W3 How and Why You Can and Should Integrate Advanced Imaging Techniques Into Your Daily Autopsy Practice

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After attending this presentation, attendees will: (1) understand the concept of "disciplinary cross-over" within medicine; (2) understand the "toolbox" approach to modern forensic pathology; (3) review the core science behind plain film radiography, Postmortem Computed Tomography (PMCT), and Postmortem Magnetic Resonance (PMMR); (4) understand practical applications of imaging techniques as they apply to natural and non-natural deaths; (5) understand the concept of "Targeted Tissue Assessments" (TTA) in the context of whole body PMCT and why TTA is not a partial autopsy; and, (6) review administrative considerations as they pertain to the installation and routine utilization of advanced imaging techniques.

This presentation will impact the forensic science community by exploring how forensic pathologists can and should take ownership of advanced imaging techniques in their daily practices.

The tools available to forensic pathologists have undergone few significant upgrades over the past few decades. While initially considered a luxury to many, plain film radiography has become standard technology in autopsy suites — so much so that National Association of Medical Examiners (NAME) accreditation of any system of death investigation requires access to a simple "X-ray" machine. Despite routinely ordering and interpreting radiographs, no forensic pathologist would describe himself/herself as a radiologist. Rather, like clinicians, they are making use of radiographs in their own practices — an example of "disciplinary cross-over" within medicine.

Although clinical medicine has quickly adopted more modern and advanced technologies, such as computed tomography and magnetic resonance imaging, forensic pathologists have been reticent to embrace such tools. Reasons for this include the high costs of installation and operation, training requirements for forensic pathologists and their support staff, and generalized "apprehension" about the adoption of new technologies. Some forensic pathologists resist the use of advanced radiologic techniques in their practices, citing concerns that "radiologists will take away their jobs." This concern ignores the reality that there is a paucity of radiologists interested in postmortem work, particularly in the context of the vast differential in remuneration between clinical radiology and forensic pathology. Furthermore, even if there were a plethora of radiologists interested in forensic imaging, none of them have the statutory authority or duty to investigate and certify death.

A handful of mortuaries have adopted Postmortem Computed Tomography (PMCT), and a very small number have adopted Postmortem Magnetic Resonance (PMMR) scanning. Some institutions make use of these technologies to augment their daily practices; others have taken a more focused "research-based" approach. This workshop takes a practical approach to the introduction and utilization of advanced radiologic techniques into daily forensic pathology practice. While extremely useful, PMCT is not an across-the-board replacement for autopsies; however, it is an excellent substitute for internal examination across broad categories of commonly investigated deaths. In general, PMCT can be regarded as either supplementing traditional examinations or supplanting them. Categories of death that traditionally undergo invasive autopsy, but that now can most often undergo only external examination with PMCT include: accidental blunt trauma, suspected trauma in the elderly and other at-risk adults, suicidal violence, some types of sudden natural death, and certain types of mechanical asphyxia, including choking on food.

Although rarely used, PMMR does have a solid and important function within the forensic pathology setting; the roles and limitations of this important, but very expensive technology will also be reviewed.

After this presentation, attendees should have grounded expectations for the important strengths and weaknesses of both PMCT and PMMR and should also understand fundamental administrative considerations regarding adoption, installation, and utilization of new technologies within systems of death investigation. Without any doubt, the introduction of advanced radiologic techniques into the autopsy suite represents the most important advancement in forensic pathology "tools" in the past century. This session will help to convince attendees that advanced imaging is within reach and can and should be utilized whenever possible within daily practice.

Postmortem Imaging, Autopsy, PMCT

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