

An NYEE-Mount Sinai Eye Stroke Protocol Saves a Young Woman's Sight

When Elodie Ontala entered the walk-in clinic at New York Eye and Ear Infirmary of Mount Sinai (NYEE) one morning last September and described a gray blurry cloud that was blocking her vision in her left eye, the ophthalmologists on duty were concerned. The 27-year-old woman had sickle cell anemia, and while an emergent fluorescein angiogram failed to show a suspected arterial occlusion, optical coherence tomography revealed the pattern of paracentral acute middle maculopathy, a rare form of retinal capillary ischemia. But another part of Ms. Ontala's history threw the physicians into high alert: She had lost her other eye to an accident 13 years earlier. "When my sight didn't improve after waking up that morning, I knew I needed to get help quickly," she recalls. "This was my only eye."

For years, ophthalmologists have struggled with how to effectively reverse arterial occlusion of the eye, an "eye stroke," which is as critical a medical emergency as a stroke affecting other parts of the brain. A long list of therapies tried in the past—usually aimed at displacing the clot—were rarely effective, and patients typically suffered permanent, devastating vision loss, beyond the level of legal blindness. As Ms. Ontala was about to learn, however,

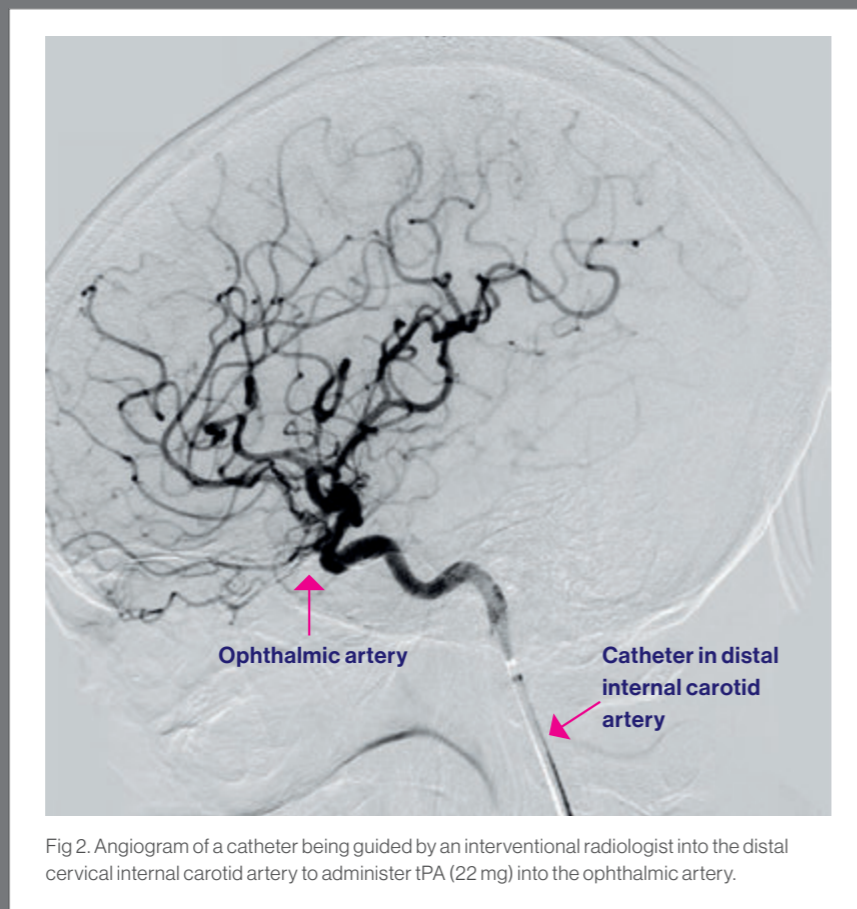


Fig 2. Angiogram of a catheter being guided by an interventional radiologist into the distal cervical internal carotid artery to administer tPA (22 mg) into the ophthalmic artery.

she had come to the right place. NYEE offers a treatment available at only a handful of major medical centers around the country: the "Eye Attack Protocol" for treating acute stroke of the eye.

"The key is getting patients on the operating table within the 12-hour window of safety and efficacy, so that the neuroradiologists can administer intra-arterial tPA, which has worked

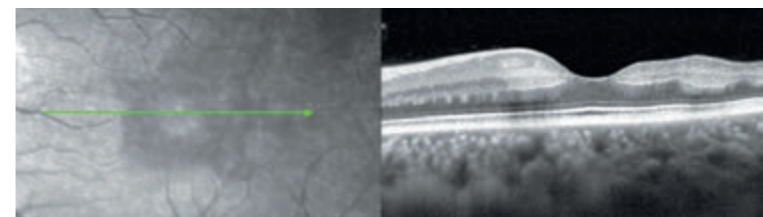


Fig 1. Initial SLO and OCT image of left eye showing paracentral acute middle maculopathy and VA of 20/200.

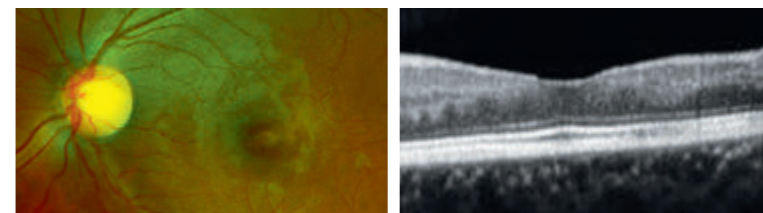


Fig 3. Color fundus and OCT imaging 3-months post tPA shows improvement in vision (VA 20/20) and mild paracentral scotoma.

miraculously in dissolving clots for patients with strokes and heart attacks," says Richard Rosen, MD, Director of Retina Service and Ophthalmic Research at NYEE, who developed the protocol 10 years ago in collaboration with Mount Sinai Health System's nationally recognized Department of Neurosurgery. "This protocol is the best option we now have for saving the sight of patients with central retinal artery occlusion."

For Ms. Ontala, the procedure meant transporting her emergently to another Health System hospital, Mount Sinai West. Waiting for her in an operating room were members of the hospital's neuroradiology team, who stand by 24/7 to treat patients who present

with various forms of stroke at any of Mount Sinai's hospitals. After administering general anesthesia, the team began delivering 22 mg of intra-arterial tPA (tissue plasminogen activator) through a catheter inserted in the femoral artery of the groin, up past the heart to the carotid artery in the neck, and finally to the entrance of the ophthalmic artery in the brain, where the medicine was released.

While treatment of eye stroke with tPA is still being actively studied, neuroradiologists have reported impressive results in patients who were identified and treated early. "In developing this protocol, we were aware of the growing numbers of

success stories involving people with eye stroke who had tPA administered to the ophthalmic artery within the eye," notes Christopher Kellner, MD, Director of the Intracerebral Hemorrhage Program at Mount Sinai and the neurosurgeon who operated on Ms. Ontala. "We know that minimizing the time the clot remains in the eye is critical. And when we use catheters that were recently developed specifically for stroke treatment, it actually becomes a very low-risk procedure."

When Ms. Ontala awakened from the late-afternoon surgery, her vision was still blurry, not uncommon in cases of this type given the retinal swelling from the ischemic injury. But it wasn't long before her world of darkness took a decided turn for the brighter. At one week, vision in her left eye had improved from 20/200 to 20/60. By one month she had progressed to 20/25, and a three-month follow-up visit revealed a remarkable 20/20.

With her new lease on life, Ms. Ontala moved to Milwaukee, where she has family, and has returned to full-time work with a nonprofit educational company there. "I'm fortunate to have had an experienced team of physicians that did everything they could to help me," she acknowledges a year after her ordeal. "To say I'm happy with the results after suffering an eye stroke is an obvious understatement."