Stroke Pretreatment MRI May Predict Parenchymal Hematoma

Published on Nutritional Outlook (http://www.nutritionaloutlook.com)

Using MRI to evaluate blood-brain barrier disruption following intracranial hemorrhage may predict severity after intervention.

Blood-brain barrier (BBB) disruption after intracranial hemorrhage (ICH) seen with pretreatment MRI is associated with the severity of ICH after acute intervention, according to a study published in Neurology.

Researchers from the United States and Australia sought to confirm the relationship between the degree of BBB damage and the severity of ICH among patients who received endovascular therapy. The study included 108 patients who had undergone imaging prior to endovascular therapy; 100 were included in the final analysis. The patients were participating in the Diffusion and Perfusion Imaging Evaluation for Understanding Stroke Evolution (DEFUSE)-2 Study. The degree of BBB disruption on pretreatment MRI scans was analyzed, blinded to follow-up data. The BBB disruption was compared with ICH grade previously established by the DEFUSE 2 core lab. A prespecified threshold for predicting parenchymal hematoma (PH) was tested.

Richard Leigh, MD

The results showed that of the 100 evaluable patients, 24 developed PH. Increasing amounts of BBB disruption on pretreatment MRIs was associated with increasing severity of ICH grade. “BBB disruption on the pretreatment scan was associated with PH with an odds ratio for developing PH of 1.69 for each 10 percent increase in BBB disruption, although a reliably predictive threshold was not identified,” the researchers wrote.

“The biggest impact of this research is that information from MRI scans routinely collected at a number of research hospitals and stroke centers can inform treating physicians on the risk of bleeding,” co-author Richard Leigh, MD, a scientist at NIH’s National Institute of Neurological Disorders and Stroke (NINDS), said in a release.

The researchers concluded that the amount of BBB disruption on pretreatment MRI is associated with the severity of ICH after acute intervention. “It is too early to say how these images will be able to help guide clinical decisions, but they can expand how we think about stroke, especially as we try to broaden treatment options for this disease that can have devastating consequences,” Leigh concluded.

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