News / Calgary

Lethbridge researcher makes a scientific breakthrough after his son's seizure

Dr. Artur Luczak began studying epilepsy at the University of Lethbridge after his infant son suffered a seizure and has emerged, four years later, with a new discovery

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Dr. Artur Luczak, a researcher in the University of Lethbridge, began studying epilepsy after his infant son had a seizure four years ago.

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It was the middle of the night when Dr. Artur Luczak discovered that his infant son was suffering from a seizure.

"Such things are the worst moments in someone's life," he said. "I work in neuroscience, so I knew about seizures and have seen them happen, but when it's your own child who's unconscious and jerking…it's really something different."

Fortunately, Luczak's son is a now healthy four-year-old who suffered his seizure as a result of a fever. But, even years later, the effects of the experience have lived on through his new scientific discovery.

Luczak, a neuroscientist at the University of Lethbridge, was already studying the basic properties of the brain, but after witnessing his son's seizure he turned his eye toward understanding epilepsy.

"(My son) will probably be free of epilepsy," he said. "But, nevertheless, that was a big moment for me to decide that I should start doing some research in this area, because I can contribute to it."

Luczak explained that the two types of neurons in the brain, excitatory and inhibitory, play a large part in seizures. Comparing it to a car, Luczak said the excitatory neurons

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are the accelerator and the inhibitory neurons are the brakes, and the two work to balance one another to keep the brain moving at the right speed.

It's been widely believed that in influx of excitatory neurons are at the root of the cause, but through a collaborative study with U of L's Dr. Bruce McNaughton and Stanford University, Luczak has found that this isn't the whole story.

"By looking more closely at the cells, we found that a surprisingly large contribution to the brain activity during a seizure is from the inhibitor (neurons)," he said. "This tells us that things are much more complicated than we thought."

Although the research may not provide any quick answers on how to treat epilepsy, Luczak said it now opens new doors to understanding how seizures work.

"We want to know how these seizures are hijacking regular brain activity," he said. "And I think this is putting us on a better path."

The study was recently published in the neurology journal *Brain*, and Luczak is already looking at how to advance this new discovery.

"It's not a 'eureka' moment," he said. "It was a lot of work, but in the end it paid off because we found something that other people didn't know before and that opens so many possibilities of testing different treatments."

Luczak said that epilepsy is a complicated disorder, and that there's plenty left to discover, but the next step is to manipulate activity on the inhibitory neurons (the brakes, if you will). He said he hopes a pharmacological treatment could be created to keep others from experiencing the same fear he had while he held his son's unconscious body in his arms four years ago.

"It's something every father would like to avoid, having this inspiration, but it happened," he said. "And I stated to do something about it."

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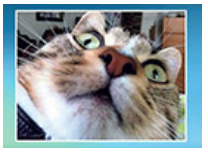

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