Virtual autopsy

Peter Mygind Leth

Accepted: 9 April 2013 / Published online: 25 April 2013
© Springer Science+Business Media New York 2013

Pollanen and Woodford have put forward the idea that it might be time to do fewer “classical” medico-legal autopsies and instead perform more autopsies that are targeted at a particular purpose or benefit [1]. They suggest investigating whether post mortem computed tomography (PMCT) and other imaging modalities, either alone or in combination with a complete autopsy or a targeted partial autopsy, would be of greater value than the classical comprehensive “3-cavity autopsy.” We have used post mortem computed tomography (PMCT) since 2006 and have estimated that the autopsy could be substituted by PMCT in at least 15 % of cases and that the cause of death could be established by PMCT in approximately 30 % [2]. This is supported by another study we have undertaken investigating 900 forensic cases that is yet to be published. Our research also indicates that PMCT is of the highest value in traumatic deaths and of less value in natural deaths. We found more accidents (77 %) and fewer natural deaths (15 %) among the cases where PMCT could substitute autopsy, and PMCT was also much better in identifying the cause of death in accidental deaths than in natural deaths. PMCT is not very good in diagnosing cardiovascular diseases. Coronary atherosclerosis can be detected if the atherosclerotic lesions are calcified, but it is not possible to determine the degree of stenosis or determine if a thrombosis is present, and an acute myocardial infarction cannot be seen. Many other disease processes cannot be found by PMCT such as pulmonary embolism, peritonitis or bleedings from a chronic gastrointestinal ulceration or esophageal varices. Given these deficiencies it

is obvious that PMCT is not a substitute for most autopsies, especially not in non-traumatic deaths. Pollanen and Woodford suggest that the least invasive medical examination to answer all the relevant questions from applicable legislation, the criminal justice system, and the health care of the family should be employed, and suggest that this could be a partial autopsy in some cases [1]. An autopsy is, however, not a very time consuming procedure, and is not very expensive, so the only reason for not doing a complete autopsy must be ethical considerations. It is not our experience that relatives are opposed to autopsy if the purpose is properly explained. In Denmark the decision to request a forensic autopsy is done at the medico-legal inquest by the police. At the inquest the medical officer of health performs an external investigation of the body and the police and hospital records are reviewed. An autopsy is requested in about 10 % of these forensic cases. An alternative approach to the procedure suggested by Pollanen and Woodford could be to perform the CT-scanning prior to the medico-legal inquest, and use PMCT as a screening tool. It may mean that some autopsies are not needed after all, or unexpected CT-findings could lead to a decision of autopsy that would otherwise not have been requested. I agree with Pollanen and Woodford that a multi-center clinical trial would be of great value.

References

1. Pollanen MS, Woodford N. Virtual autopsy: time for a clinical trial. *Forensic Sci Med Pathol*. 2013. doi:[10.1007/s12024-013-9408-8](https://doi.org/10.1007/s12024-013-9408-8).
2. Leth PM. Computerized tomography used as a routine procedure at postmortem investigations. *Am J Forensic Med Pathol*. 2009; 30(3):219–22.

P. M. Leth (✉)
Institute of Forensic Medicine, University of Southern Denmark,
J.B. Winsløvs Vej 17, 5000 Odense, Denmark
e-mail: pleth@health.sdu.dk