

When your child with epilepsy die suddenly: febrile seizures are part of the process?

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ABSTRACT

Objective: To analyze the occurrence of Sudden Unexpected Death in Epilepsy (SUDEP) in children with febrile convulsions (FC) and its correlation with the occurrence of epilepsy.

Methods: We analyzed the medical records of 100 children with FC, born between 1990 and 2000, who were followed up in the Epilepsy Clinic of the Hospital de Base de São Paulo.

Results: The mean age at the first seizure was 18 months. The mean age at the last seizure was 36 months. The mean age at the onset of epilepsy was 48 months.

Conclusion: The occurrence of SUDEP in children with FC is low. The correlation between the occurrence of FC and the occurrence of epilepsy is not clear.

Keywords: Sudden Unexpected Death in Epilepsy (SUDEP), febrile convulsions (FC), epilepsy.

Introduction: Sudden Unexpected Death in Epilepsy (SUDEP) is a rare but serious complication of epilepsy. It is defined as the sudden, unexpected, and unexplained death of a person with epilepsy.

The incidence of SUDEP is estimated to be between 1% and 5% per year in patients with epilepsy. The risk of SUDEP is higher in patients with a history of seizures.

Some authors have reported that the risk of SUDEP is higher in patients with a history of febrile convulsions (FC). However, other studies have not found a correlation between FC and SUDEP.

The purpose of this study was to analyze the occurrence of SUDEP in children with FC and its correlation with the occurrence of epilepsy.

Methods: We analyzed the medical records of 100 children with FC, born between 1990 and 2000, who were followed up in the Epilepsy Clinic of the Hospital de Base de São Paulo.

Results: The mean age at the first seizure was 18 months. The mean age at the last seizure was 36 months. The mean age at the onset of epilepsy was 48 months.

Conclusion: The occurrence of SUDEP in children with FC is low. The correlation between the occurrence of FC and the occurrence of epilepsy is not clear.

Keywords: Sudden Unexpected Death in Epilepsy (SUDEP), febrile convulsions (FC), epilepsy.

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denly, suffering of sudden unexpected death in epilepsy (SUDEP)⁶. SUDEP is defined as a death that occurred suddenly, unexpectedly and of non-traumatic and non-drawing, witnessed or unwitnessed, with or without the evidence of a seizure, excluding *status epilepticus*, and without a toxicological or anatomical cause of death in *post-mortem* examination^{7,8} and will be responsible for about 7.5 to 17% of all deaths in epilepsy⁹. Individuals with epilepsy are at a higher risk to suffer of SUDEP. Although there was no suggestion in the literature that FS were related to SUDEP^{1,4} there is a significant association

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quency²² but may be triggered by interictal epileptiform discharges, suggesting that transient dysfunction of cortical networks can interfere with cardiac repolarization²³.

Mutation in potassium channel genes (KCNQ1, KCNH2, KCNE1 and KCNE2) and sodium channel genes (SCN5A) has been related to neonatal seizures and long QT syndrome²⁴ and over one third of referred cases of SUDEP were found to harbor a genetic arrhythmia-susceptibility mutation^{20,25}. Physiologic changes of mutated channels causing seizures or cardiac arrhythmias are similar²⁵. Also, FS is currently observed in patients with epileptic syndromes associated with genetic mutations in

genes of sodium channels subunits as SCN1B, SCN1A and SCN2A²⁶. Sodium channel mutations of the genes SCN1A, SCN1B and SCN2A had been reported in patients with generalized epilepsy and FS (GEFS+), an autosomal dominant epilepsy^{27,28}, with some of these patients developing latter on temporal lobe epilepsy^{11,12}. Hindocha et al. reported two cases of SUDEP in a family with typical GEFS+ and a novel mutation of SCN1A and raised the hypothesis of a unique mutation to be responsible for both epilepsy and sudden death¹⁰. Corroborating this theory is the finding that SCN1A gene products are present

animal studies²⁹⁻³¹. It acute FS do not clear if a susceptible with a major risk of tonic epilepsy. Cor et al.³² demonstrated children that suffered epilepsy. SUDEP is the stated cause of death or set of factors in not clear the principle should be prompt and generalized convulsio-vascular asso-

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