Study shows area undamaged by stroke remains so, regardless of time stroke is left untreated

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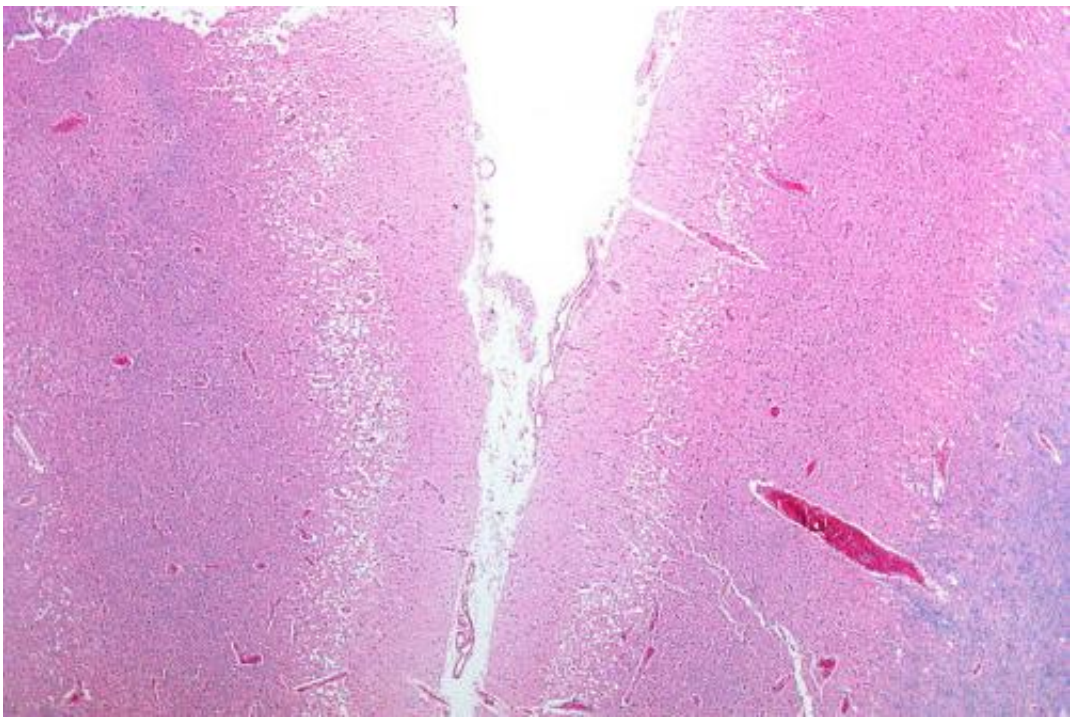

Micrograph showing cortical pseudolaminar necrosis, a finding seen in strokes on medical imaging and at autopsy. H&E-LFB stain. Credit: Nephron/Wikipedia

Radiological imaging is being used more often to evaluate stroke diagnosis and outcomes, with penumbra, or tissue that is at risk of progressing to dead tissue but is still salvageable if blood flow is returned, as a potential target for therapy.

However, there have been few studies about what happens to the penumbra without treatment to restore blood flow through the blocked arteries, known as reperfusion treatment.

A study led by Achala Vagal, MD, associate professor at the University of Cincinnati (UC) College of Medicine and a UC Health radiologist, looked at a group of untreated acute stroke patients and found that there was no evidence of time dependence on damage outcomes for the penumbra but rather an association with collateral flow—or rerouting of blood through clear vessels.

These findings are being presented at the American Society of Neuroradiology's annual meeting May 25 in Washington, DC.

Vagal says their sample size was small—only 110 patients—so larger studies are needed to examine how treatment may differ in a stroke with a delayed or unknown onset time.

"Using a large, multicenter stroke registry, we analyzed all untreated acute stroke patients who received baseline CT angiogram, an X-ray that uses a dye and camera (fluoroscopy) to take pictures of the blood flow in an artery, and CT perfusion, to show which areas of the brain were getting blood, within 24 hours of the onset of stroke, and follow-up CT angiogram or MR angiogram within 48 hours," she says. "Baseline CT angiogram results were reviewed for artery blockages and rerouting of blood flow, and follow-up imaging was reviewed to determine if blood flow was restored."

Vagal adds that CT perfusion was used to determine baseline numbers for the penumbra and that dead tissue was measured on follow up CT and MR imaging.

Results showed that there was no significant correlation between

salvaged penumbra and time; however, there was a correlation between salvaged penumbra and the amount of collateral blood flow, meaning the blood flow that was rerouted.

"Larger studies are needed to understand the natural history of penumbra that could lead to future trials and have treatment implications particularly in delayed or unknown onset time," she says.

Provided by University of Cincinnati Academic Health Center