Sleep state-dependent mechanisms of sudden unexpected death in epilepsy

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HOST: Dr. Thimmasettappa Thippswamy

PIZZA SERVED!

About 4% of the population will develop epilepsy during their lifetime. Approximately one-third of these patients will be refractory to medical therapy and are at high risk for sudden unexpected death in epilepsy (SUDEP). SUDEP is the leading cause of death in these patients. Among neurological diseases, SUDEP is second only to stroke in terms of years of potential life lost to disease, and thus is an important public health problem. While relatively little is known about factors leading to SUDEP, evidence suggests SUDEP results from cardiorespiratory dysfunction triggered by a generalized convulsive seizure. An additional consistent feature of SUDEP is that it frequently follows seizures that occur during sleep. There is some evidence that reduced supervision and thus delayed resuscitation during sleep, and prone sleeping position contribute to the increased likelihood of death from a nocturnal seizure; however, sleep state has independent influence on seizure propensity, breathing, and cardiac function that may also contribute to death. A major focus of our research is to understand mechanisms by which seizures which occur during sleep become fatal. Understanding these mechanisms may help us understand why SUDEP occurs at all, and reveal novel therapeutic and prophylactic strategies for this terrible disease.