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STROKE THERAPY WITH CORKSCREW DEVICE MOST BENEFICIAL, STUDY SUGGESTS

AT A GLANCE

- Patients whose stroke-causing blood clots were removed with a corkscrew-like device improved an average of 81 percent, according to a five-year study. Stroke suffers who received other minimally invasive treatments improved from 32 percent to 60 percent.
- In another study, the brain function of patients whose strokes were treated with stents improved an average of 60 percent.
- About 750,000 people suffer from stroke every year, and more than one in five die. The sooner stroke sufferers receive treatment, the more likely they will benefit.

HOLLYWOOD, Fla. – Although all minimally invasive stroke therapies are beneficial, results are most dramatic in sufferers treated with a corkscrew-like clot-removing device, suggests a five-year-study being presented at the 22nd annual International Symposium on Endovascular Therapy (ISET).

In the study of 76 stroke sufferers, those treated with the corkscrew-like device improved an average of 81 percent. Others, who received clot-busting drugs or a combination of therapies, improved 32 percent to 60 percent. All patients were treated at St. Joseph's Hospital in Tampa, one of seven comprehensive stroke centers in Florida.

Another study being presented at ISET suggests stents can be used to treat stroke – just as they sometimes are used to treat heart attacks – often resulting in significant improvements in brain function. The study includes 20 patients treated at one of three centers: the State University

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of New York at Buffalo (SUNY), the University of Florida at Gainesville and Barrow Neurological Institute in Phoenix. Patients treated with stents experienced an average of 60 percent improvement in brain function.

Stroke is called a brain attack because oxygen and blood flow to part of the brain is cut off. Eighty three percent of all strokes are ischemic, meaning they are caused by a small clot that blocks an artery in the brain, stopping blood flow. (The other 17 percent of strokes are hemorrhagic, caused by bleeding in the brain.) If blood flow is not restored, impairment can result, including loss of brain function, speech, vision, movement (paralysis) and death. About 750,000 people suffer from stroke every year, and 160,000 die, according to the National Stroke Association. Signs of stroke include sudden numbness or weakness in the face, arm or leg, loss of vision, confusion or severe headache. In both studies, only patients with ischemic stroke were included.

"In stroke treatment, time is brain, which means the quicker you can get to a stroke center, the more likely that treatment will be beneficial," said Glenn W. Stambo, M.D., an interventional radiologist at St. Joseph's Hospital, and co-investigator of the study.

St. Joseph's Study

In the St. Joseph's study, the stroke sufferers were assigned to one of five treatment groups. When stroke patients entered the hospital, their impairment was assessed according to the National Institutes of Health Stroke Scale (NIHSS), which ranges from 0 (no stroke) to 42 (severe stroke) based on a variety of factors, including consciousnesses, speech, vision, movement, strength and muscle coordination. Group assignment was based on several aspects,

including the length of time since the onset of stroke, the NIHSS score and the results of a computed tomography (CT) perfusion scan. The results are as follows:

- 17 patients' whose clots were removed with the corkscrew-like device entered the hospital with an average NIHSS score of 15.9 and left with an average score of 3.1, an improvement of 81 percent. All patients whose clots were in large arteries and who entered the hospital within three to six hours of onset of stroke symptoms were assigned to this group.

- 18 patients who received clot-busting drugs intravenously (intravenous tissue plasminogen activator, or IV tPA) entered the hospital with an average of NIHSS score of 11.8 and left with an average score of 4.7, a 60 percent improvement. Patients who entered the hospital within three hours of onset of stroke symptoms were assigned to this group.

- Nine patients who received clot-busting drugs infused directly into the affected artery in the brain (intra-arterial, or IA tPA) entered the hospital with an average NIHSS score of 16.1 and left with an average score of 7.4, an improvement of 54 percent. Patients who entered the hospital within three to six hours of onset of stroke were assigned to this or one of the following groups.

- Eight patients who received a combination of the clot-removing device and IA tPA, entered the hospital with an average NIHSS score of 15.7 and left with an average of 10.6, an improvement of 30 percent. Two patients died. Patients who had extensive clots were assigned to this group.

- 24 patients who had no treatment entered the hospital with an NIHSS average score of 11.1 and left the hospital with an average score of 8.9, a 20 percent improvement. Two patients died. Patients in this group were those who sought treatment more than six hours after onset of stroke, or who were suffering from stroke caused by bleeding in the brain and therefore were not candidates for intervention.

Clot-busting drugs work by breaking up the clot to open up blood flow. In IV tPA, the drugs are infused intravenously through a standard IV. However, only some of the drugs make their way to the clot to break it up. IV tPA doesn't require a specialist to administer it, and is the most widely available stroke treatment. IA tPA infuses the clot-busting drugs through a catheter (small tube) directly into the artery where the clot is located, meaning most of the drugs can quickly work to break up the clot. IA tPA must be administered by a physician who specializes in this treatment, such as an interventional radiologist. The clot-removing device is advanced on a wire through a catheter directly to the site of the clot. The device works like a corkscrew to hook into the clot and pull it out. This procedure also must be performed by a specialist.

"All of the treatment groups had improvement, but those in the clot-removing device-only group had the most significant improvement," said Dr. Stambo. "In most of these patients, blood flow in the brain was re-established quicker than in patients who received the other treatments. If possible, people who show signs of suffering from stroke should get to a stroke center that offers comprehensive treatment. Dedicated stroke training of all key personnel is imperative for a stroke center to be successful."

Three-Center Stent Study

In a study using stents to treat stroke, the stents opened up the blocked arteries of all 20 patients, and 12 (60 percent) had significant improvement in brain function. On a brain function scale of 0 to 5, with 0 being no brain impairment and 5 being extreme brain impairment, 45 percent of patients scored a 0 or 1 after treatment. Stents generally can reopen arteries much faster than other agents, said L. Nelson Hopkins, M.D., professor and chairman of neurosurgery and professor of radiology at SUNY at Buffalo, who is presenting the research at ISET.

"No device or treatment works for every stroke, but the future is getting brighter for stroke patients because every year there are more and better stroke treatments available," said Dr. Hopkins. "Stents appear to work in cases where other treatments don't."

Dr. Hopkins said the next step is to compare stent treatment for stroke to IV tPA because it is the most widely available interventional stroke treatment.

Co-authors of the study comparing stroke therapies being presented by Dr. Stambo are M.H. Berlet, D. Steffen, K. Van Epps, T. Woeste and C. Kelley.

Co-authors of the study using stents to treat stroke being presented by Dr. Hopkins are E. Levy, A. Siddiqui and J. Mocco.

The International Symposium on Endovascular Therapy (ISET) is attended by more than 1,200 physicians, scientists, allied professionals and industry professionals from around the world. The meeting pioneered the use of live cases to promote the multidisciplinary treatment of cardiac and vascular disease by endovascular means. ISET is presented by the Baptist Cardiac & Vascular Institute, Miami. ISET 2010 is taking place Jan. 17-21 near Miami Beach, Fla.

For more information, visit www.ISET.org.

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Editor's note: Study numbers are current as of January 12, 2010 and may change upon presentation at the ISET meeting.

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