Carpe Diem – Seize the Day Blog

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How do brief sounds influence disordered brain activity in Rolandic Epilepsy? A research team at the University of Tübingen and Tübingen University Hospitals has posited that playing brief sounds while a child with Rolandic epilepsy is sleeping can subdue, in part, the discharge of neurons commonly associated with epilepsy. The group who pioneered this study believes their research could be a foundation for more intensive research into useful treatments for Rolandic epilepsy.

Rolandic epilepsy is a form of epilepsy that only presents in children. The seizures associated with this type of epilepsy usually occur before bed, in the morning, or while asleep. While typically mild and often untreated, Rolandic epilepsy can cause lasting aberrations in cognitive development. These aberrations include, but are not limited to, cognitive performance issues, as well as motor skill underdevelopment. While more research is needed, it is possible that treatments using these methods could have a positive and lasting impact on children with Rolandic epilepsy.

Rolandic epilepsy commonly presents in kids ranging in age from five years old to eight years old and typically goes away about the time they reach puberty. The symptoms of this type of epilepsy include short seizures that cause twitching in the facial area as well as difficulty with speech. The seizures are usually infrequent and relatively benign, so many parents opt out of treating the condition with drugs. However, this can be a problem because the brain function of children with Rolandic epilepsy can be disrupted at a crucial point in their development. Many types of developmental issues commonly occur with Rolandic epilepsy, including difficulty with reading, verbal learning, or attention issues.

Divergences in Brain Activity

Seven children with Rolandic epilepsy, as well as seven unaffected children (the control group) were observed during the study. While the children slept, their brain activity was recorded using electroencephalograms (EEG). The team determined that the unaffected children had different readings than the children with Rolandic epilepsy. A pattern of brain activity associated with the storage of memories (known as sleep spindles) was measured in the children.

These measurements present as spikes on an EEG. The energy and frequency of the discharges may determine how severe cognitive dysfunction is. The researchers came up with an idea. They decided to experiment with short sounds during sleep. Previous studies had determined there is a correlation between a person's diencephalon and their cerebral cortex. They are ultimately responsible for the formation of spikes and the associated sleep spindles. The researchers were

also already aware of the fact that sleep spindles can be altered with sound. Because of this, they surmised that it was possible to disrupt epileptic discharges using the same method. They discovered that they were able to lower the rate of the spikes as well as the strength of the subsequent spikes in Rolandic epilepsy subjects.

Improving Cognitive Function

The study produced normalized sleep spindles on the EEG in the test subjects. This is a sign that the cognitive functions in the cerebrum which lead to the strengthening of memory are working. It is thought that there may be a level of impairment with these functions in Rolandic epilepsy patients.

The hope of the researchers who conducted the study is that their approach will in some measure suppress the negative epileptic discharges correlated with the condition. The goal moving forward is to have a more comprehensive study verify the findings. Many questions remain unanswered, “Will this specific form of spike suppression lead to improvements in children’s cognitive function?” “Could this be used as a therapeutic alternative to drug intervention?” Only time and further studies will tell.

Source:

https://medicalxpress.com/news/2021-10-disordered-brain-rolandic-epilepsy.html

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