



Pathology Biology Section – 2009

G52 Commotio Cordis: A Forensic Science Perspective

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After attending this presentation, attendees will have an enhanced understanding of the prevalence, pathophysiology, and important forensic science issues related to commotio cordis and the ability to apply this knowledge to their practice should it become necessary.

This presentation will impact the forensic community by providing a broad and thorough review of the current literature and scientific knowledge about commotio cordis, with particular emphasis on key issues relevant to forensic scientists. Included in the discussion will be several published case examples of commotio cordis, as well as several case examples of commotio cordis investigated in the State of Missouri.

The presentation will begin with detailed criteria for what type of

deaths do and do not constitute commotio cordis. Mention will be made of the prevalence of commotio cordis and common involved activities, with specific published case examples involving sports activity and a low speed vehicle collision. Case reports resulting from a retrospective search of cases in Missouri will be presented.

Attention will next be focused on animal models used for the study of the pathophysiology of commotio cordis. The theory of "mechano- electric coupling" of myocyte stretching and the opening of potassium/ATP channels will be discussed. Lessons learned from various experiments using animal models will be presented, including the importance of hardness of sports objects and effectiveness of chest protectors.

The presentation will include several issues of particular interest to medicolegal investigators and forensic pathologists. Typical as well as atypical case histories of commotio cordis will be presented, stressing the importance of proper scene investigation and obtaining medical history. There will be a review of possible autopsy findings seen in cases of commotio cordis. Finally, controversies regarding manner of death in atypical cases of commotio cordis will be discussed.

Commotio Cordis, Precordium, Manner of Death