SCIENCE-IN-BRIEF
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TURNING SCIENCE INTO ACTION

Challenges and Opportunities of Endovascular Stroke Therapy

The following is a synopsis of "Challenges and Opportunities of Endovascular Stroke Therapy," which was published in January 2016 in the *Annals of Neurology*.

What is already known on this issue?

Eighty-five percent of strokes can be severe and deadly as a result of large, proximal vessel occlusion. Fast neurovascular imaging with brain computer tomography (CT) and CT antiography (CTA) is critical.

Five randomized, controlled trials published recently provide evidence that outcomes among patients with acute ischemic stroke due to large vessel anterior circulation occlusion can be dramatically improved. The treatment shown to make a difference in these studies is endovascular treatment using stent retrievers (with or without tissue plasminogen activator [tPA]) to open the occluded vessel. In these five trials patients had brain CT and neurovascular imaging, fast and early treatment, and complete or near complete reperfusion.

What is added by this article?

The authors of this article identify transport, teamwork, technology, and training and technique as the challenges and opportunities of endovascular stroke therapy.

Transport: Patients must be routed to centers that can perform endovascular stroke therapy as quickly as possible. Several factors contribute to successful transport. First, paramedics must be enabled to determine which patients have the highest likelihood of being diagnosed with an ischemic stroke resulting from proximal vessel occlusion. This requires training and tools such as validated scoring systems. Secondly, communication between physicians and paramedics during transport should be enabled. Thirdly, a GIS (global information system) should be in place so paramedics know where to go. Policy changes may be necessary for these improvements to take place. Privacy policies might need to be examined so that telemedicine can be during transport.

Teamwork: Endovascular stroke therapy involves multiple physicians, allied health professionals, technicians, and hospital administrators. Organizing teams effectively and instilling a culture of teamwork must be a priority, and a standard-of-care and workflows are needed.

Technology: Gaining access to the intracranial circulation might become even faster with improvements to devices. Safely increasing the effective reperfusion rate might become possible with improvement in technology. New technology is also needed to assist in decision making for triage and transportation.

Training and technique: Additional locations offering the type of endovascular stroke therapy discussed in the article are needed, and more doctors must be trained in the technique.

Patient simulators are a must, because they alone can allow the student to learn how to cope with the many technical challenges, such as a patient who may be uncooperative and even the fragility of the intracranial circulation. Paramedics and other team members also need training on patient stroke care.

What are the implications of these findings?

An exciting opportunity to provide evidence for clinicians making treatment decisions about ischemic stroke now presents itself. The evidence of efficacy of this treatment for ischemic stroke prompts new questions. Can the treatment be used with pediatric populations and in patients beyond six hours of stroke onset? What imaging or clinical criteria should define when endovascular stroke treatment should not be offered?

Resources

Centers for Disease Control and Prevention
Stroke
http://www.cdc.gov/stroke/

Centers for Disease Control and Prevention
Stroke Treatments
http://www.cdc.gov/stroke/treatments.htm

Centers for Disease Control and Prevention
Vital Signs: Preventable Deaths from Heart Disease & Stroke
http://www.cdc.gov/dhdsp/vital_signs.htm

Citation

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National Center for Chronic Disease Prevention and Health Promotion
Division of Heart Disease and Stroke Prevention

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