



Pathology & Biology Section – 2008

G65 Death Caused by Cardioinhibitory Reflex: Myth or Reality?

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The goal of this presentation is to inform the medicolegal community about the different practices in using the cardioinhibitory reflex.

This presentation will impact the forensic science community by informing the medicolegal community about the mainstream opinion.

It has been known for hundreds of years that pressure applied to the carotid sinus region may result in unconsciousness and convulsions. Hering and Heymans demonstrated that stimulation of the carotid sinus region results in a number of reflexes, with effects on the cardiac rhythm, vascular tonus, and respiratory function. Ever since, a number of reports dealing with cases of death after mechanical pressure (such as strangulation, short-termed neck trauma and/or other traumatic injuries) against the carotid sinus region were published in the literature. The autopsy signs were the lack of local vital signs (such as absence of congestion, cyanosis, petechiae), indicating a very short agony possibly due a reflex mechanism.

In recent times, there has been an observed increase in numbers of clinical forensic cases in which the victim have suffered neck compression. Some victims show suggestive signs (e.g., petechiae, bruises). Other victims do not show any objective signs but anamnestic subjective symptoms are consistent with neck compression. The role of the forensic expert is to evaluate if there was life endangerment subsequent to compression based on objective and subjective findings.

The question whether 'violence against the neck may cause life endangerment by cardio-inhibitory reflex' is often the subject of discussion in medicolegal practice. The answer to this question may have important consequences in penal jurisprudence, particularly in cases in clinical forensic medicine.

In order to evaluate this question we mailed six questions in the frame- work of a qualitative and quantitative study to the members of different organisations of legal medicine: IALM, AAFS (International listing), NAME, French Society of Legal Medicine, German Society of Legal Medicine, and the Swiss Society of Legal Medicine.

The survey was conducted by E-Questionnaire based on the opinion, experience, and collaboration of several experts from about thirty countries.

The two principle questions were: (1) can cardioinhibitory reflex subsequent to neck injury cause death (forensic pathology)? And (2) can cardioinhibitory reflex subsequent to neck injury cause life endangerment (clinical forensic medicine)?

The questions required the participants to specify how often they made this kind of diagnosis and on which criteria they based their conclusions. Criteria for forensic pathology included the following: provided information, postmortem examination (macroscopic), histological examination, complementary investigations (such as medical imaging), or by elimination.

Criteria for clinical forensic medicine included the following: provided information, subjective findings (such as spots before the eyes, loss of consciousness), objective findings on the victim, complementary investigations (such as medical imaging), or by elimination. Other variables concerning the forensic experts were the following: active - emeritus, years of experience in forensic pathology and/or clinical forensic medicine, principal discipline of activity: forensic pathology, clinical forensic medicine, genetics, and toxicology.

The preliminary analysis indicates that over two-thirds of the partici- pants believe that neck injury can induce a cardioinhibitory reflex and therefore life endangerment is possible. About a third of the experts use the cardioinhibitory reflex in their medicolegal opinions to confirm life endangerment in clinical forensic medicine or as a cause of death. They base their diagnosis on different criteria.

Cardioinhibitory Reflex, Neck Compression, Life Endangerment