Retrieval System is designed to treat ischemic stroke, the most common type of stroke, which is caused by a clot. (Occurring less often is hemorrhagic stroke, which is caused by a ruptured vessel.) To date, Mount Sinai physicians have used the clot retrieval device on five patients. In three of the patients, Dr. Patel and his team were able to open a significant portion of the blocked blood vessels, which, in turn, helped improve overall blood flow and led to better outcomes than with standard medical therapy which may include administration of heparin or other anticoagulants.

The issue in New York City (and everywhere else!) is getting patients into the hospital in the allotted time window. People need to know the symptoms of stroke and recognize when someone is having one.

“We are hoping to get the word out about the device,” says Dr. Patel. “This procedure can save lives.”