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**P22. Febrile Seizures: An Appropriately Aged Model Suitable for Long-Term Studies**

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Seizures induced by fever are the most prevalent age-specific seizures in infants and young children. Whether they result in long-term sequelae such as neuronal loss and temporal lobe epilepsy is controversial. Prospective studies of human febrile seizures have revealed no adverse effects on the developing brain. However, adults with temporal lobe epilepsy and associated limbic cell loss frequently have a history of prolonged febrile seizures that occurred in early life. These critical issues may be resolved using appropriate animal models. In published descriptions of models of hyperthermic

seizures, "adolescent" and older rats have been used, a low percentage of animals with actual seizures has been yielded, or the animals have suffered from a high mortality, rendering them unsuitable for long-term studies. The goal of this study was to establish an age-appropriate model of febrile seizures that would be useful for studying the mechanisms of these seizures. Hyperthermia was induced in infant rats using a regulated stream of mildly heated air, and the presence of seizures was determined by both behavioral and electroencephalographic (EEG) criteria. Stereotyped seizures were generated in 93.6% of 10- to 11-day-old rats. EEG correlates of these seizures were not evident in cortical recordings but were clearly present in depth recordings from the amygdala and hippocampus. Prolonged febrile seizures could be induced without burns, yielding a low mortality (11 %) and excellent long-term survival. An infant rat paradigm of EEG-confirmed, hyperthermia-induced seizures that is suitable for long-term studies is described. This model should be highly valuable for studying the mechanisms and potential sequelae of febrile seizures.

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