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Technology as applied to forensic post-mortem examinations: A boon or a bane?

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Abstract

The growing arsenal of diagnostic technology currently at the disposal of medical specialists is frequently being employed by forensic pathologists as a matter of routine practice. Post-mortem ancillary investigations are no longer limited to the traditional, yet increasingly complex, domains of histology, toxicology, biochemistry, or microbiology (to say nothing of DNA profiling and micro-RNA). Whole-body MDCT, and even MRI, have become normative in a growing number of jurisdictions, where selective or routine post-mortem scanning is undertaken, either as an adjunct to, or a substitute for, the conduct of a formal autopsy. Added to these is a vast and rapidly expanding array of molecular and genetic tests designed to detect rare, but potentially lethal, mutations which may predispose certain individuals to sudden cardiac death (such as various forms of ion channelopathy and cardiomyopathy), as well as multiplex PCR for a variety of viral infections. And, of course, one can hardly fail to notice the increasing use of complex biomechanical models in the evaluation of falls and head injuries. So, to what extent should one resort to these ancillary investigations when conducting a forensic post-mortem examination? Quite apart from the inevitable issue of cost-effectiveness, there is the equally fundamental one of practicality, as the list of these investigations is virtually endless. Established protocols are useful, but their applicability may well be circumscribed by the limited availability of the relevant resources or expertise. Should a forensic pathologist be faulted for not requesting for a particular test if it is not readily available? Should he/she be expected to resort to extraordinary means to procure it? Or would an adequate, albeit sub-optimal, test be sufficient under these circumstances? And, must a forensic pathologist also be an accomplished mathematician in order to practise competently? It must be acknowledged that inconclusive or equivocal test results may actually serve to confound and confuse, rather than to provide the clarity which is being sought. Indeed, some clinical laboratories, fearful of liability arising from diagnostic error, might even decline to undertake any form analysis on post-mortem specimens (including blood samples for HIV and hepatitis screening) simply because the commercially available test kits have not been validated for this purpose. One might conclude that any forensic pathologist who aspires to practise safely in the present, highly technologised, environment would be well advised to navigate his or her way with great care through this burgeoning minefield of ancillary investigations.

Biography

Gilbert Lau is a Fellow of the Royal College of Pathologists (UK) and a Clinical Associate Professor with the Yong Loo Lin School of Medicine, National University of Singapore. He is a practising forensic pathologist and concurrently Director of Professional Practice at the Forensic Medicine Division, Health Sciences Authority, Singapore. He is a member of the editorial boards of the *Forensic Science International* and *Forensic Science, Medicine and Pathology*, he also reviews papers for the *Journal of Forensic and Legal Medicine, Journal of Clinical Pathology, Annals of the Academy of Medicine, Singapore, and the Singapore Medical Journal.* His academic interests and publications include iatrogenic deaths, pulmonary thromboembolism, maternal deaths and fatal falls from heights.

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