Appropriate diagnostics and good health care do not end when the patient dies, but when the final diagnosis has been made clear

Autopsy – still the gold standard?

We have long been aware that death certificates are prone to errors (1–3). Glattre & Blix (1) found errors in every fourth death certificate examined. Alfsen and collaborators found that clinicians had most likely recorded a wrong cause of death in one in every five death certificates (2). These errors are caused by several factors, such as time constraints facing the doctor who completes the certificate, insufficient experience with death certificates and occasionally insufficient knowledge about the patient.

It is therefore interesting to note that Akershus University Hospital since 2008 has undertaken continuous quality control of death certificates. In an article in this issue of the Journal, Alfsen & Lyckander (4) describe this project. They find that the hospital's corrections, combined with the computer program ACME in the Cause of Death Registry, indicated a change to the underlying cause of death in 176 of 1 001 death certificates issued from May 2008 through 2009. ACME is a computer program that removes illogical diagnoses in the sequence of causes listed in the death certificates. Alfsen & Lyckander found that continuous correction of death certificates provided an essential adjustment at the individual level, although the corrections had little bearing on the hospital's total statistics on causes of death. These corrections were entered on the basis of information from patient records, not autopsies. In another article, Alfsen (5) examines 89 medical autopsies undertaken on deaths outside hospital in the years 2007–2011. She found that this group was younger than in the case of other autopsies, and that only ten of these deaths had occurred in nursing or health institutions.

It is paradoxical that autopsies are not undertaken more frequently when somebody dies in a nursing home or a sheltered accommodation, since the authorities have formulated requirements for quality assurance and internal control that are abundantly clear (6). The supervisory authorities process a fair number of complaints regarding treatment provided in nursing homes, including issues related to deaths. Some of these cases strongly underscore the need for quality assurance and quality control in nursing homes. Autopsies could be a means to this end. Most of those who die in nursing homes or sheltered accommodation are being treated by general practitioners. In 1998, Jana Midelfart (7) found that approximately 70 % of GPs regarded autopsies as (extremely) useful. We may assume that the usefulness will be even greater today, for example since patients with complex disease pictures are moved from hospitals to nursing homes because of the Coordination Reform. A study undertaken in all departments of pathology nationwide shows that the pathologists agree that autopsies ought to be undertaken more frequently (8). The failure of this to happen is likely to be caused by a number of factors (8), including hospital finances and a general pressure on the pathology departments.

We should bear in mind, however, that even autopsies have their limitations. Autopsies were previously regarded as the gold standard of diagnostics. Today, radiological examinations provide better opportunities for making a diagnosis while the patient is still alive. In addition, the number of autopsies has declined. An autopsy is currently performed for approximately 10 % of all deaths. Since the number of pathologists has increased significantly since the 1970s, this means that each pathologist accumulates less experience from practical autopsies.

Autopsy – like any other manual methodology – has a value which is delimited by the care and diligence devoted to its performance. If only one incision through a liver is made during an autopsy, one may easily overlook a neoplasm that could have been discovered if several incisions had been made. Medical autopsies are often performed by assistant doctors, and the results tend to depend on the time that each experienced pathologist spends on mentoring the assistant doctors.

In case of medical autopsies (formerly referred to as hospital autopsies to distinguish them from the forensic ones) where an exact cause could not be found, the cause of death which is regarded as most likely on the basis of a comprehensive assessment is recorded. The value of the «gold standard» may then depend on the thoroughness of the search. Moreover, autopsies are largely based on visual diagnostics. This is perhaps one reason why some autopsies fail to detect the cause of death. Perhaps the pathologists ought to be better trained in pathophysiology and causal mechanisms that may lead to death without leaving major, visible traces? Perhaps samples for chemical analysis as part of an autopsy are taken too rarely? Many issues deserve attention in this context.

We may nevertheless assert that the value of a death certificate depends on the thoroughness with which it has been completed, with or without an autopsy. Subsequent examination of death certificates in light of patient records, clinical-pathological conferences, CT and MR undertaken post mortem (9) and autopsies – these are all useful aids that may complement each other. In most cases, autopsies still defend their position as the gold standard, provided that they are performed with care, and with adequate supervision if necessary.

It is crucial to imbue doctors with an awareness that the diagnostic work and quality assurance of health services do not end when a patient dies. The effort which is put into the death certificate and the clarification of the final diagnoses may be essential to the next of kin, to the health personnel and in cases of scrutiny. To society, it is important to have reliable statistics of diseases and causes of death, since this information is used for purposes of planning development and prioritisation in the health services. Cecilie Alfsen and Lars Gustav Lyckander have delivered a commendable and praiseworthy effort to put these issues on the agenda and to remind us of our responsibility.

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References
1. Glattre E, Blix E. En vurdering av dødsårsaksstatistikken. Rapport fra Statistisk sentralbyrå 80/13. Oslo: Statistisk sentralbyrå, 1980. www.ssb.no/a/histstat/rapp/rapp_198013.pdf (18.3.2013).
2. Alfsen GC, Lyckander LG, Lindboe AW et al. Kvalitetssikring ved dødsfall i sykehus. Tidsskr Nor Legeforen 2010; 130: 476–9.
3. Ravakhah K. Death certificates are not reliable: revivification of the autopsy. South Med J 2006; 99: 728–33.
4. Alfsen GC, Lyckander LG. Har kvalitetskontroll av dødsmeldinger i sykehus betydning for dødsårsaksstatistikken? Tidsskr Nor Legeforen 2013; 133: 750–4.
5. Alfsen GC. Medisinsk obduksjon ved dødsfall utenfor sykehus. Tidsskr Nor Legeforen 2013; 133: 756–9.
6. FOR-2002-12-20 nr. 1731. Forskrift om internkontroll i helse- og omsorgstjenesten. www.lovdata.no/for/sf/ho/xo-20021220-1731.html (18.3.2013).
7. Midelfart J, Aase S. The value of autopsy from a clinical point of view. A survey of 250 general practitioners and hospital clinicians in the county of Sør-Trøndelag, Norway. APMIS 1998; 106: 693–8.
8. Hagestuen PO, Aase S. Organisering og nytteverdi av obduksjon. Tidsskr Nor Legeforen 2012; 132: 152–4.
9. Ayoub T, Chow J. The conventional autopsy in modern medicine. J R Soc Med 2008; 101: 177–81.