G16 Autopsy Investigation and Bayesian Approach to Coronary Artery Disease (CAD) in Victims of Motor Vehicle Accidents

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After attending this presentation, attendees will understand the importance of coronary artery disease in causing motor vehicle accidents. Each year 1.2 million people die world-wide as a result of motor-vehicle accidents and the prevalence of injuries is estimated at 50 million, representing a tremendous burden to health. The objective of this study was to define the prevalence of coronary disease and its possible role in motor-vehicle accidents.

This presentation will impact the forensic science community by discussing the data regarding the important percentage of evidence of acute myocardial ischemia in traffic accidents.

Consecutive cases of non-hospital sudden death autopsies between 2002 – 2006 were examined. The research focused on those individuals victims of motor vehicle accidents. A total group of 1,260 individuals in the area of West Quebec were identified. Severe coronary artery disease (CAD) was defined as a narrowing of ≥ 75% cross-sectional area or acute plaque events in major epicardical coronary arteries. In order to evaluate the probability of fatal accidents caused by the presence of significant coronary disease, a *Probabilistic Expert System* (PES) was applied.

Motor-vehicle accidents were responsible for a total of 123 deaths (63%); 100 (81.3%) were males and 23 (18.7%) were females. In individuals over 40 there was significant coronary artery disease in 64.1%, with evidence of acute myocardical ischemia in 12%. In decedents older than 60 years, the prevalence of significant coronary disease and ischemia were 84.6% and 18.18% respectively. Two-thirds of the coronary patients were identified as having erratic driving behavior by bystanders before the accident. ETOH was detected in 11.8% and drugs in 4.9% of the drivers. Statistical analysis showed that an individual affected by coronary artery disease has an accident with a probability of 0.09 (9%).

This research data shows that there is a very high prevalence of severe coronary artery disease in individuals who have suffered a motor- vehicle accident. In an important percentage there is evidence of acute myocardial ischemia. In contrast with previous statements, a large group of the coronary drivers who died, had no time to control and stop the car before the accident. This evidence has important implications for driving safety.

Motor Vehicle Accident, Coronary Artery Disease, Autopsy Investigation

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