



H113 The Needle in the Haystack: Histology of Postmortem Computed Tomography (CT) -Guided Biopsies Versus Autopsy-Derived Tissue

Bartholomeus G.H. Latten, MSc, Nederlands Forensisch Instituut, Den Haag, Zuid Holland 2497 GB, NETHERLANDS; Frans Bakers, Maastricht University Medical Centre, Maastricht, Limburg 6229HX, NETHERLANDS; Paul Hofman, PhD, Maastricht University Medical Center, Maastricht 6202 AZ, NETHERLANDS; Axel zur Hausen, MD, PhD, Maastricht University Medical Centre, Maastricht, Limburg 6229 HX, NETHERLANDS; Bela Kubat, PhD, Nederlands Forensisch Instituut, Den Haag, Zuid Holland 2497GB, NETHERLANDS*

Learning Overview: The goal of this presentation is to make a critical statement concerning the inferiority of histological examination of postmortem CT-guided biopsies in comparison to tissue derived during the classic autopsy.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by increasing awareness of the limitations of postmortem imaging/minimal invasive autopsy and raising reasonable doubts concerning new non-validated techniques.

Objective: During the last decade, autopsies have been declining worldwide, whereas non-invasive methods have been proposed as an alternative for the classic autopsy. Some of these methods add needle biopsies to imaging techniques to provide an alternative to histological examination of autopsy-derived tissue. The goal of this study was to investigate the representativeness of the histology of CT-guided postmortem needle biopsies in comparison to autopsy derived tissue from the same organ.

Method: Consent of next of kin was obtained from relatives of the deceased within the department of Internal Medicine to perform an autopsy, postmortem CT, and CT-guided needle biopsies. The lungs and the liver were routinely sampled with CT-guided postmortem biopsies and during the autopsy. In addition, optionally extra CT-guided biopsies of lesions reported on the CT were sampled. The biopsy and the autopsy reports were independently reported and retrospectively coded according to the Nationwide Network and Registry of Histo- and Cytopathology in the Netherlands (PALGA). Three pathologists with an interest in autopsy pathology and three physicians of the department of internal medicine separately and independently interpreted all histological results in relation to the cause of death as formulated in the autopsy report. Fleiss's Kappa was calculated, and a consensus grade was defined.

Results: Fleiss's Kappa showed substantial agreement in both lungs and moderate agreement in the liver. Of the 60 included cases, 43% of the CT-guided postmortem biopsies in the left lung and 30% in the right lung showed false negative findings, primarily concerning a bronchopneumonia. In contrast, 91% of the liver biopsies showed concordant results; however, only 22% of these concerned a major diagnosis related to the cause of death. The positive predictive value of the biopsies of the left lung, right lung, and the liver were, respectively, 86.8%, 88.9%, and 100%. The negative predictive values of these biopsies were 34.3%, 50% and 92.7%, respectively.

Conclusion: CT-guided postmortem biopsies of the lungs have a mediocre predictive value. Due to a low prevalence of relevant findings, the overall usefulness of biopsies of the liver is limited. Conventional autopsy should still be preferred to biopsy-based postmortem examination. Postmortem biopsies are only an alternative if consent for an autopsy cannot be obtained.

Biopsies, Autopsy, Histology