H87 Autism Spectrum Disorder (ASD) and Sudden Cardiac Death: Is There a Link? A Case Report and a Literature Review

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Learning Overview: The goal of this presentation is to investigate an association between ASD, the use of antipsychotic drugs, and sudden cardiac death.

Impact on the Forensic Science Community: The ASD and the use of antipsychotic drugs may be the cause or a risk factor of sudden cardiac death. This presentation will impact the forensic science community by focusing on the association between ASD, the use of antipsychotic drugs, and the sudden cardiac death in young people in order to obtain a reliable postmortem diagnosis.

ASD is a neurodevelopmental disorder, including qualitative impairments in social interactions and communication with repetitive and stereotyped patterns of behavior.[1] In 2010, there were an estimated 52 million cases of ASDs around the world affecting 60–70 children per 10,000.[2] Males are affected about four times more frequently than females.[2] Compared with mortality statistics from the general population or general population controls, the risk of premature mortality has been estimated to be two-fold to ten-fold higher in the ASD population.[3] Sudden unexplained death has been noted as a cause of death in individuals with autism, above all among those who also have the comorbid condition of epilepsy or intellectual disability.[2] There is an increased mortality in ASD due to diseases of nervous, circulatory, respiratory, and digestive systems, as well as congenital malformations.[3] A systematic review demonstrated that people with ASD have an increased risk of sudden cardiac death; Bilder et al. identified cardiac, respiratory, and epileptic events as the most common causes of death.[3] The use of antipsychotic drugs has been related to sudden death, too. The most severe consequences of treatment are arrhythmias and sudden cardiac death due to blockade of cardiac channels.

Case Report: A 30-year-old male with ASD, oligophrenia, and hyperkinetic syndrome was in a psychiatric clinic. He had undergone antipsychotic therapy for 15 years and would self-harm, including fingernail abrasions and blunt injuries. One morning, he was found dead on the floor of his bathroom by a nurse. A crime scene investigation was performed; the hospital room was tidy and only a bloodstain on the floor was detected. The postmortem examination was unremarkable. A complete autopsy was performed two days after death. Cervical and thoracic organs were dissected with Virchow's technique (one by one). The macroscopic examination of the brain was unremarkable. After fixation, the heart was examined. There was thickening of the left ventricular wall with asymmetrical hypertrophy with a maximal increase in the interventricular septum. A histological examination of all organs using Hematoxylin-Eosin (H&E) was conducted. H&E samples of the heart showed hypercontraction of cardiomyocytes; extremely short sarcomeres; the breakdown of the whole contractile apparatus; eosinophilic cross-bands and a granular aspect of the whole cell, and finally contraction band necrosis. According to macroscopic and microscopic autopsy findings, death was caused by sudden cardiac death.

Shavelle et al. showed that 22 of 200 deaths in ASD patients were due to cardiac disease.[4] Another study attributed the death of patients with ASD in 6 of 25 cases. Moreover, the use of antipsychotics drugs has been recognized as an independent risk factor for sudden cardiac death. In conclusion, using the medical records, crime scene investigation, macroscopic and microscopic heart findings, previous literature, and the use of antipsychotic drugs, this death was attributed to a sudden cardiac death.

Reference(s):

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Autism Spectrum Disorder (ASD), Antipsychotic Drugs, Sudden Cardiac Death

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