G56 A New Tool for Coding and Interpreting Injuries in Fatal Airplane Crashes

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After attending this presentation, attendees will understand the importance for forensic pathologists, investigators, and safety experts to have at their disposal the tools to collect and interpret injuries in case of an aircraft accident. The presented tool will be used in a real case to illustrate its possibilities.

This presentation will impact the forensic science community by proposing a new coding system and software to record, code, and analyze injuries sustained in aircraft crashes.

Unfortunately, every year in the world, more than 500 passengers die in air disasters involving commercial airplanes. There are numerous questions to be answered following an aircraft accident: What caused the accident? Who was involved? What were the causes of deaths or mechanisms of injuries? What can be done to prevent it?

In such cases, forensic pathologists are facing pivotal challenges, first to identify the victims but also to perform injury analysis in order to reconstruct the sequence of events and to estimate human-machine interactions. Crash reconstruction is generally obtained using data from the flight recorder but these are often supplemented by physical evidence coming from the site of impact especially the damage of the different parts of the airplane but also from documented injuries pattern linked to position of the victims in the airplane. Detailed records of injuries when many victims are involved are; however, sometimes overlooked with the priority being placed on identification procedures. This proved to be unfortunate, in particular when flight recorders could not be recovered, but also to issue recommendation in the area of injury prevention.

The objectives of this presentation are to describe a new tool to facilitate this work. A coding system has been derived from the AIS (Abbreviated Injury Score), which was developed from a nomenclature dedicated to research and statistics for trauma epidemiology. Numerous modifications and additions were necessary as the AIS system was developed to predict survival from injury severity while the goal is to code lesions that can be observed on corpses. Severity scores were replaced by scores corresponding to the amount of energy that caused the trauma (ECT).

In a second step, a software was developed to compute summary variables that will be further related to the position (assigned seat) of each of the victims in the airplane. Three types of variables are available:

- Variables representing the number, potentially weighted, of injuries coming from a group defined by the user (for instance, number of lesions of the pelvis).
- Variables representing a maximum ECT score among a group of injuries defined by the user (for instance, maximum ECT score for injuries of the upper limbs).
- Variables representing a sum, potentially weighted, of the ECT scores of a group of lesions defined by the user (for instance the sum of the ECT scores for all the coded lesions of the head).

When relevant, each score can take into account the laterality of a lesion.

A real case will illustrate the use of the coding system and software and the interest to collect and to interpret the pattern of injuries as a consequence of the circumstances of the air crash.

Air Crash, Injury, Coding

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