

Saving lives with brain-scan guided emergency stroke treatment



According to a new study, advances in brain imaging can identify a large number of stroke patients who can receive therapy later than previously believed.

The International Stroke Conference 2018 in Los Angeles presented the results of the Endovascular Therapy Following Imaging Evaluation for the Ischemic Stroke (DEFUSE 3) trial, which demonstrated that physically removing brain clots up to 16 hours after symptom onset in selected patients led to improved outcomes compared to standard medical therapy.

The study was funded by the National Institute of Neurological Disorders and Stroke (NINDS), part of the National Institutes of Health.

Walter Koroshetz, M.D., director NINDS explained that, "These striking results will have an immediate impact and save people from life-long disability or death. I really cannot overstate the size of this effect.

"The study shows that one out of three stroke patients who present with at-risk brain tissue on their scans improve and some may walk out of the hospital saved from what would otherwise have been a devastating brain injury."

Gregory W. Albers, M.D., professor of neurology and neurological sciences at Stanford University School of Medicine, in California, and director of the Stanford Stroke Center, conducted the study throughout 38 centres across the US.

The study was ended early by the NIH on recommendation of the independent Data and Safety and Monitoring Board because of the overwhelming evidence of benefit from the clot removal procedure.

When asked how the results may change the future for patients who suffer from stroke but are not treated urgently, Prof. Scott Janis, one of the programme directors in stroke studies (including DEFUSE 3), told HealthManagement.org in an email:

"Stroke is a serious medical emergency and rapid treatment offers the best opportunity for a full recovery. The results from the DEFUSE 3 Trial offer another option for a specific set of patients by extending the time a stroke can be treated out to 16 hours from the time the stroke occurred.

"This may be especially important for patients who live too far from a specialised centre to receive urgent care as well as for those patients who may have experienced a stroke during sleep, when the start time of the stroke was not known."

Ischaemic stroke occurs when a cerebral blood vessel becomes blocked, which cuts off the delivery of oxygen and nutrients to brain tissue. Brain tissue in the immediate area of the blockage cannot typically be saved from dying, and it can enlarge over time.

Over the past two decades, scientists have been attempting to develop various brain scanning methods, called perfusion imaging, that could essentially identify patients with brain tissue that can still be salvaged by removing the blockage. A standard dye is injected and scanned for a

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few minutes as it passes through the brain.

Prof. Janis explains that perfusion imaging allows doctors to determine whether brain tissue in an area affected by the stroke can still be saved. "In some patients, their brain is able to temporarily return blood flow into that area," he says.

"This tissue has the potential to be fully saved, if the main source of blood flow, blocked by a blood clot that is the cause of the stroke, is restored."

The DEFUSE 3 researchers identified patients using an automated software known as RAPID to analyze perfusion MRI or CT scans. The participants were randomised to either receive endovascular thrombectomy, plus standard medical therapy, or medical therapy alone.

The findings showed that patients in the thrombectomy group had substantially better outcomes 90 days after treatment compared to those in the control group. 45 percent of the patients treated with the clot removal procedure achieved functional independence compared to 17 percent in the control group.

In addition, thrombectomy was associated with improved survival. According to the results 14 percent of the treated group had died within 90 days of the study, compared to 26 percent in the control group.

"Although stroke is a medical emergency that should be treated as soon as possible, DEFUSE 3 opens the door to treatment even for some patients who wake up with a stroke or arrive at the hospital many hours after their initial symptoms," explained Dr. Albers.

"The impact of these results is a major advance for the treatment of an acute stroke that will provide more patients with a chance for greater recovery," Prof. Janis explains.

"While time is still critical in treating a stroke, these data provide new scientific opportunities for doctors to offer greater benefit to an even greater number of patients who suffer from a stroke".

Source: [National Institute of Neurological Disorders and Stroke](#)
Image Credit: Greg Albers, M.D., Stanford University Medical Center

Published on : Thu, 22 Feb 2018