Importance of the hospital autopsy in clinical governance, teaching and research

The hospital autopsy is an examination performed by a pathologist at the request of a clinician with consent from the decedent's next of kin. The body is examined externally, internally by dissection and with the aid of laboratory techniques including histopathology in order to determine the cause of death, the extent of disease, the effects of treatment and the presence of other diseases which may or may not have contributed to the cause of death.

Although historically it played a central role in the teaching, research and practice of medicine, the hospital autopsy has seen a sharp decline in numbers in the last 50 years. Hospital autopsies now account for considerably less than 10% of all autopsies performed, a trend that is seen worldwide (Burton and Underwood, 2003, 2007). It has been suggested that 'the autopsy has lost much of its authority and now has a marginal role in contemporary medical practice' (Clark, 2005).

Although most recognize the value of the autopsy, especially as a means of quality assurance, clinicians are reluctant to request autopsies (Midelfart and Aase, 1998). This may be either for fear of litigation in the event that their diagnosis is disputed, because they perceive no need for the autopsy thanks to radiological and laboratory investigation, or because they think that the relatives will refuse. Lengthy request forms, necessary to satisfy the requirements of the Human Tissue Act 2004, probably also dissuade clinicians from seeking consent.

Curiously, it may be that most relatives do not give consent for a hospital autopsy because no one asks them (Burton and Underwood, 2003). Refusal of consent is usually on religious grounds, or because the relative feels that the decedent has already 'suffered enough'. Many clinicians are unaware of the religious attitudes that surround autopsy practice (Rosenbaum et al, 2000). Some pathologists dislike (and may discourage) autopsies, noting that they are unpleasant and that the requesting clinicians seem disinterested in the results, although the latter may be a function of delays in the production of autopsy reports (Underwood, 2010). Pressures of work generated by surgical biopsies leave less time available for the autopsy. Hospital managers find the autopsy expensive.

These are all good reasons to explain the decline of the hospital autopsy. Can it continue to play a valuable role in modern medicine? That question can be answered by considering its roles in clinical governance, teaching and research.

The hospital autopsy plays a role in clinical governance and audit

Understanding why people die matters. Mortality statistics are used to monitor the performance of the health service and to determine how the health-care budget is apportioned.

The belief that the autopsy has been made redundant by modern laboratory and imaging diagnostic tools has repeatedly and consistently been demonstrated to be false worldwide during the past 40 years (Burton and Underwood, 2007). The autopsy is still widely accepted as being the standard tool for determining the cause of death. The pathologist has the additional benefit of the findings of his/her examination in addition to those performed in life when formulating a cause of death.

The current low hospital autopsy rate and failure to adjust for the prevalence of missed cases among those not coming to autopsy results in an overestimation of the accuracy of antemortem diagnostic tests (Shojania et al, 2005). It is therefore not surprising that studies have repeatedly found a discrepancy of between 25 and 56% between the causes of death declared by clinicians and pathologists in large series (Kircher et al, 1985; Underwood, 2010). Sonderegger-Iseli et al (2000) found that the major error rate in clinical diagnosis had declined from 30% to 14% over a 20-year period but that the minor error rate had doubled to 42%.

The hospital autopsy has a role therefore in allowing clinicians to truly understand how and why their patients die. To be of most benefit, the hospital autopsy is needed not only when the clinician or family have unanswered questions about a patient's disease or treatment, but also following deaths where there is clinical certainty as to the cause (Underwood, 2010). It is unfortunate that the days when hospital autopsies were routinely requested have passed. Sadly, many senior clinicians have had little or no training in autopsy consent practice (Rosenbaum et al, 2000). The medical profession has let slip a valuable tool for the audit of medical practice. Where relatives refuse consent for a complete autopsy, an examination limited to part of the body, or even to needle biopsy, may yet provide valuable clinical information (Burton and Underwood, 2007). Further declines in autopsy rates may mean that the opportunity to improve practise by learning from the dead is irretrievably lost.

Whether or not we should be seeking to examine more patients after death is controversial, and it may be that there is now insufficient capacity to cope with a greatly increased autopsy rate. The author would argue that what is important is that clinicians and pathologists work together to ensure that autopsies are performed on the right patients, to a high standard, and reported in a timely manner.

The hospital autopsy is a valuable teaching tool

The autopsy is now underutilized as an educational tool but it continues to have potential (Benbow, 1990; Horowitz and Naritoku, 2007). It has been repeatedly shown that the autopsy can be used to teach students pathology, anatomy, clinicopathological correlation and about the

processes of death. Its teaching roles need not be limited to this. With appropriate integration into undergraduate curricula autopsy examinations present an opportunity to enhance students' professional behaviours and attitudes, and to teach about medical law, medical ethics and medical fallability (Burton, 2003). Students should therefore be encouraged to attend the autopsies of those patients that they have seen on the wards. Where there is limited opportunity to present autopsy findings directly to students, video and other modalities may play a useful role (Burton et al, 2004).

The hospital autopsy and research

The decline of the hospital autopsy is matched by a marked rise in the number of research publications relating to it. The autopsy can play a role in medical research as, with appropriate consent and ethics committee approval, it can be used to source tissues for research (Underwood, 2010).

The most important role that the hospital autopsy can play in research is to confirm the cause of death. Death is an ultimate end point in research. Patients enrolled in research trials may die of the disease for which they were enrolled, of the treatment given – be it the experimental therapy or a control – or because of an unrelated cause. Clearly it is important to know why patients enrolled in research trials die. The Medical Certificate of the Cause of Death is, as we have seen, too inaccurate for this purpose and its use alone would result in an unacceptable error rate of 30–50%.

Conclusions

We are in danger of losing the hospital autopsy entirely. Histopathology trainees now have the option of not learning to perform autopsies. The hospital autopsy still has a valuable role to play in educating doctors and student doctors about disease and its diagnosis, in ensuring high standards of medical care and as a research tool. We lose it at our peril. BJHM

Julian L Burton
Coronial Pathologist and Senior Teaching Fellow
Academic Unit of Medical Education
University of Sheffield Medical School
Sheffield S10 2GJ

Benbow EW (1990) Why show autopsies to medical students? *J Pathol* **162**: 187–8
Burton JL (2003) The autopsy in modern undergraduate medical education: a qualitative study of uses and curriculum considerations. *Med Educ* **37**: 1073–81
Burton JL, Underwood JCE (2003) Necropsy practice after the "organ retention scandal": requests, performance and tissue retention. *J Clin Pathol* **56**: 537–41
Burton JL, Underwood JCE (2007) Clinical, educational, and epidemiological value of autopsy. *Lancet* **369**: 1471–80
Burton JL, Diercks-O'Brien G, Rutty GN (2004) Videos have a role in postgraduate autopsy education. *J Clin Pathol* **57**: 877–81
Clark MJ (2005) Autopsy. *Lancet* **366**: 1767
Horowitz RE, Naritoku WY (2007) The autopsy as a performance measure and teaching tool. *Hum Pathol* **38**: 688–95
Kircher T, Nelson J, Burdo H (1985) The autopsy as a measure of accuracy of the death certificate. *N Engl J Med* **313**: 1263–9
Midelfart J, Aase S (1998) The value of the autopsy from a clinical point of view: a survey of 250 general practitioners and hospital clinicians in the county of Sor-Trondelag, Norway. *APMIS* **106**: 693–8
Rosenbaum GE, Burns J, Johnson J, Mitchell C, Robinson M, Truog RD (2000) Autopsy consent practice at US teaching hospitals: result of a national survey. *Arch Intern Med* **160**: 374–80
Shojania KG, Burton EC, McDonald KM, Goldman L (2005) Overestimation of clinical diagnostic performance caused by low necropsy rates. *Qual Saf Health Care* **14**: 408–13
Sonderegger-Iseli K, Burger S, Muntwyler J, Salomon F (2000) Diagnostic errors in three medical eras: a necropsy study. *Lancet* **355**: 2026–31
Underwood JCE (2010) Autopsies and clinical audit. In: Burton JL, Rutty GN, eds. *The Hospital Autopsy: a manual of fundamental autopsy practice.* Hodder Arnold, London: 315–23

KEY POINTS

- World wide the hospital or consent autopsy is in decline.
- The autopsy remains a powerful, but underused, tool for teaching undergraduates and postgraduates in medicine.
- The hospital or consent autopsy can be used to gather material and data for research, to collect accurate mortality statistics and as a clinical governance tool.