G8 Sudden Death in Epilepsy: A Review of 51 Consecutive Cases

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After attending this presentation, attendees will be able to list the risk factors for sudden death in epilepsy, discuss pathophysiological mechanisms for sudden death in epilepsy, and address the role neuropathological examination in epilepsy cases.

The presentation will impact the forensic community by providing a broader understanding of the role of seizures in sudden death as well as the role of detailed neuropathological examination in characterizing such cases. The presentation will also identify two additional subgroups of epilepsy patients and provide attendees of an enhanced understanding of causes of death in epilepsy patients in general.

Sudden unexpected death in epilepsy (SUDEP) is a well-known but poorly understood phenomenon. While certain risk factors are consistently associated with SUDEP, the pathophysiological mechanism for sudden death remains speculative. Autopsy data from 51 consecutive cases with a history of "seizures" and who underwent complete autopsy, including toxicology and neuropathological examination were reviewed. A board-certified neuropathologist completed the neuropathological examination in 50 of the 51 cases. Of 51 cases, 24 (47%) met criteria for SUDEP (history of epilepsy, sudden unexpected death, no other cause of death, no status epilepticus). Of the cases meeting criteria for SUDEP, 15 (63%) were male and nine (37%) were female, with a mean age of Fourteen were found in bed, none were found outside, and eight were lying prone. Seven (29%) had evidence of tongue biting. Fourteen were treated with a single antiepileptic drug. Two were receiving polytherapy. General autopsy revealed pulmonary edema in 17 (71 %) cases. Twelve of 19 cases had childhood onset of epilepsy. Neuropathological examination revealed significant abnormalities in 67%. Among these were remote contusions, vascular malformations, hamartomas, mesial temporal sclerosis, and migration disturbances. Of cases excluded from the SUDEP category, two groups were apparent: one with complex neurological disorders in children complicated by seizures (CND-S), and the second with atherosclerotic cardiovascular disease in older decedents complicated by seizures (ASCVD-S). No acute cause of death was apparent in a number of these cases, raising the possibility that seizures could have played a role. In conclusion: 1) cases discussed indicate general SUDEP risk factors consistent with the published literature; 2) the percentage of cases with significant neuropathological findings is higher than indicated in other studies, emphasizing the need for detailed neuropathological examination (formalin fixation and examination by a neuropathologist); and 3) two additional subgroups, ASCVD-S and CND-S, are in need of further study regarding the role of seizures in sudden death.

Epilepsy, Sudden Death, Seizures

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