
H88 Diagnostic Values of Postmortem Computed Tomography (PMCT) and Multi-Phase Postmortem CT-Angiography (MPMCTA) in Blunt Trauma Death

Dina A. Shokry, MD, Kasr Alaini, Cairo 00202, EGYPT; Maged Nabil Hussien, MS, Medicolegal Authority-Ministry of Justice-Egypt, Medicolegal Authority-Zenhum-Cairo-Egypt, Cairo 002, EGYPT; Axel Heinemann, MD, Legal Institute-Hamburg University, Legal Institute-Hamburg Eppendorf, Hamburg, GERMANY; Klaus Püschel, MD, PhD, University of Hamburg, Institute of Legal Medicine, Butenfeld 34, Hamburg 22529, GERMANY; and Hermann Vogel, MD, Hamburg University, Hamburg-Eppendorf, Hamburg, GERMANY*

After attending this presentation, attendees will better understand PMCT and MPMCTA in forensic practice for the diagnosis of blunt trauma.

This presentation will impact the forensic science community by explaining how PMCT and MPMCTA are effective tools in blunt trauma death diagnosis and how these techniques provide accurate data that conventional autopsy cannot obtain regarding the reconstruction of bony fractures and air detection.

Background: In the last decade, postmortem imaging techniques have gained a remarkable acceptance in the forensic field practices. They proved themselves as objective, non-invasive diagnostic tools for both external and internal body injuries. This is especially true in blunt trauma cases which are the most common injuries faced in forensic field practice. In this study, the sensitivity and specificity and accuracy of PMCT scan and MPMCTA were examined and compared with the conventional autopsy in diagnosing the major findings and the cause of death in blunt trauma cases to determine the advantages and disadvantages and to outline a framework for their ideal application in forensic cases.

Methods: This is a prospective study. Data was obtained from 50 decedents presented to the legal institute of Hamburg University with death allegedly due to blunt trauma. Each case underwent a whole body examination by CT and the MPMCTA was performed only for 15 cases. The resultant radiological findings are validated by conventional autopsy. Both autopsy and radiological findings are divided by body regions into the head and neck, thorax, abdomen and pelvis, extremities, and vascular system. They are then compared and correlated to the most common traumatic patho-anatomic findings, including soft tissue injuries (contusions and lacerations), hemorrhage, fractures, presence of free air in body cavities, and air emboli, in addition to the detection of the cause of death.

Results: The preliminary results show the low sensitivity and specificity of PMCT in detection of soft tissue injuries compared to MPMCTA and conventional autopsy, which almost have the same results. Both PMCT and MPMCTA are superior to autopsy in detection, configuring, and reconstruction of bony fractures and in detection and localization of air emboli and free air; however, the detection of hemorrhage is relatively dependent on the blood amount and the location of the bleeding source. Despite the presence of contrast-related artifacts, the MPMCTA has a higher sensitivity and specificity in identifying the source of the bleeding compared to the PMCT and conventional autopsy.

Conclusion: Together, PMCT and MPMCTA are effective tools in blunt trauma death diagnoses and are able to provide accurate data that the conventional autopsy cannot, regarding the reconstruction of bony fracture and air detection; however, with the observed contrast artifacts in MPMCTA and the low ability of PMCT alone in detection of the soft tissue injuries, the chance of these imaging techniques replacing the conventional autopsy is decreased.

PMCT, MPMCTA, Blunt Trauma