Early Warning System Could One Day Predict Epileptic Seizures

Findings show that levels of a molecule in the blood of people with epilepsy rise prior to a seizure.

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According to the World Health Organization, more than 50 million people worldwide have epilepsy, which makes it one of the most common neurological diseases globally. Now, new research published in the Journal of Clinical Investigation reveals that there may be a way to foresee seizures—a common symptom of epilepsy, reports FutureNeuro.

For the study, scientists from FutureNeuro, the SFI Research Centre for Chronic and Rare Neurological Diseases hosted at the Royal College of Surgeons in Ireland (RCSI), monitored blood samples from individuals with epilepsy.

Researchers checked the blood of people with epilepsy from two cities—Dublin and Marburg, Germany—and found elevated levels of fragments from three transfer RNAs (tRNAs) in the blood several hours before a seizure occurred. (tRNAs are chemicals closely related to DNA that play an important role in building proteins within cells.)

When cells are stressed, tRNAs break into pieces. Researchers believe that higher levels of these fragments in the blood may indicate that brain cells are under stress leading up to a seizure.

Many people who live with epilepsy often complain about how difficult it is never knowing when a seizure will happen. But the findings of this study could open the door to developing a system that provides a warning before a seizure strikes, suggested Marion Hogg, PhD, a FutureNeuro investigator and honorary lecturer at RCSI and the lead author of the study.

“New technologies to remove the unpredictability of uncontrolled seizures for people with epilepsy are a very real possibility,” said David Henshall, PhD, director of FutureNeuro, a professor of molecular physiology and neuroscience at RCSI and the study’s coauthor. “Building on this research we in FutureNeuro hope to develop a test prototype, similar to a blood sugar monitor that can potentially predict when a seizure might occur.”

Click here to learn how new findings may affect current treatments for epilepsy.

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