جامعة القاهرة
كلية طب قصر العيني
قسم الطب الشرعي و السموم الإكلينيكية

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CAIRO UNIVERSITY - FACULTY OF MEDICINE

وحدات متعددة من تقنيات التصوير بعد الوفاة في حالات الاصابات الرضية و التحقق منها بالتشريح

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Multi-modular techniques of post mortem imaging in blunt traumatic cases validated by autopsy

Thesis submitted for partial fulfillment of Doctorate Degree in
Forensic Medicine & Clinical Toxicology

By

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Dedication

To my Parents, for their never-ending support.
To my lovely wife, my cute daughter,
my brothers, my sisters, and my best friends,
with love, for their love.

Maged

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List of Abbreviations

- 3D CT : **T**hree **D**imensional **C**omputed **T**omography.
- CSF : **C**erebro-**S**pinal **F**luid.
- CT : **C**omputed **T**omography.
- CTA : **C**omputed **T**omographic **A**ngiography.
- DAI : **D**iffuse **A**xonal **I**njury.
- EDH : **E**pi-**D**ural **H**emorrhages.
- FES : **F**at **E**mbolism Syndrome.
- IA : **I**maging **A**utopsy.
- ICH : **I**ntra- **C**erebra**l** **H**emorrhage
- MPI : **P**ost-**M**ortem **I**nterval.
- MPMCTA : **M**ultiphase **P**ost **M**ortem **C**omputed **T**omographic **A**ngiography.
- PMCT : **P**ost **M**ortem **C**omputed **T**omography.
- RTA : **R**oad **T**raffic **A**ccidents.
- SDH : **S**ub- **D**ural **H**emorrhage.

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Comment [٢]: Coronal CT chest of blunt trauma with right ventricular rupture show (A) a large hemopericardium and (B) contrast material extravasation through a perforation in the anterior wall of the right ventricle (arrow)

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ABSTRACT

***Background*:** Postmortem CT and multiphase postmortem CT angiography have been used for objective noninvasive documentation of body injuries, especially, in blunt trauma cases which are the most common injuries faced in forensic field practice. This study aims to assess the efficiency of PMCT and MPMCTA in diagnosis of blunt trauma deaths as an alternative technique to conventional autopsy.

***Methods*:** This prospective study examined 50 decedents presented to the legal institute of Hamburg University, alleged death due to blunt trauma by CT and\or MPMCTA. The resultant radiological findings are validated by conventional autopsy.

Results: The study shows the low efficiency of PMCT in detection of soft tissue injuries and the superiority in detection and configuring of bony fractures and in detection and localization of air emboli and free air compared to autopsy. Multiphase PMCTA has a higher efficiency in detection of hemorrhage and in identifying the source of the bleeding compared to autopsy.

Conclusion: PMCT and MPMCTA are reliable tools for blunt trauma diagnosis and can efficiently complement conventional autopsy.

Keywords: Postmortem CT, postmortem CT angiography, Blunt trauma, Conventional autopsy.