G52 Postmortem Computed Tomography (CT): A Tool for Assessment of Emergency Medical Intervention

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After attending this presentation, attendees will be able to explain the value of postmortem CT in assessing medical devices used by first responders to emergency events.

This presentation will impact the forensic science community by demonstrating that postmortem CT affords the opportunity to evaluate some aspects of the use of emergency medical devices. These observations can improve design and application of devices and the training of first responders.

Medical examiners are increasingly using postmortem CT as a preliminary to autopsy. The Armed Forces Medical Examiner System (AFMES) has done this since 2004 and learned that CT can yield helpful information about the use of medical equipment by first responders in the attempt to save a life. However, this requires that resuscitative equipment not be removed from the body until after imaging.

Intraosseous intravenous devices (e.g., tibial, sternal, humeral), cricothyroidotomy devices, thoracentesis needles, and supraglottic airways have been studied by the AFMES in conjunction with autopsy. The CT images non-invasively show precise location of devices in areas not routinely incorporated into the internal examination. Placement of tibial devices in 44 cases has been 95% successful, sternal device placement in 98 cases has been 80% successful and humeral device placement in 24 cases was 83% successful. Recommended length of thoracentesis needles was changed from 5cm to 8cm. It should be noted that military first responders are typically in environments that differ appreciably from civilian emergency situations, results of intervention attempts may therefore differ. Feedback communication of autopsy observations to the military medical community has been used to improve design of devices and upgrade training in device use.

It is important to point out that the postmortem observations do not assess function of a device with regard to its effectiveness in resuscitation or stabilization because the conditions and circumstances surrounding placement of the devices is not always known. Also for any data gathered from postmortem CT consideration must be given to the possibility a device position may have changed during transport and handling of the body.

Attention to details of emergency medical interventions seen on postmortem CT can result in observations that aid first responders in assessing equipment and procedures used in pre-hospital emergency care.

Postmortem CT, Emergency Medical Treatment, First Responders

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