G17 Sodium Channelopathies Linked to Sudden Cardiac Death (SCD) - What is the Meaning of Carrying a Genetic Mutation?

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The goal of this presentation is to describe the use of genetic testing directed toward identifying sodium channel mutations linked to Sudden Cardiac Death as a diagnostic tool in the forensic field.

This presentation will impact the forensic community by developing guidelines on how to approach the results of postmortem molecular analysis of Sudden Cardiac Death Cases and the immediate consequences of genetic testing of the relatives.

Mutations in the SCN5A gene have been linked to a variety of diseases causing sudden cardiac death, with important variability in expression and phenotypic overlap. With the availability of postmortem molecular analysis and genetic testing of family members, it is now possible to identify carriers based solely on the presence of the genetic defect. Clinical decision making in this situation is complex and generates important ethical and medico-legal issues.

Two families, 24-328 and 24-588, originally diagnosed with Brugada syndrome after the probands experienced cardiac arrest. Clinical and genetic analysis in their members were performed. Both families had members with various electrocardiographic abnormalities including some with Brugada syndrome, long QT syndrome and conduction system disease. Both families had an important family history of sudden cardiac death. Direct sequencing of exons and exon-intron boundaries of the sodium channel gene SCN5A identified mutations in both families.

These two families illustrate an increasingly common scenario when encountering families with ion channelopathies. Because defibrillator is the only available therapeutic option at present in Brugada syndrome, physicians and forensic pathologists will be faced with extremely difficult therapeutic decisions that also have important legal, social and ethical implications, especially in children. These data indicate the need to develop guidelines on how to approach the results of postmortem molecular analysis and genetic testing of the relatives as well, especially in asymptomatic individuals.

Sudden Cardiac Death, Genetics, Brugada Syndrome

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