



Pathology/Biology Section - 2015

H66 Cardiac Arrest During Police Restraint in a Man With Catecholaminergic Polymorphic Ventricular Tachycardia (CPVT): Frightened to Death?

*Ashwyn Rajagopalan, MD**, 25 Morton Shulman Avenue, Toronto, ON M5T 1V1, CANADA; and *Michael S. Pollanen, MD*, Ontario Forensic Pathology Service, 25 Morton Shulman Avenue, Toronto, ON M3M 0B1, CANADA

After attending this presentation, attendees will be able to better ascribe the cause of death in these controversial cases and will understand the role of the molecular autopsy in cases of sudden death.

This presentation will impact the forensic science community by highlighting the value of the molecular autopsy and by revealing how an evolving knowledge base can lead to reinterpretation of existing genetic data.

Instances of sudden and unexpected death while in police custody remain complex and controversial cases in forensic pathology, providing unique diagnostic challenges. In general, the circumstances of these cases have resulted in two major theories to account for these deaths: “excited delirium syndrome” and positional (restraint) asphyxia; however, some cases that are not easily explained by one of these theories may be best explained by a theory from another emergent area in forensic pathology, non-structural genetic heart disease. One such case, a sudden arrhythmic death during struggle/restraint, is presented.

A 45-year-old man with developmental delay was walking outdoors, when, in a tragic case of mistaken identity, he was identified as a suspect by police officers, who attempted to take him into custody. He resisted this arrest violently. He was taken to the ground and restrained in a face-down position, from which he moved his extremities and pushed his chest off the ground. He was subsequently observed to be cyanotic and non-responsive. He was placed into a recovery position and resuscitation attempts were started. Paramedics found him to be asystolic. He was transported to the hospital and pronounced dead. The interaction with police was too brief to account for an asphyxial death. There was no history of a delirious state.

At autopsy, there were minor external blunt force injuries and small hemorrhages within the neck, arms, and back. The heart showed mild cardiomegaly with concentric left ventricular hypertrophy and sub-occlusive atherosclerotic luminal stenosis. Toxicological testing was negative for common drugs, including cocaine and its metabolites. Postmortem molecular testing demonstrated this man to be heterozygous for a catecholaminergic polymorphic ventricular tachycardia (CPVT) associated mutation (Phe189Leu) in the Calsequestrin 2 (CASQ2) gene. This mutation was initially classified as class II mutation (unknown significance), which would be expected to cause disease in a heterozygous state. Subsequently, the mutation was reclassified as a class I mutation (deleterious) that may cause disease in a heterozygous state. The cause of death was cardiac arrhythmia precipitated by struggle/restraint in a man with CPVT. This case illustrates the difficulty assigning a scientific cause of death in rare and controversial cases, the value of the molecular autopsy in identifying disease causing mutations, and how an evolving knowledge base can lead to reinterpretation of genetic data.

CPVT, Police Restraint, Molecular Autopsy