Stroke care demands radical approach


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Selecting who is likely to benefit from intervention is essential for effective management of acute ischemic stroke. This is where radiologists fit in.

"The goal of imaging is to diagnose the precise type of stroke so that appropriate management can be promptly implemented in each patient," said Dr. Madja Thurnher, an associate professor of neuroradiology at the Medical University of Vienna.

The current standard of practice is to send patients for thrombolytic therapy within three hours of symptom onset. Once this time window has passed, treatments such as intravenous tissue plasminogen activator are not generally considered.

This protocol assumes that all strokes are equal, but in reality they are not, said Dr. R. Gilberto González, chief of neuroradiology at Massachusetts General Hospital. What is needed is a triage protocol that takes account of the differing physiology of acute ischemic strokes.

"Things are changing. We are at a crossroads in terms of stroke therapy," he said. "We are about to change the paradigm."

No more than 6% of potential patients with ischemic stroke receive tPA at present. González blames this low rate on the strict three-hour time window and the marginal cost-benefit ratio. A study of 230 consecutive patients undergoing tPA at MGH, however, revealed how patients' outcome was strongly linked to the precise nature of their stroke, as observed on imaging. The results implied that the tPA success rate could be boosted significantly if it was only offered to patients who had suffered a minor stroke.

"Proximal occlusions make up a minority of strokes, approximately 25%, but they account for the majority of poor outcomes, virtually all the deaths, and the majority of costs. These are the ones that are less likely to be recanalized by intravenous tPA," González said.

Results from recent clinical trials show that the time window for treating stroke could be extended, possibly up to nine hours. These same trials have also validated the concept of an ischemic penumbra, that is, an area of potentially salvageable tissue surrounding infarcted, dead brain. Imaging such as CT and/or MR perfusion can be used to identify the presence of this penumbra.

An increasing number of stroke patients are being treated with endovascular methods rather than thrombolytic therapy, said Dr. Michael Forsting, chair of radiology and neuroradiology at the University of Essen in Germany. He recommends that mechanical recanalization be included in any endovascular repertoire, owing to its ability to dramatically reduce the risk of hemorrhagic transformation and true intracerebral hemorrhage.

Dedicated stroke centers should ensure they have the staff to carry out these techniques day and night and during holiday periods, he said. They should also be prepared to deal with more complex neurovascular cases, since some patients presenting with ischemic stroke symptoms may actually have subarachnoid hemorrhage or a ruptured aneurysm.

"There is no space for small stroke centers. We have to think big," he said. "We need a lot of people who can treat these patients."

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