New Findings May Affect Current Treatments for Epilepsy

Addressing a dysfunction in the blood-brain barrier may help those with epilepsy who respond poorly to anti-seizure meds.

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Thirty percent of individuals with epilepsy, a neurological disease that causes recurrent seizures, do not respond to current seizure medications. But now, new findings published in the Journal Neuroscience hint at new ways to treat and manage these seizures, reports the University of Kentucky (UK).

One of the many factors that cause epilepsy is a defect in the blood-brain barrier (BBB). This complex system separates the brain from the blood and is essential for normal functioning of the nerve cells in this organ. Epileptic seizures erode the lining of capillaries in the brain that let nutrients in and keep out toxins. The result is a leaky BBB, which ultimately leads to more seizures and a worsening of the disease.

For the study, researchers at the UK College of Pharmacy teamed up with scientists from the UK Sanders-Brown Center on Aging to assess leakage in the barrier. Their findings showed that the neurotransmitter glutamate, which is released during seizures, increases the activity levels of two types of enzymes. These enzymes in turn cause the BBB to become leaky.

Scientists also found that blocking and genetically deleting the enzyme cPLA2 could possibly prevent the leakage, suggesting that this enzyme is the key reason for the leakage.

In addition to improving treatment for epilepsy, scientists believe that focusing on cPLA2 could offer therapies to address other neurological disorders associated with BBB leakage.

Click here to learn how chronic conditions, such as epilepsy, can lead to mental health problems for kids.
