

4 PATHOLOGY

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4. PATHOLOGY

Key Points

- *The postmortem rate has dropped from 41% in 1990 to 30% in 1998/99 with a disproportionate decrease in the percentage of hospital (consent) postmortems from 22% to 14%.*
- *Since 1990 there has been a great improvement in the content of postmortem reports, notably the marked increase in the number of reports that include a clinical history, summary of findings and a clinicopathological correlation. The Royal College of Pathologists' guidelines may now need expansion and updating into a minimum data set format, with inclusion of guidance on ONS (formerly OPCS) formatting for cause of death.*
- *The Office of National Statistics' guidelines should be extended and modified to include more information about acceptable causes and modes of death, with perhaps the adoption of a restricted list of acceptable conditions similar to national clinical disease coding lists.*
- *The proportion of limited postmortems may increase following recent recommendations on retention of organs and tissues after postmortem and the introduction of new postmortem consent forms.*
- *A similar proportion of clinicians are recording that they receive a copy of the postmortem report as in 1990, although fewer postmortems are attended by clinicians. Systems need to be established to ensure that clinicians always receive timely copies of both coroners' and hospital postmortem reports.*
- *The patient's medical records should always be available to the pathologist at the time of postmortem.*
- *Weight and height should always be recorded as part of the external appearances and taken into consideration in assessing relative size of internal organs.*

POSTMORTEM RATE

Of the 1518 surgical questionnaires received, 448 (30%) recorded that a postmortem had been performed, 62 of which were hospital (consent) postmortems. Two hundred and seventy-one reports were available to the pathology subgroup for scrutiny, representing 60% of those cases where it was recorded that a postmortem had been performed. Nine hundred and twenty cases were recorded as having been reported to the coroner and in 386 of these a coroner's postmortem was performed; in 111 of the questionnaires it was not known or the question was not answered.

In 1990⁴, 1058 of the 2558 questionnaires reported that a postmortem had taken place, indicating a 41% postmortem rate; 827 of these were for the coroner and 231 were hospital postmortems. There was a higher postmortem rate in 1990 than 1998/99 and a higher proportion of these (22%) were

hospital postmortems. One hundred and eighteen hospital and 486 coroners' reports were scrutinised, representing 57% of the cases which had postmortems, which is comparable to the current sample. Two percent of the 1990 reports were handwritten, in contrast to none in 1998/99.

In all, reports from 249 coroners' postmortems and 22 hospital cases were studied from the 1998/99 sample. Two hundred and fifty-six cases (94%) had a full postmortem, but in 15 cases the postmortem was limited, with the most frequent exclusion being the central nervous system. The number of limited postmortems is thought likely to increase following the publication of guidelines on organ and tissue retention⁵⁴ and the proposed new postmortem consent form⁵⁵. Recognition that the autopsy is important in audit⁵⁶ and governance has not increased the postmortem rate in the last ten years and it is likely that it will continue to decrease, particularly for those procedures requiring consent from next of kin.

THE POSTMORTEM EXAMINATION REPORT

Clinical history

A clinical history was provided in 88% of coroners' postmortems and 100% of the hospital cases. In 94% of cases the history was satisfactory or better. It is recognised that some coroners do not wish such histories included with their reports and in some cases only a brief history appears to have been available, suggesting that the notes were not scrutinised at the time of the postmortem. In contrast, only 76% of coroners' postmortems and 82% of hospital cases provided a clinical history in 1990.

Description of external appearances

Most reports had an adequate description of the external appearances with 27 (10%) falling below an acceptable standard, which is similar to the figure of 12% in 1990. Scars and incisions were measured in 159 (59%) cases, which is an improvement on the 51% recorded in 1990. The height was recorded in 150 (55%) cases, but the weight was only recorded in 121 (45%). In assessing the relative weight of body organs these parameters are useful, particularly the body weight in relation to the heart weight³⁷ and it was a concern that this was recorded in less than half the cases scrutinised.

Gross description of internal organs

The majority of descriptions of the internal organs were deemed satisfactory or better (89%). In 29 cases (11%) the gross description of the internal organs was thought to be poor or inadequate, or inappropriate to the clinical problem. In nine cases (3%) no organs at all were weighed, contrasting with the 26% of cases in 1990 where no weights were recorded.

Table 4.1: Number of organs weighed (271 cases; answers may be multiple)

Organ	Number
None	9
Brain	234
Lungs	246
Heart	255
Liver	238
Spleen	233
Kidneys	231
Other	7

Description of the operation site

In 38/271 (14%) cases the operation site was not described. In the 1999 NCEPOD report, 'Extremes of Age'², 27% of the operation sites in elderly patients were not described. The majority of procedures in that report were orthopaedic and it was noted that these sites were less likely to be fully examined and described than sites of internal operations. This data was not specifically recorded in 1990.

Postmortem histology

Seventy cases (26%) had postmortem histology performed (59 (24%) of the coroners' cases and eleven (50%) of the hospital cases), a marked increase on the 15% noted in 1990. In 53 of the 70 cases a histology report was included with the postmortem report. All but two of these 53 reports were graded satisfactory or better. In the majority of the other cases histology would have added little or nothing to the value of the postmortem and in only 36 cases was the absence of a histology report thought to detract from the value of the postmortem report. It was recognised that histology may have been undertaken on some of these cases but it was either not recorded in the anatomical report, or an additional report may have been issued at a later date that was not available for scrutiny.

Summary of lesions, clinicopathological correlation and ONS cause of death

ONS/OPCS cause of death	1998/99	1997/98	1996/97	1994/95	1993/94*	1992/93
Yes	258 95%	94%	94%	96%	91%	82%
No	13 5%	6%	6%	4%	9%	18%

* The 1993/94 report did not specifically mention an OPCS cause of death but asked "Is a certified cause of death present?" No question about recorded or certified cause of death was asked in 1990.

A summary of the lesions was present in 205 (76%) cases, whereas in 1990 it was only present in 37%. Usually this was in the form of a list, but in many cases it was not in order of importance to the clinical condition. A clinicopathological correlation was present in 150 (55%) cases; in 1990 this was only 39%. Nine percent of these were felt to be poor or inadequate. The majority of the reports (95%) included an ONS (previously OPCS) cause of death but in 9% of cases this did not correspond to the text report and in 5% it did not follow ONS formatting rules. The lack of a list of lesions was not thought by the advisors to be so detrimental to the quality of the report as the lack of a clinicopathological correlation or a well formulated ONS cause of death. Guidance on the formatting of ONS causes of death may be found in the front of death certificate books⁵⁸ and a training video and information pack 'Death Counts'⁵⁹ is also available. However, there are no lists of recommended terms issued by the ONS similar to those used for clinical and disease coding so many terms and synonyms are used.

It was not known whether the full medical records were available to the pathologist at the time of postmortem but it was thought by the advisors that this might improve the clinicopathological correlation, particularly in the more complex cases.

In only 101/271 (37%) cases was the operation mentioned in the ONS cause of death (Table 4.3). Even when death occurred within the first week following operation, only 71 (38%) pathologists mentioned the operative procedure in the cause of death. This is a lower percentage than seen in the 1999 report, when 46% of reports noted the operation in the cause of death. There are no specific ONS guidelines on this matter, but the advisors considered that the operation was a contributory factor in the causation of death in a majority of cases and should at least be specifically recorded within part 2 of the ONS cause of death. Terminology such as 'fractured neck of left femur (operated upon)' or 'adenocarcinoma of the caecum (resected)' could be used.

Day of death	Number of cases	Operation in ONS cause of death
Day of operation	44	17 39%
Day 1-7	143	54 38%
Day 8-30	84	30 36%
Total	271	101 37%

Overall score for postmortem examinations

Quality of postmortem	1998/99		1990
Unacceptable, laying the pathologist open to serious professional criticism	9	3%	5%
Poor	54	20%	19%
Satisfactory	117	43%	56% *
Good	80	30%	
Excellent, (meeting all standards set by RCPATH 1993 guidelines)	11	4%	20%
Total	271		

* the 1990 report had a grouping of 'adequate/satisfactory'. 'Good' was not a grouping.

Only nine (3%) of the 1998/99 reports were thought to be of a very low standard, often because of their brevity and lack of correlation with the clinical history (Table 4.4). Fifty-four (20%) of the cases had a poor report. Two hundred and eight (77%) were graded satisfactory or better. These figures are remarkably comparable to the 1990 data, although the number of reports graded excellent, 20% in 1990 and only 4% in 1998/99, probably indicates the application by the advisors of the 1993 RCPATH guidelines⁶⁰ to the current sample of reports, which were not available nine years ago.

The detection of unexpected findings at postmortem reiterates the findings of previous years with 45 cases (17%) where a major discrepancy between clinical diagnosis and postmortem examination was found and a further 17 cases (6%) where a minor discrepancy or interesting incidental finding was found (Table 4.5). In 27 (10%) cases there was a failure to explain some important aspect of the case, although in nine of these the autopsy was felt to have been conducted satisfactorily.

Postmortem findings	Coroner's	Hospital	Total
A discrepancy in the cause of death or in a major diagnosis which, if known, might have affected treatment, outcome or prognosis	12	3	15
A discrepancy in the cause of death or in a major diagnosis which, if known, would probably not have affected treatment, outcome or prognosis	30	0	30
A minor discrepancy	2	0	2
Confirmation of essential clinical findings	203	18	221
An interesting incidental finding	14	1	15
A failure to explain some important aspect of the clinical problem, as a result of a satisfactory autopsy	9	0	9
A failure to explain some important aspect of the clinical problem, as a result of an unsatisfactory autopsy	16	2	18

ATTENDANCE OF THE SURGICAL TEAM AT THE POSTMORTEM

An analysis of all 448 questionnaires indicating that a postmortem had taken place showed that only 127 (28%) surgical teams reported that they had been informed of the time and place of the postmortem compared to 355/1058 (34%) in 1990. Sixty-five of these clinicians (51%) indicated attendance of a member of the team at the postmortem compared to 72% in 1990. Lack of attendance, when stated, was mainly due to unavailability of the surgeon, other commitments or a feeling that nothing was to be gained from the postmortem as the diagnosis was already known.

COMMUNICATION OF THE POSTMORTEM RESULT TO THE SURGICAL TEAM

Table 4.6: Communication of postmortem results to the clinical team

Results to clinical team	1998/99		1990	
Postmortem copy received	338	75%	823	78%
Postmortem copy not received	90	20%	206	19%
Not answered	19	4%	29	3%
Not known	1	<1%	0	-
Total	448		1058	

Table 4.7: Time taken for first information to be received by clinical team

Days after patient's death	Coroner's	Hospital	Total
Less than 8 days	74	18	92
8 - 30 days	48	9	57
31 - 60 days	8	2	10
More than 60 days	30	4	34
Not answered	125	20	145
Total	285	53	338

In 90 cases (20%) the surgeon noted that no postmortem result was received by the clinical team (Table 4.6). The majority of those who answered the question indicated that the reports were received within one calendar month (Table 4.7). The pathological information was thought by the surgeons to confirm the clinical impression in 81% of cases and in 20% there were additional clinically unexpected findings noted as a result of the postmortem by the clinician. This is comparable to previous years including 1990.

CAUSE OF DEATH ASSIGNED BY PATHOLOGIST

Table 4.8: Cause of death assigned by pathologist

Cause of death	Number	
Cardiovascular disease	97	36%
Sepsis/DIC	35	13%
Pneumonia (excluding aspiration)	32	12%
Gastrointestinal disease	26	10%
Pulmonary embolism	17	6%
Malignant disease (as cause of death)	15	6%
Other primary lung disease	6	2%
Cerebrovascular disease	5	2%
Aspiration pneumonia	4	1%
Others including trauma	26	10%
Not stated	8	3%
Total	271	

The most common cause of death was cardiovascular disease (97/271, 36%) followed by infective pneumonias and sepsis (67/271, 25%), which together made up 61% of the causes of death. Pulmonary embolism was uncommon and caused only 17 deaths (6%), which is similar to the 5% of deaths from pulmonary embolism in the 1999 report on the elderly. This may well indicate the current success of preoperative prophylactic measures. In two of the cases where no cause of death was given the postmortem was limited.

COMMENT

The postmortem rate has dropped from 41% in 1990 to 30% in 1998/99 with a disproportionate decrease in the percentage of hospital (consent) postmortems from 22% to 14%. Since 1990 there has been a great improvement in the content of postmortem reports notably the marked increase in the number of reports that include a clinical history, summary of findings and a clinicopathological correlation. The Royal College of Pathologists' 1993 guidelines⁶⁰ are in general being followed, with most postmortem reports being of a good standard. A clinicopathological correlation, however, was not present in just under half of the cases studied. A minimum data set approach to postmortems may assist in improving reports.

ONS formatting rules for cause of death are not always followed and causes of death given in parts 1a, 1b and 1c are sometimes not appropriately related. The recent operation is frequently omitted from the ONS cause of death; it should be given as part of the cause of death in most cases, usually under 2 (contributory cause not directly causing death). An update of the Royal College of

Pathologists' postmortem guidelines with specific attention to ONS rules⁵⁸ may help address this in the future.

Unlike clinical codes used in hospitals to classify patient episodes, there is no list of acceptable terms for causes of death and underlying conditions. Such a list would help standardise terms used on death certificates and may improve death certification. Such a list could be included in the ONS guidelines^{58, 59} and may help with more accurate death statistics collection.

Too few postmortem examinations are attended by the surgical team, although the majority of clinicians are informed of the cause of death in a timely manner and most receive a copy of the report. A similar proportion of clinicians are recording that they receive a copy of the postmortem report as in 1990, although fewer postmortems are now attended by clinicians.

Pulmonary embolism appears to be an infrequent cause of death, with cardiovascular disease, sepsis and pneumonia being the most common causes of postoperative death assigned by pathologists.

Future surveys should closely monitor the postmortem rate and the use of limited postmortems following the recent guidelines on retention of tissues and organs and recommended new format for postmortem request forms issued by the Royal College of Pathologists^{54, 55}.