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hotline

Study Links Chronic Epilepsy To Lower Brain Cell Production

A new study has shown that chronic (recurrent or long-term) seizures decrease the production of brain cells in the hippocampus, the brain's learning and memory center. Epilepsy has been believed to boost production of new brain cells as a means of repairing injury, but this study is the first to demonstrate how new brain cell production in the hippocampus is affected by chronic, rather than acute (infrequent but severe), seizures.

In this study by researchers from Duke University, rats with chronic epilepsy showed a 75% decrease in new brain cell production in the hippocampus compared to the control group.

The finding may explain why people with chronic epilepsy are prone to learning and memory deficits and depression. This new knowledge of brain cells in chronic epilepsy could lead to treatments that alleviate the learning and memory deficits and mood symptoms that can accompany the condition.

For example, in the future, we could theoretically treat chronically epileptic patients with stem cell factors that induce new neuron [brain cell] production and see if it alleviates their learning and memory problems and depression; or we could prescribe exercise, enriched environment or antidepressants. All of these treatments are known to considerably increase adult brain cell growth in the hippocampus where learning, memory and mood are regulated.

In the study, published in the journal *Neurobiology of Disease*, rats were induced to have seizures and hippocampal injury to mimic humans with temporal lobe epilepsy. Immediately following the acute seizures, there was a 60% increase in new brain cell production in the hippocampus. A respite period with no seizures lasted for 4 to 6 weeks, and then seizures recurred with increasing severity – the chronic phase of temporal lobe epilepsy. During the chronic phase, rats displayed an average 75% decrease in brain cell production.

The study showed that the more frequent the rats' seizures, the fewer new brain cells they produced in the long term and the fewer brain cells their brains produced, the more likely they were to suffer more seizures.

With chronic epilepsy, the brain's wiring is reorganized to become more excitable. The seizures induce changes in nerve cells that make them more susceptible to additional seizures.

The rapid production of new nerve cells following acute seizures was thought to repair damage, however, the study indicates that such rapid brain cell growth actually dispatches cells to the wrong places and contributes to abnormal brain circuitry.

Epileptologists : Epilepsy Specialists

Epilepsy as a specialty did not enjoy widespread visibility until after World War II. The invention of the EEG, modern Neurosurgical practices, and substantive clinical and basic research helped the field develop. The Veterans Admin. spearheaded the movement by establishing Epilepsy Centers in the 1970's launching epileptologists—a new breed of Neurologist who began to specialize in the treatment and research of epilepsy.

In addition to patient care, an Epileptologist must concurrently be engaged in research. These specialists also teach others in the Health field (medical students, Neurology residents, etc.) as well as researchers in training (predoctoral, postdoctoral).

Finally, an Epileptologist is concerned about the non-medical issues of epilepsy (social injustice, driving regulations, access to employment and healthcare, quality of life).

KANSAS EPILEPTOLOGISTS

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The field of Epilepsy is justified in saying it has now matured and flourished into a major force within the medical community.

Yet, currently most epilepsy patients do not ever see an epileptologist. Family practitioners, general practitioners, internists, or pediatricians treat most. For patients which appear to be more difficult to manage, referrals are made to Neurologists or Neurosurgeons for another level of care. Finally, the highest level of expertise is the epileptologist. They are usually very busy seeing medically intractable patients, patients with difficult to diagnose spells, pseudoseizures, and epilepsy surgical candidates.

If a patient is not satisfied with their seizure control, or the quality of life they are experiencing on their current seizure treatment regimen, it may be appropriate to seek an epileptologist.

Study Suggests Zonegran May Reduce Seizures in Infants

A new study suggests that the antiepileptic drug Zonegran could possibly reduce or eliminate seizures in infants up to 1 year old.

The new data was reported by Angus Wilfong, MD, of Texas Children's Hospital, Division of Neurology. Wilfong studied 50 patients with an average of 7 months, most of whom suffered from generalized seizures.



After being treated with Zonegran, 29 patients experienced at least a 50% reduction in seizure frequency, and 14 patients were seizure free. Though the study demonstrated success, Wilfong said that further investigation into Zonegran for treatment of epilepsy in infants is warranted.

Early Detection of Infant Epilepsy

Athena Diagnostics (AD), a US-based reference lab dedicated to the development of diagnostic testing for neurological disorders, was recently granted a license by Bionomics, an Australia-based company, to market a gene-based test that allows for the early detection of infant epilepsy that has a high mortality rate.

85% of children that develop infantile spasms do so before the age of 12 months; most stop having spasms by age 5. For 40% of those cases, infants whose cause for the spasms are not known have very good prognoses. But for those infants that have symptomatic causes for their spasms, there is not a good prognosis. As many as 20 percent may die before age 5. As many as 240,000 children in the US could be candidates for the test, according to AD. The test should be on the market in 2005.

AD expects to use the revenue generated by the use of the test to help them improve their epilepsy research. The revenue will provide the basis for fast-tracking their epilepsy drug-discovery program to provide improved treatment strategies for patients with epilepsy.

Adult Epilepsy Support Group

Group meets @ 6:30 PM
Second Tuesday of month at:
The Arc, 2919 W. 2nd St., Wichita

NEXT MEETINGS:

February 8
March 8

Glimmer Group

Parent's Support Group

Saturday, February 12th 10:00 am - Noon
2919 W 2nd Street, Wichita

*A support group for parents (and family)
of children affected by seizure disorders.*

E-NEWS available

Do you have an email address? Help us conserve paper & cut costs by mailing directly to your email box. Send an email to us at ERC@arc-SedgwickCounty.org with subject "Add E-News"

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Don't Miss Our Quarterly
Glimmer Group Meeting
on
SATURDAY, Feb. 12th!!

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