G48 Sudden Death and Fatty Liver Disease

Michael E. Archer, MA, New York Forensics, Inc., 1039 Main Street, PO Box 28, Fishkill, NY 12524-0028; and Dennis J. Chute, MD, and Kari B. Reiber, MD, Office of the Medical Examiner, Dutchess County Department of Health, 387 Main Street, Poughkeepsie, NY 12601*

The objective of this presentation is to draw attention to the alarming prevalence of non-alcoholic fatty liver disease in the obese population and to a potential increase in sudden fatty liver deaths. The need for a thorough medicolegal investigation and autopsy will be emphasized, since a better understanding of the mechanism of death in such cases may have clinical consequences for both alcoholics and non-alcoholics with fatty liver disease.

The prevalence of non-alcoholic fatty liver disease in the general population may signal an increase in the number of sudden deaths in which fatty liver disease is the sole pathologic finding at autopsy. This presentation will impact the forensic community by. The forensic pathologist should be prepared to carefully investigate these deaths, since the opportunity to better understand the mechanism of death in such cases may induce clinicians to recommend routine EKG studies in obese patients and alcohol abusers.

The sudden death of a teenager with non-alcoholic fatty liver disease (NAFLD) prompted us to question the mechanism of death in individuals whose sole pathologic observation at autopsy is fatty liver disease. From a clinical stand point, NAFLD is recognized as a leading cause of chronic liver disease, and has been associated with obesity and insulin resistance. According to recent studies, the prevalence of NAFLD in the United States now exceeds 30% and probably mirrors the prevalence of obesity in the general population. One would therefore expect forensic pathologists to see a surge of NAFLD cases at autopsy, regardless of the cause and manner of death.

A 17-year-old morbidly obese female non-drinker with an unsubstantiated history of mild mental retardation, sleep apnea, and insulin resistance died suddenly and unexpectedly. She was found face down on her futon-style bed, clad in shorts and a tee-shirt. She was 5'5" tall and weighed more than 240 lbs. The only abnormal finding at autopsy was a 2490 g pale yellow-tan liver with greasy consistency. Microscopy showed marked fatty change with focal bridging fibrosis and spotty lobular inflammation. A toxicology therapeutic and abused drug screen was negative, and vitreous glucose was less than 20 mg/dl. In the absence of any other findings of significance, the mechanism of death was assumed to be a cardiac arrhythmia, and the cause of death was certified as "Sudden Death Associated with Non-alcoholic Fatty Liver Disease and Morbid Obesity". Forensic pathologists have long been familiar with cases of sudden, unexpected, non-violent deaths in alcoholics with autopsy findings limited solely to fatty liver. The mechanism of death in such cases is not well understood. In a review of the literature, one current theory proposes that a prolonged QT interval may be triggered by alcohol withdrawal induced hypoglycemia complicated by low potassium and magnesium concentrations.

The anatomic pathology of alcohol-related fatty liver disease and non- alcoholic fatty liver disease is the same. Absent any other factor contributing to death, the mechanism of death may also be the same.

A thorough medicolegal investigation of the circumstances of death and medical history, a careful autopsy, and of standardized histologic grading systems for fatty liver are recommended in all cases of sudden death with fatty liver disease as sole pathologic finding in order to better understand the mechanism of death. An increase in NAFLD deaths may justify the need for routine electrocardiograms in obese individuals and alcohol abusers of all ages.

Fatty Liver Disease, Prolonged QT Syndrome, Sudden Death

 ** Presenting Author*