Medical Xpress

Hospitals with neurology residency programs more likely to administer life-saving clot-busting drugs

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Stroke patients treated at hospitals with neurology residency programs are significantly more likely to get life-saving clot-busting drugs than those seen at other teaching or non-teaching hospitals, new Johns Hopkins-led research suggests.

The findings, described online last week in the journal *Neurology*, suggest that patients at academic medical centers with neurology residency programs likely benefit from having stroke specialists on hand 24 hours a day, seven days a week. These physicians have more experience with the use of tissue plasminogen activator (tPA) and are likely more confident in using the stroke treatment, which can be deadly if used in the wrong situations, the researchers say.

"The use of tPA within three hours of stroke symptom onset increases the chances of a better outcome by 30 percent and has revolutionized stroke treatment," says study leader Yogesh Moradiya, M.D., a neuro-critical care fellow in the Department of Neurology at the Johns Hopkins University School of Medicine. "But the data show there is a massive underutilization of this drug, which is considered the gold standard of treatment for patients with the most common type of stroke. And our research finds that where you are treated seems to determine whether or not you receive it."

Moradiya conducted the research with colleagues at SUNY Downstate

Medical Center in Brooklyn, N.Y., when he was a neurology resident there.

The drug tPA is used only for patients with ischemic stroke, the most common type of stroke, which occurs as a result of an obstruction in a blood vessel supplying blood to the brain. It should not be used in cases of hemorrhagic stroke, marked by bleeding in the brain as the result of a broken blood vessel. Roughly 700,000 Americans each year suffer strokes, which may cause death or serious disability in the form of weakness, loss of sensation, and difficulty with speaking, seeing, or walking.

Nationwide, Moradiya says, approximately 5 percent of ischemic stroke patients receive tPA, which is injected into a vein only after a CT scan is quickly done to rule out hemorrhagic stroke. Researchers believe that approximately 15 percent of ischemic stroke patients could benefit from tPA. The decision to give the clot-busting drug comes after physicians also consider a variety of factors that could increase the risk of deadly bleeding, including size of the stroke, the patient's other illnesses and age.

In the new study, Moradiya and his colleagues analyzed 11 years of data from the U.S. Department of Health and Human Services' National Inpatient Sample, looking at more than 700,000 cases of ischemic stroke. Over the study period, they found that more than 71,000 stroke patients were treated at hospitals with neurology residency programs (10 percent), 207,208 were treated at other teaching hospitals (29 percent), and the rest were treated at non-teaching (community) hospitals. The rate of tPAuse ranged from .96 percent of stroke patients at the 140 hospitals with neurology residency programs in 2000 to 6.25 percent in 2010, from .82 percent in other teaching hospitals to 4.86 percent over the time period, and from .82 percent to 3.83 percent at non-teaching hospitals.

When tPA was first widely adopted, Moradiya says, physicians felt that very old patients, those 80 and older, should not be treated with tPA. Later research, however, found that these elderly patients did just as well as younger ones, so many hospitals have routinely given them the clot-buster since. The new study found that this population routinely gets tPA at the same rate as younger patients at neurology residency program hospitals, but at much lower rates at other hospitals.

"As patients get older, the rates of tPA utilization at hospitals without neurology residency programs go down in a straight line with advancing age," Moradiya says.

He says the reluctance to give tPA at those hospitals could be related to the dangers associated with the drugs. In 6 percent of cases, he says, the drug can cause severe bleeding, but those risks must be weighed against the harm of doing nothing. He says physicians who don't give tPA often may be less up-to-date with recommendations for its proper use, and therefore fearful of administering it, especially to older, sicker patients.

Given his findings, Moradiya says he believes it would be valuable for physicians in hospitals without neurology residency programs to receive continuing education on the current research on tPA in an attempt to get the life-saving medication to appropriate patients more often.

People having strokes typically don't have an option of where to be taken for treatment, as many emergency medical services deliver them to the nearest hospital with a stroke unit (if there is one nearby).

Moradiya says it would be premature to suggest that patients try to be seen at hospitals with neurology residency programs if they are, say, 30 minutes further away. The trade-off in wasted time could be the difference in outcome in an instance where every minute counts. But if future research confirms his results, he says he could see a value in

transporting stroke victims to a hospital where it is much more likely they will receive tPA.

Provided by Johns Hopkins University School of Medicine