



E70 Multi-Phase Postmortem Computed Tomography Angiography (MPMCTA): Is an Interventional Radiological Approach Possible Instead of the Classical One? A Preliminary Study

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After attending this presentation, attendees will learn that an interventional approach for MPMCTA is an easier approach for postmortem investigations. This new broad technique in forensic and scientific postmortem investigations will be better accepted if a micro-invasive method is applied. With this study, the feasibility and good quality of such a technique was established.

This presentation will impact the forensic science community by illustrating how an interventional approach is an alternative approach for classic MPMCTA in cases of conventional cannula insertion.

Purpose: MPMCTA is a new diagnostic tool used to diagnose organ and vascular lesions. This technique requires surgical denudation of some anatomical regions followed by insertion of surgical cannulas. The goal of this report was to assess the feasibility of sheath insertion instead of surgical cannula insertion for MPMCTA and to assess the quality of imaging in comparison with the reference standard procedure: the opacification through surgical cannulas.

Materials: The protocol was performed on eight bodies in the hospital's medicolegal. All cases were medicolegal autopsies ordered by the public prosecutor in charge of investigation, except for one scientific autopsy. The control group was composed of eight MPMCTAs produced for a forensic purpose and randomly selected.

Methods: The first step was the sheath insertion for the Interventional Radiology (IR) approach group and surgical cannula insertion for the control group. Then, a conventional MPMCTA was applied, using the three conventional phases (arterial, venous, and dynamic). Vascular opacification quality was studied with a special focus on the dynamic phase. Regions of interest were cerebral veins opacification, main thoracic abdominal and pelvic vessels, and arterial and venous lower limbs opacification. A statistical analysis was applied on these semi-quantitative results, using non-inferiority tests such as the Fisher test.

Results: Feasibility — sheath insertion was possible for each case of the IR group. A global study of the Computed Tomography (CT) examination did not lead to visually significant differences between the IR and control groups. Coronary opacification was optimal in both groups. Abnormal MPMCTA findings on the IR group were easily identified and were confirmed by autopsy. Vascular opacification quality — Multiple steps were performed to assess absence of difference between groups: (1) cerebral vein opacification — this step showed a complete cerebral vein opacification in half of the cases for both groups; (2) global vascular opacification — 16 items were selected from major arteries and veins in the cerebral and cervical, thoracic, abdominal, and pelvic regions. Complete opacification of the 16 items was achieved in six cases from both groups; and, (3) vascular lower limbs opacification — this step allowed studying distal opacification for both groups. Even if the results seemed better with the IR group, they were not statistically significant. This is certainly due to the small number of cases studied ($n=4$).

Arterial lower limbs opacification: ipsilateral distal opacification was achieved in 25% of the cases for the IR group, while none was achieved using the control group. Contralateral distal opacification was achieved in 25% of the cases for both groups. Venous lower limbs opacification: no distal opacification was seen, using both techniques.

Conclusion: Image quality using the IR approach was as good as that obtained using conventional surgical cannulas. Thanks to this technique change, the approach was micro-invasive rather than mini-invasive. This could be applied especially for scientific autopsies in order to improve the family's acceptance of the autopsy.

Postmortem CT Angiography, Radiology, Interventional