

The organisation and value of autopsies

Summary

Background: There has been a considerable reduction in the frequency of autopsies over the past few decades. We wanted to investigate whether doctors consider this a proper and natural development, or whether they consider that autopsies should be given a higher priority, and in such case, how.

Material and method: Resources, organisation and opinions on autopsy practice were registered using a questionnaire sent to all pathology departments at Norwegian hospitals, and to all doctors in the clinical departments of Haukeland University Hospital in Bergen, Norway.

Results: 392 clinicians replied (percentage of replies 50.3%). Of these, 82% considered autopsies to be a good means of quality assurance and quality control of the clinical work. 83% considered that more autopsies should be performed on a national basis, and 65% considered autopsies to be just as important today as previously, in spite of technological advances in medicine. However, 80% of the clinicians attended autopsy demonstrations less than twice a year. The waiting time for autopsy reports was long – 66 days, on average. A majority of clinicians considered that reducing this time would lead to more autopsies being ordered.

Discussion: Hospital doctors still consider autopsy to be a good means to assure the quality of clinical work. A reduction in the time needed to complete an autopsy report and better communication between clinicians and pathologists should be given priority.

Based on a student report at the Faculty of Medicine and Dentistry, University of Bergen, 2009 [1].

Appendix 1–4 can be found on www.tidsskriftet.no/hagestuenengappendiks

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Since antiquity, autopsies have been important for our understanding of the anatomy of the human body and how it changes as an effect of disease. Here in Norway, we know that autopsies were undertaken in Christiania and Bergen as early as the 18th century. The first known Norwegian autopsy report refers to an autopsy performed in Bergen in 1752 (2). In the period from around 1955 to the end of the 1970s the science of pathology underwent a considerable development and expansion in Norway (2), and this period also witnessed a large autopsy activity in Norway as well as the other Scandinavian countries. In Norway, this activity reached a peak in 1985, when autopsies were performed on approximately 22 per cent of all deceased persons (2). During the 1990s the autopsy frequency declined considerably in Norway, but a study undertaken by Midelfart and Aase in Sør-Trøndelag County nevertheless showed that 66 per cent of the clinical doctors continued to regard autopsies as essential (3). The autopsy rate has continued to decline, and currently constitutes approximately 10 per cent of all deaths (4). We wished to investigate whether hospital doctors believe this to be a natural and proper development, or whether they consider that autopsies should be given a higher priority, and in such case, how. We also wished to collect information on the conditions under which autopsies are performed in Norwegian hospitals, to see whether these may help explain why the autopsy rate is falling.

Material and method

We distributed a questionnaire with 19 questions to all doctors in the clinical departments of Haukeland University Hospital in Bergen, a total of 779 doctors. In addition, we sent a questionnaire with 27 questions regarding autopsy activities to all the 19 departments of pathology in Norwegian hospitals. The departments at Rikshospitalet and Radiumhospitalet were considered as a single department. At the time, the departments at Aker and Ullevål hospitals formed separate units. The distribution of the questionnaires and the receipt of responses mainly took place during the academic year 2007/2008. The distribution letter and the questionnaire sent to the clinical doctors at Haukeland University Hospital, as well as the distribution letter and the questionnaire to all the departments of pathology are found in the online version of this article (Appendices 1–4).

Results

A total of 392 clinical doctors (50.3 per cent) at Haukeland University Hospital responded to the questionnaire, whereof 21.3 per cent were engaged in surgical activities, 24.4 in internal medicine and 54.3 in other activities. The responses to some of the main questions are shown in Tables 1 and 2. The tables show that 302 of 362 responding clinicians and 16 of 18 departments of pathology believed that the number of autopsies ought to be increased from the present level. On the other hand, a majority of the clinicians (56 per cent) reported that they hardly ever participated in autopsy demonstrations. As many as 80 per cent reported participating less than twice annually.

Main message

- Hospital doctors claim that autopsies remain important for quality assurance of clinical work.
- Clinicians and departments of pathology claim that autopsies ought to be performed more frequently.
- Response times for autopsy reports are too long in most hospitals.
- The opportunities for learning from clinical-pathological demonstrations are being insufficiently exploited.

Among the departments of pathology (Table 2) 18 of 19 departments responded to the questionnaire. The only department that failed to respond was the country's smallest and most recently established, which had no capacity to participate at the time. Responses from the 18 departments showed that they had performed 2,502 autopsies in 2006, excluding forensic autopsies.

In some cases, the next of kin refuse to allow an autopsy to be performed. Only seven departments provided figures for the frequency of such refusals, with an average of 20 per cent of all deaths. In approximately 10 per cent of all deaths an autopsy could not be performed because the next of kin had not been informed of the planned autopsy. The requesting doctor should notify the pathologist that the next of kin have been informed of the possibility of an autopsy. If the clinician fails to notify the pathologist, or has noted in the autopsy request that the next of kin have not been informed, the pathologist is prevented from performing the autopsy (5).

Average response time for autopsies varied between the departments from 14 days to approximately 150 days, with a median time of 66 days. The autopsy theatres were reported to be 25 years old on average (as of 2009), and 72 per cent of them had a separate room for demonstrations for clinical personnel. All the departments reported that as a rule, the examined organs were replaced in the dead body and buried along with it.

Discussion

It is interesting to note that clinicians continue to perceive autopsies as a good means of quality assurance and quality control of clinical work. Even though technological developments during recent decades (CT, MR, ultrasound, advanced endoscopy, etc.) have produced major improvements in diagnostics, a total of 65 per cent of the clinicians in this study claimed that autopsies remain as important as before. This figure is similar to the one found by Midelfart and Aase in a study in the Trøndelag district approximately ten years earlier (3). At that time, altogether 77 per cent of the doctors responded that modern technology has changed the importance of autopsies to a limited extent or not at all. The stated reasons included the view that even modern technology can produce errors, and needs to be tested and controlled. Autopsies were regarded as the gold standard against which other methods should be assessed. Similar views were found among a majority of the hospital doctors who responded to studies undertaken in Los Angeles (6) and Boston (7), published in 2007.

The response rate among the doctors who participated in the studies from the US referred to above was 15 per cent (6) and 75 per cent (7) respectively. In our study, the response rate was 50.3 per cent. It is difficult to know whether a higher response rate

would have yielded other results. The failure to respond by half of the clinicians we regard as an expression of the workload in hospitals, where the amount of paperwork and filling in of forms has increased considerably. We assume that the non-responding group includes a preponderance of doctors who are ambivalent or not particularly engaged in the issue of autopsies.

A study among hospital directors in eight states of the US pointed to financial constraints and cost control as reasons for the declining number of autopsies (8), while the practitioners continue to argue in favour of the importance of autopsies (9, 10). Autopsies provide information to clinicians about the effectiveness of treatment, they can identify diseases that the doctor who provided the treatment was unaware of, and are also important for research and training. In addition, autopsies are valuable as a corrective to clinically based death certificates and mortality statistics (9, 11). In Norway, Alfsen et al. found that the clinicians had most likely recorded the wrong cause of death on one-

fifth of the death certificates, in addition to a number of formal errors found on the certificates, irrespective of whether an autopsy had been performed or not (12). A study from Australia concluded that it was desirable to have autopsies as a corrective to clinical diagnoses of the cause of death for certain conditions, especially pulmonary embolism, intestinal ischemia, pneumonia and myocardial infarction (13). The most likely explanation is that in some cases, these conditions produce only unspecific and vague symptoms and signs. To counteract the declining autopsy rate, some institutions have started to emphasise partial autopsies or performing them with the aid of endoscopy or in combination with MR (10). However, endoscopy, MR and similar techniques have certain limitations (10). They are time-consuming and involve expensive equipment that tends to be in short supply, and compared to a full post mortem they provide less opportunity to retrieve tissue samples, for example for microscopy and chemical analysis.

Table 1: Summary of responses from the clinicians

Response	Number	Percentage ¹
Autopsy is a good means of quality assurance and quality control of clinical work.	297 of 361	82
Autopsies ought to be performed more frequently.	302 of 362	83
The benefits of maintaining the autopsy rate at the present level are commensurate with the resources devoted to this task.	181 of 363	50
Autopsies remain as important today as they were previously, in spite of technological progress in medicine.	237 of 364	65
A quick response to autopsies will help increase the number of autopsies performed.	184 of 360	51
Better communication between clinicians and pathologists will help increase the number of autopsies performed.	254 of 363	70
Health personnel should be trained in how to provide information on the importance of autopsies to patients and their next of kin.	256 of 364	70
The number of refusals could be reduced if better information on the importance of autopsies for determination of correct diagnosis [-ses] and mortality statistics were provided to the population.	279 of 359	78

¹ Responses in per cent of all those responding to the question. Some respondents did not answer all questions.

Table 2: Summary of responses from the departments of pathology

Response	Number	Percentage ¹
Autopsies ought to be performed more frequently.	16 of 18	89
The number of hospital autopsies has declined since the introduction of new regulations in 2004.	11 of 18	61
The number of refusals has increased since the introduction of new regulations in 2004.	10 of 17	59
Health personnel should be trained in how to provide information on the importance of autopsies to patients and their next of kin.	18 of 18	100
The number of refusals could be reduced if better information on the importance of autopsies for determination of correct diagnosis [-ses] and mortality statistics is provided to the population.	14 of 18	78
Prosecutors and courts too rarely request an autopsy in cases where this would be relevant in accordance with laws and regulations.	12 of 16	75

¹ Responses in per cent of those departments of pathology that answered the question.

The impact of legal acts and regulations on autopsy practices is also reflected in the fact that most departments reported a declining autopsy frequency after the introduction of new regulations in 2004, with the requirement that the next of kin should receive advance notice. This corresponds with developments in France, for example (14). A UK study published in 2011 showed, however, that a large majority of the next of kin take a positive view of autopsy if they are provided with thorough information (15).

As regards the long response time for autopsies, several explanations are possible. This study revealed a median response time of 66 days before the final autopsy report became available. A workgroup appointed by the Norwegian Board of Health Supervision argued that the response time should not exceed four weeks for ordinary autopsies (16). The long response time is probably related to the workload in departments of pathology, and that they are under considerable pressure to give priority to cancer diagnostics and other forms of emergency diagnostics on living patients. For many years, the response time for tissue and cell sample tests has constituted a bottleneck for the treatment of patients with cancer and other serious diseases. Microscopy of tissue samples from deceased persons and the completion of autopsy reports are tasks that to some extent are being performed in between other jobs, if and when there is time. Nevertheless, there are obvious differences between the departments of pathology. In our study, the average response time varied from 14 to approximately 150 days. In other words, it seems clear that priorities and appropriate organisation can produce major improvements in the response time. In 2007, Berget et al. came to the same conclusion for Haukeland University Hospital (17). They found

that a modest reorganisation of department routines and the pathologists' work schedule could result in a considerably shortened response time.

Since such long periods of time elapse before the final autopsy report is completed, it is remarkable that so few clinicians participate when the pathologists demonstrate their autopsy findings. In such demonstrations, the clinicians obtain first-hand information on their previous patients. We would like to encourage especially our younger colleagues to participate more often in such clinical-pathological demonstrations and conferences. Experienced clinicians should seek to facilitate such participation. Since the autopsy frequency is low, it seems especially important to ensure that those autopsies that are performed maximise their learning outcome.

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Conflicts of interest: None declared.

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