Catheter-Based Intervention for Acute Stroke Treatment

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Background

The only FDA-approved drug treatment for acute ischemic stroke is IV t-PA (tissue plasminogen activator), but its use is limited: Fewer than 3% of patients nationally receive t-PA, due to medical contraindications or to time constraints, as it must be given within three hours of symptom onset. Furthermore, t-PA has a limited ability to recanalize large-vessel clots.

Catheter-based intervention offers broader application in stroke treatment. It can extend the treatment time frame to eight hours; it has greater success opening large-vessel strokes; and it may be used on patients who have contraindications to IV t-PA, including those taking anticoagulants or who have had recent surgery or trauma.

The neurointerventionalists at Providence Stroke Center have particular expertise in stroke treatment beyond IV t-PA. Equipped with a $3.2 million biplanar angiography suite, one of the few of its kind in Oregon, we specialize in catheter-based intervention. Beyond established therapies, Providence Stroke Center offers patients the opportunity to participate in acute stroke clinical trials.

Case Study

A 76-year-old man with a history of high blood pressure and high cholesterol presented at the Providence St. Vincent Medical Center Emergency Department with stroke symptoms. His wife reported that he was watching television around 7:45 p.m. when she noticed him slump to his right. His speech was slurred and unintelligible, and he was unable to rise from his chair without falling to his right. Seeing no improvement after 10 minutes, his wife called 911.

Upon his arrival in the ED, the acute stroke team was called. A CT scan of the brain, obtained at 8:30 p.m., showed no abnormality, ruling out hemorrhagic and subacute stroke, but a CT angiogram revealed an occluded left middle cerebral artery. The stroke team assessed the patient as having global aphasia, right hemiplegia and a right-sided visual field cut.

As the patient was within the three-hour time frame from symptom onset, a one-hour infusion of IV t-PA was initiated at 8:55 p.m. after a discussion of risk and benefit with the patient's wife. However, the stroke team believed that IV t-PA alone wouldn't likely recanalize a vessel of this size.

Following further discussion with the patient's wife, the patient was taken from...
Our Team

Providence Health & Services interventional physicians who treat stroke patients using the intra-arterial procedure:
Donald Blair, M.D.
Bradley Evans, M.D.
David Fillmore, M.D.
Todd Kuether, M.D.
Jozsef Lukacs, M.D.
James Putnam, M.D.
John Roll, M.D.

Providence Stroke Center, with 24-hour on-call teams at Providence Portland Medical Center and Providence St. Vincent Medical Center, is Oregon’s first nationally certified stroke program.

Connect

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Current Clinical Trials

IMS III: Interventional Management of Stroke:
a study to determine whether a combined intravenous and intra-arterial approach to recanalization is superior to either treatment when initiated within three hours of acute ischemic stroke onset.

ALIAS:
a phase III randomized clinical trial with the primary objective to ascertain whether high-dose human albumin therapy confers neuroprotection in acute ischemic stroke over and above best standards of care.

The patient was admitted to the intensive care unit. One hour after the procedure, he was able to speak with mild difficulty, follow commands and move his right side against gravity. On the second hospital day, he could speak normally and walk. He was discharged on the third hospital day and has returned home to all his previous and independent activities.

In 2007, the American Heart Association and American Stroke Association recognized Providence Portland Medical Center and Providence St. Vincent Medical Center for achieving 85% or higher adherence to all Get With The Guidelines-Stroke program quality indicators. Providence Portland received the Gold Award and Providence St. Vincent, Silver, for sustained performance for two years and one year, respectively.

Left to right: Providence Stroke Center’s Lisa Yanase, M.D., associate medical director; Ted Lowenkopf, M.D., medical director; Todd Kuether, M.D.; and John Roll, M.D.

The emergency department to the biplanar angiography suite, where a neurointerventionalist performed a conventional cerebral angiogram. This study showed the persistence of the left middle cerebral artery occlusion. A specialized catheter was passed through the clot and was then pulled back through it, removing the clot and restoring blood flow.