

The declining autopsy rate and clinicians' attitudes

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SUMMARY

The autopsy rate has been declining worldwide for decades. This study determined the overall and differential autopsy rates for the Royal Victoria Hospital, Belfast for the years 1997-1999 inclusive. Trends were examined by comparison with previously collected data for the years 1990, 1991 and 1993. Reasons for the decline in autopsy rates as perceived by hospital clinicians were assessed by means of a questionnaire. Over the last decade, there has been a steady decline in the overall autopsy rate from 30.4% in 1990 to 18.4% in 1999. This is due to a decrease in the hospital autopsy rate from 21.6% in 1990 to 7.9% in 1999. The coroner's autopsy rate has remained comparatively unchanged at around 11%. The decline in the overall and hospital autopsy rates involves all of the principal bedholding directorates, but is most dramatic in medicine, surgery and intensive care, where hospital autopsy rates are currently 7% or less. The main reasons for this decline as perceived by clinicians are difficulty in obtaining consent from relatives and advances in modern diagnostic techniques. The findings of this enquiry are in keeping with trends elsewhere, despite repeated studies which clearly demonstrate the continuing value of the autopsy in clinical practice. Recent publicity concerning the retention of organs can only have an adverse affect. Pathologists and clinicians who value the autopsy must become actively engaged in both public and medical education. Renewed emphasis must be placed on the importance of the autopsy in teaching, training and clinically relevant research, and as a means of medical audit.

INTRODUCTION

Autopsies performed by hospital based pathologists fall into two categories. Hospital or non-coroner's autopsies require the consent of relatives and are requested by clinicians in a variety of situations. Medicolegal autopsies are performed on behalf of local coroners, who may request an autopsy for various reasons. Relatives' consent for a coroner's autopsy is not required. With regard to deaths occurring outside hospital, only in the minority of cases reported to the coroner will there be any likelihood of an autopsy. General practitioners do not normally request autopsy permission and indeed generally do not have contractual access to a routine autopsy service. The adverse connotations associated with the coroner's autopsy may encourage general practitioners to issue a death certificate in cases where there is only circumstantial evidence of the underlying cause of death. Overall, therefore, in numerical terms, autopsies on hospital patients remain the principal source of pathologically verified causes of death and any decline in autopsy practice within hospitals is a matter for concern.

The autopsy rate in hospitals has been declining for decades, a fact which has been documented both worldwide and locally.¹⁻³ There are many reported reasons for this decline.^{4,5} The situation is obviously complex, but it has been suggested that the most important single factor is the level of interest amongst individual consultant clinicians.^{6,7} In this study we examined figures for adult autopsy rates in the Royal Victoria Hospital (RVH), Belfast, over the last three years. These figures were compared with records which were available for the years 1990, 1991 and 1993. In addition we circulated a questionnaire among consultant clinicians in an attempt to investigate local attitudes to the decline in the autopsy rate.

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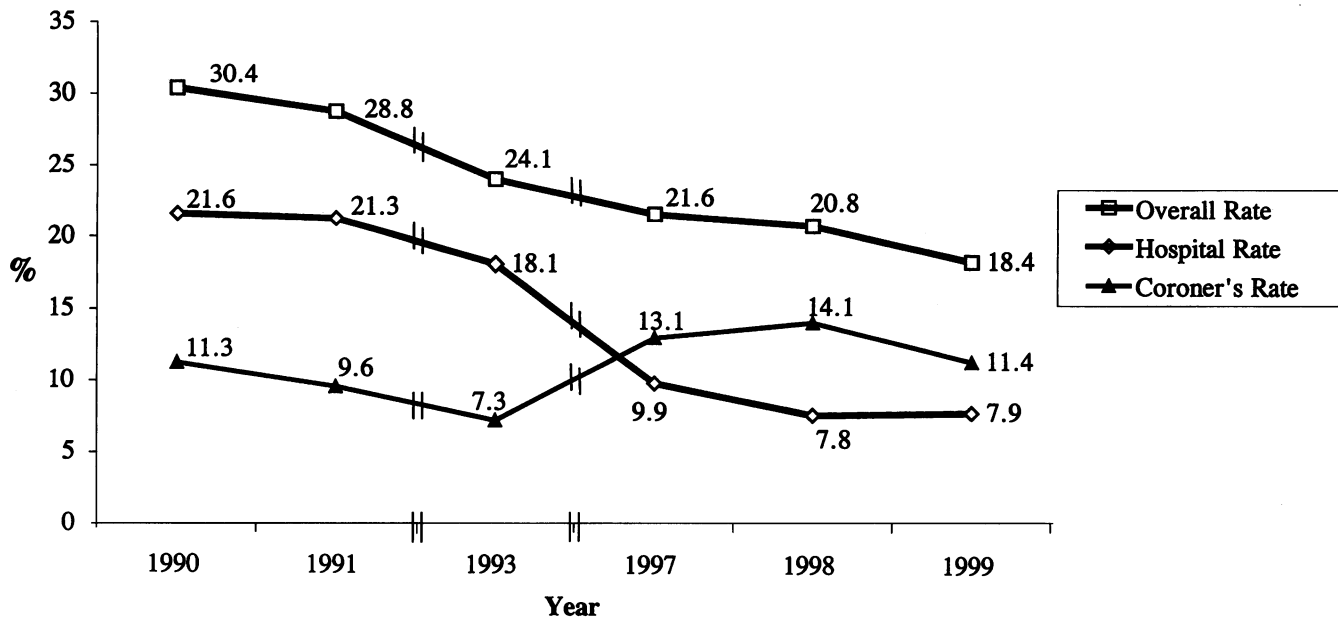
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Fig 2 Autopsy rates per year – overall and differential



METHODS

We identified all hospital deaths occurring in the RVH in the years 1997-1999 inclusive. These data were retrieved from the hospital Patient Administration System (PAS) and from log books held within the hospital mortuary which contain a record of all hospital deaths and of all autopsies performed. Deaths occurring in the Royal Maternity Hospital and the Royal Belfast Hospital for Sick Children were excluded.

The overall autopsy rate was calculated, as well as the coroner's and hospital autopsy rates. These are known as the differential autopsy rates. In this study, the coroner's autopsy rate is defined as the total number of coroner's autopsies divided by the total number of deaths. The hospital autopsy rate is defined as the total number of hospital autopsies divided by the total number of deaths, excluding those cases which underwent a coroner's autopsy. This is because it cannot be assumed that, in a case which underwent a coroner's autopsy, a hospital autopsy would not have been asked for had the coroner not intervened. The autopsy rates were determined for the hospital as a whole, and also for each individual bedholding directorate. Patients were assigned to directorates according to the consultant in charge at the time of death. These records were already available for the years 1990, 1991 and 1993. The directorate structure within the hospital has not changed significantly within the period of this study.

The second part of the study involved examining clinicians' attitudes towards the autopsy by means of a questionnaire circulated among consultant clinicians within the RVH who have access to the autopsy facility. Clinicians were asked to score each of nine possible factors, using a visual analogue scale from 0 to 9, according to how important they felt was its contribution towards the decline in the autopsy rate (fig. 1). These statements were adapted from relevant literature published on this subject.^{4,5} Mean scores were calculated for each factor. Respondents were also given the opportunity to express any additional comments. Since replies were anonymous, variations in response between individual directorates could not be examined.

RESULTS

Table I shows, for each year included in the study, the total numbers of hospital deaths; the total numbers of autopsies performed, with their breakdown into coroner's and hospital categories; and the overall and differential autopsy rates. There has been a steady decline in annual total autopsy numbers from 281 in 1990 to 169 in 1999, with only minor variations in the numbers of hospital deaths, which ranged from 827 to 923 per year. Examination of the numbers of coroner's and hospital autopsies reveals the changing pattern in autopsy practice, with a greater proportion of coroner's autopsies and a marked decline in the hospital autopsy rate. The overall and differential autopsy rates are demonstrated graphically in

TABLE I

Total numbers of hospital deaths, numbers of autopsies and autopsy rates per year

Year	Total Deaths	Autopsy numbers			Autopsy Rate (as % of deaths)		
		Total	Hospital	Coroner's	Overall	Hospital	Coroner's
1990	923	281	177	104	30.4	21.6	11.3
1991	874	252	168	84	28.8	21.3	9.6
1993	827	199	139	60	24.1	18.1	7.3
1997	850	184	73	111	21.6	9.9	13.1
1998	849	177	57	120	20.8	7.8	14.1
1999	920	169	64	105	18.4	7.9	11.4

TABLES II-IV

Overall and differential autopsy rates as % of deaths per year for each directorate of the Royal Victoria Hospital

* Small numbers of deaths in ENT and ophthalmology preclude meaningful interpretation

TABLE II

Overall Rate as % of Deaths

Directorate	1990	1991	1993	1997	1998	1999
Surgery	39.2	31.3	21.2	28.3	20.2	23.6
Medicine	19.1	19.3	22.5	13.5	12.2	11.8
Neuroscience	62.7	41.7	37.7	42.6	35.3	46.2
Cardiothoracic	40.5	38.6	29.9	19.7	27.1	20.0
ICU	51.9	51.9	21.2	41.1	39.2	25.9
*ENT	9.5	0	6.7	0	20	0
*Ophthalmology		0	0	100	0	0
Entire Hospital	30.4	28.8	24.1	21.6	20.8	18.4

TABLE III

Hospital Rate as % of Deaths

Directorate	1990	1991	1993	1997	1998	1999
Surgery	23.1	20.2	11.9	13.2	4.6	6.9
Medicine	16	15.3	17.8	7.6	5.7	6.1
Neuroscience	50	36.4	26.7	25.0	10.8	22.2
Cardiothoracic	36.3	31.7	26.2	12.1	17.3	12.2
ICU	19.6	30.9	11.8	9.9	8.1	7.0
*ENT	9.5	0	6.7	0	11.1	0
*Ophthalmology		0	0	0	0	
Entire Hospital	21.6	21.3	18.1	9.9	7.8	7.9

TABLE IV
Coroner's Rate as % of Deaths

Directorate	1990	1991	1993	1997	1998	1999
Surgery	20.9	13.9	10.6	17.4	16.3	17.9
Medicine	3.7	4.7	5.7	6.4	6.9	6.1
Neuroscience	25.4	8.3	15.1	23.4	27.5	30.8
Cardiothoracic	6.6	10.0	5.1	8.7	11.9	8.9
ICU	40.3	30.4	10.6	34.7	33.8	20.3
*ENT	0	0	0	0	10	0
*Ophthalmology		0	0	100	0	
Entire Hospital	11.3	9.6	7.3	13.1	14.1	11.4

FIGURE 1.

Nine statements were presented in a questionnaire to consultant clinicians, who were asked to score each from 0 to 9, using a visual analogue scale, according to how important they felt was its contribution towards the decline in autopsy rate. Mean scores are shown and the statements ranked according to perceived importance.

MEAN SCORE

1. 5.8 Difficulty obtaining consent from relatives because of their perceptions of the autopsy.
2. 5.5 Advances in modern diagnostic techniques reducing the need for autopsy.
3. 4.7 Unavailability of reports in "clinically relevant time" i.e. excessive time lapse between patient's death and receiving report.
4. 4.6 Lack of direct feedback between pathologist and clinician at the time of autopsy.
5. 3.9 The lower profile of the autopsy in the medical undergraduate curriculum.
6. 3.7 Inconvenience and inability to view autopsy material.
7. 2.9 Lack of enthusiasm for autopsy practice shown by pathologists.
8. 2.4 Increasing fear that unexpected autopsy findings may lead to litigation.
9. 2.0 Lack of satisfaction with the quality, content or format of reports.

figure 2. Over the decade, the overall autopsy rate has dropped from 30.4% in 1990 to 18.4% in 1999. This is due to the decrease in the hospital autopsy rate, from 21.6% in 1990 to 7.9% in 1999. The coroner's autopsy rate has remained relatively unchanged over this period at approximately 11%. Tables II-IV show the overall and differential autopsy rates within each directorate for the years studied. The fall in both overall and hospital autopsy rates affected even the neurosciences and cardiothoracic directorates, where autopsy rates are generally higher than average. The decline, however, was most dramatic in the medical, surgical and intensive care directorates, where hospital autopsy rates are currently only 7% or less.

QUESTIONNAIRE DATA

Of 71 questionnaires circulated, 32 replies were received, giving a response rate of 45%. The mean scores for each factor are as shown in figure 1, and the factors are ranked according to the overall perceived order of importance. Additional comments were invited and were offered by 60% of respondents.

DISCUSSION

This study confirms the progressive decline in the overall and, more specifically, the hospital autopsy rate within the Royal Victoria Hospital, Belfast. This is in line with the rest of the United Kingdom and with general experience elsewhere.^{1,2} The most important reason for this decline, as perceived by consultant clinicians, is increasing difficulty in obtaining consent from relatives for a hospital autopsy. Comments suggested that consent was often declined because of a possible delay in the funeral, or a negative

view of the autopsy held by the relatives. This negative perception has perhaps resulted from the lack of involvement of the general public in dialogue concerning the autopsy.⁸ Relatives may not appreciate the benefits of an autopsy and may prefer to "maintain the physical dignity" of their loved one, rather than determine the exact cause of death. It might be expected that recent controversy in the media regarding the retention of organs at autopsy will exacerbate this problem. The Royal College of Pathologists is currently considering this matter, with particular focus on modification of the consent format to include allowance for organ or tissue retention in appropriate cases and to ensure fully informed consent. Contributing to the problem is the fact that seeking consent for hospital autopsies still usually falls to the more junior members of the medical staff, who may "sign off" death certificates because no instructions have been left by the consultant that an autopsy should be requested. It has been previously shown that the approach used by clinicians to obtain consent affects the likelihood of a positive response from the relatives.^{9,10} If the clinician concerned is not convinced of the worth of an autopsy, this can only reduce the chances of obtaining a positive response from the relatives. Techniques of communication with the bereaved should be improved, a matter which should be addressed at both an undergraduate and postgraduate level.¹¹ A summary of the uses of the autopsy should be available in all clinical units (figure 3).

The second commonest reason cited by clinicians for the decline in the autopsy rate is the considerable advance in modern diagnostic techniques. Modern radiological methods of imaging and the ability to obtain tissue samples from deep-seated lesions either by trucut biopsy or fine needle aspiration have resulted in an antemortem diagnosis of malignancy in many cases where this would not previously have been possible. This has had a major effect on autopsy rates, notably within the surgical directorate, where a large number of deaths are due to advanced malignancy, in which a tissue diagnosis has already been made. In cases where the underlying diagnosis is thought to be reasonably clear, an autopsy rarely seems justified to clinicians. However, even where a primary diagnosis of malignancy is known, it has been shown that autopsy can often reveal unsuspected conditions and complications, particularly post-

FIGURE 3

A summary of the main uses of the autopsy.

Post mortems are carried out primarily to determine the cause of death. They are important for many reasons: -

Quality of Care

To assess the accuracy of clinical diagnosis
To assist in the audit of clinical care
To assist in counselling the bereaved

Quality of Statistics

To enhance the accuracy of death certification
To improve the quality of the Registrar General's cause of death statistics, for health services planning and epidemiology

Teaching and Training

To assist in medical undergraduate teaching
To assist in postgraduate medical training in all specialties
To assist in the professional training of pathologists

Research and Development

To advance medical research in the clinical, pathological and basic medical sciences
To validate new diagnostic procedures
To monitor the effectiveness and side effects of new medical and surgical therapies

Medico-Legal

To assist in the detection of crime
To assist the courts in legal actions for compensation for industrial injury or negligence

surgery, from which lessons can still be learned which are of relevance to the care of others.¹² Despite continuous improvements in diagnostic techniques, studies over a number of decades continue to show a surprisingly consistent rate of significant discrepancies between antemortem and postmortem diagnoses.¹³⁻¹⁵ Major discrepancies, although difficult to define, occur in around 10% of cases. With the constant introduction of new investigative and therapeutic procedures, the autopsy remains of fundamental value in monitoring their efficacy and complications.

The next most important perceived factors relating to the declining autopsy rate were the unavailability of the autopsy report in "clinically

relevant time” and a lack of direct feedback between pathologist and clinician at the time of autopsy. These were felt to be more important than the ability to view autopsy material directly. The quality of autopsy reports was not felt in general to be a problem, this statement receiving the lowest mean score, although there was occasional dissatisfaction with inconsistencies between the clinical course and the pathological findings. In addition, the clinicopathological correlation was sometimes deemed to be inadequate, with little attention paid to points of clinical interest. There have been previous reports documenting the inadequacies of communication between pathologist and clinician with regard to autopsies.¹⁶ Direct contact before the autopsy, or improved completion of autopsy request forms, a task again usually left to the most junior medical staff, could help to ensure that the autopsy addresses the issues which interest the clinician, as well as simply recording pathological findings consistent with a cause of death. This would result in improvements in the clinicopathological correlation in the final autopsy report. On the part of the pathologist, the time taken to produce the final autopsy report should be reduced, and communication of the gross autopsy findings to the clinician should be improved. This can usefully be supplemented in appropriate cases by rapid diagnostic histology of selected sections.¹⁷ In all cases, there should be direct contact between pathologist and clinician immediately following the autopsy, not least because relevant autopsy findings can be of assistance in counselling the bereaved.

The role of autopsy pathology in the new undergraduate medical curriculum has declined; many clinicians commented that they were unaware of this change. Many junior doctors have never attended an autopsy, while in general practice there is no tradition of autopsies by consent.¹⁸ There is therefore an ever greater need for medical education at undergraduate and postgraduate level, to focus on the value of the autopsy as a useful investigative and teaching tool and as a means of medical audit. Autopsies provide excellent educational resources for interested clinicians at clinicopathological conferences. Many subscribers to this Journal will be aware of the long-established local tradition established by Sir John Henry Biggart, who is commemorated in the award of the Biggart Trophy at a major clinicopathological conference

held annually by the Ulster Medical Society, under the auspices of the Royal College of General Practitioners. One of the present authors has participated in this event for the past fifteen years and, over this period, the challenge presented by these autopsy-based conferences has never failed to stimulate participants and audience alike.

Lack of enthusiasm for autopsy practice amongst pathologists and fears of litigation were not perceived as important reasons for the decline in the autopsy rate. The latter is perhaps surprising in these days of increased public and medical awareness of malpractice litigation.

In conclusion, the overall autopsy rate within hospitals continues to decline, mainly as a result of reduced numbers of hospital autopsies. The main reasons for this are perceived by clinicians to be difficulty in obtaining consent from relatives and advances in modern diagnostic techniques. With increasing media attention focusing on the retention of organs and tissues, consent may become more difficult to obtain. In the modern era of clinical governance and medical audit, we must not lose sight of the fundamental contribution which the autopsy makes to medical training and to quality assurance in clinical care. Action and commitment will be required from both pathologists and clinicians if the autopsy is to maintain its position as the “ultimate audit”.

† The Royal College has recently produced a comprehensive publication dealing with these and related issues (Ref 19).

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