

Relation between stress-precipitated seizures and the stress response in childhood epilepsy

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Objective – Anecdotal reports in the clinic show that stress can exacerbate seizures in people with epilepsy. One reason for this could be a subjective bias in how events are recalled i.e. something as unpredictable as a seizure can be viewed as stressful when looking back. However, scientists have shown a correlation of seizure frequency with stress even in laboratory animals, suggesting that perhaps there are definite neurobiological mechanisms at play. Stress causes activation of two pathways – the sympathetic nervous system responsible for the ‘fight or flight’ reaction we’re familiar with, and the hypothalamic–pituitary–adrenal (HPA)-axis. The latter is a slower response and involves release of a stress hormone called cortisol. Both systems can cause an increase in excitability of neurons, potentially leading to seizures. Authors of a [recent study](#) studied the relationship between stress and seizures in children with epilepsy; children without epilepsy were controls. Children were given a seizure diary to capture daily seizures and were administered a test that produced acute stress and the level of cortisol in their saliva was tested.

Results – The diaries showed a positive relationship between stress and seizures in a subset of children with epilepsy. In these children, the acute stressor test revealed a decreased cortisol response to stress.

Interpretation – A positive relationship between stress and seizures could be attributed to a subjective recall bias, or due to factors like fatigue or a lack of sleep. This study shows a neurobiological mechanism that could underlie this relationship.

Short summary for scientists – A positive relationship between stress and seizures in subjects with epilepsy has been observed, but not entirely understood. In [this](#) study in children with epilepsy, the authors administered the Trier Social Stress Test for Children – a standardized acute psychosocial test – and found a blunted cortisol response in children with epilepsy that had stress-sensitive seizures. Children with epilepsy without stress-sensitive seizures did not show the blunted cortisol response and neither did controls. By unraveling the biological mechanism of stress-related seizures, one can envision novel therapies for stress-related seizures.

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