AN INTERVIEW WITH…

Johanna T. Fifi, MD

Dr. Fifi shares her insight into current stroke research, her experience in a mobile interventional stroke team in New York City, recent and forthcoming technologic advances, and more.

As Principal Investigator of the NYC MIST trial, can you share the background on why this study is needed and its current status?

Currently, the biggest hurdle in treating patients with emergent large vessel occlusion (ELVO) is access to the appropriate procedure. The devices and procedural technology have advanced to the point that we can successfully open the vessel in > 90% of cases. The issue is that this is a highly specialized procedure that is performed more quickly and efficiently in places and by teams that have experience. Therefore, not every hospital is or should be a level 1 stroke center with access to stroke thrombectomy.

Quickly getting ELVO patients to centers that offer thrombectomy is what sparked this model and trial. We thought that instead of transferring the patient to the center, bringing the procedure to the patient would be quicker. This is because the door-in/door-out time at the primary stroke center (PSC) prior to transfer is always significant—at least 1 hour in studies reported to date. We thus developed the system of enabling some of our system PSCs to deliver thrombectomy by having one of us, as part of a team, travel to those sites to provide the service. This approach appeared to be faster and just as efficient in the actual procedure time.

We have completed the trial in order to prove that this approach is quicker and that use of the mobile interventional stroke team (MIST) results in better outcomes than the drip-and-ship method.

Can you tell us about your experience in a MIST? How did your center's "trip-and-treat" model come about, and how has it evolved with experience?

The team experience has been great. We have involved specialized neurointerventional technologists to cover the sites in our system that do not have routine access to neurointerventional radiology services. They travel with us and also keep the site's equipment maintained. We have evolved in that our volumes have grown, and so at this point, we have some sites where we may have some simple elective cases during the day (eg, angiography and carotid stent placement), keeping the site even more up to date and prepared for stroke cases.

In April 2019, New York City started emergency medical services triage using a clinical scale, which is a set of items that the first responder in the field can use to determine points on a scale for a standardized examination of the patient. This has made these sites even busier. This triage process has made us realize that no systems will ever be perfect. ELVO patients still end up at PSCs, and we need to continue to work to improve the system and speed of transfers to get all patients the care they need.

What recent advancements in mobile triage technologies have had the most impact during the initial stages of stroke assessment and treatment?

We have installed Viz technology (Viz.ai) in our system hospitals. This allows us to have early access to the neuroimaging on our phones. We also use the LVO detection feature to notify our covering physicians, fellows, and technologists, so that they have advanced notice if they need to travel to a site. New York City also has three mobile stroke ambulances that can assess the patient in the field and use onboard teleneurology and CT scanning to deliver tissue plasminogen activator and appropriately and accurately triage patients. However, they can only reach a limited number of patients given the number of stroke ambulances per population.

As an investigator for the COMPASS trial, what do you believe are the biggest takeaways from the recently published findings?

The biggest takeaway for me is that the technology has improved such that the vessel almost always opens once we get to the patient, and having all of the devices at our disposal is important. Aspiration technology and stent retriever technology work equally well and are complementary to each other at times.

Which therapeutic technologic advances—big or small—would you most like to see from future generations of aspiration devices?

Larger-bore catheters are here, and I think they can get even larger. The balance, of course, is trackability. I would like to see a technology that can take us from the arteriotomy site to the site of occlusion in one step.

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Then, once delivered, it works on the first pass. Right now, we first put up a guide, then put in an aspiration or microcatheter, then deliver a stent retriever. One system that goes in all together is the next step for speed. I think we are getting to that point soon.

What are your thoughts on the current research on neuroprotection strategies for acute ischemic stroke, and what might it represent for the future of treating stroke patients?

We have all been disappointed in the past by the neuroprotectants that worked well in the lab but not in patients. However, there are now several trials that are ongoing and in planning stages. I am involved in the planning of one of them that will be used with thrombectomy, and I just hope that one or more of them pans out. I think the strategy of testing these devices in combination with recanalization is key. These agents will buy us time for ELVO patients who need to be transferred long distances before they can get undergo recanalization therapy. I think the early data are very promising. If it works, this will likely open up the window and allow for treatment of even more patients.

Although the past decade saw tremendous growth in endovascular stroke therapy, there remains a large proportion of LVO patients who are not yet receiving optimal care. What needs to happen in the decade ahead to close this gap?

We need to keep on chipping away at systems of care and reorganization of stroke care one region at a time. Prehospital triage is going to be important. Creating hub-and-spoke networks will also be key. In the United States, it is done on a state and regional level. We cannot wait for hospitals to do this themselves. What we have found in New York is that they need things like Department of Health regulations and guidelines, as well as collaboration in groups of interested stakeholders, to guide the creation of integrated, high-quality, regional stroke systems of care focused on the patients and their timely navigation through the emergent part of their care. ■

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