Oesophageal and gastric cancer pathology reporting: a regional audit

S H Burroughs, A H B Biffin, J K Pye, G T Williams

Abstract

Aim—To audit the information content of pathology reports of oesophageal and gastric cancer resection specimens in Wales.

Methods—All such reports from the 16 NHS histopathology laboratories in Wales in a one year period were evaluated for their information content. Two standards were used: (1) best practice reporting, and (2) a minimum dataset required for informed patient management that included clear statements on histological tumour type, depth of tumour invasion, lymph node involvement, and completeness of excision.

Results—282 reports were audited. Minimum standards were achieved in 77% of gastric resections (156/203) and 53% of oesophageal resections (42/79). All laboratories achieved minimum standards in some gastric cancer reports (range 50–100%); three laboratories did not achieve minimum standards in any oesophageal cancer reports (range 0–100%). Best practice reporting was achieved in only 20% of gastric and 18% of oesophageal cancer reports. Failure to include an explicit statement on completeness of excision or involvement of the oesophageal circumferential resection margin were the most frequent causes of inadequate reporting. Most other data items were generally well reported, but apparent inadvertent omission of just one item was noted in many of the substandard reports.

Conclusions—This audit shows the need to improve the information content of pathology reports in gastric and oesophageal cancer. The widespread implementation of template proforma reporting is proposed as the most effective way of achieving this. Multidisciplinary meetings of clinicians involved in cancer management should provide a forum for greater communication between pathologists and surgeons, and help to maintain standards of pathological practice.

Keywords: audit; pathology reporting; gastric cancer; oesophageal cancer

The overall five year survival for patients with gastro-oesophageal cancer remains poor, at 5% or less. Only patients undergoing potentially curative resection have any prospect of long term survival, and in these, subsequent prognosis is strongly linked to tumour stage. Histopathological assessment of the resection specimen plays a vital role in patient management, in confirming whether complete excision has been achieved and in providing essential information for pathological TNM staging. As well as contributing to the management of individual patients, pathology reports provide information for cancer registration, for clinical audit, and for assessing the accuracy for new diagnostic and preoperative staging techniques, such as endoluminal and laparoscopic ultrasound, contrast enhanced and spiral computerised tomography, and magnetic resonance imaging.

Guidelines for standardised surgical pathology reports are published in histopathology textbooks, but such proforma based reporting is not in widespread practice in the United Kingdom. A recent audit of colorectal cancer pathology reporting in Wales has highlighted deficiencies in a significant number of reports, with only 78% of colonic carcinoma reports and 47% of rectal carcinoma reports meeting minimum standards required for informed patient management. The results of this and other audits have prompted the Royal College of Pathologists to establish minimum datasets for reporting a range of common cancers in the United Kingdom. This paper presents the results of an audit of histology reports of gastric and oesophageal cancer resections in all of the NHS laboratories in one United Kingdom region (Wales) over a one year period.

Table 1 Data items abstracted from pathology reports and used for audit

<table>
<thead>
<tr>
<th>Criteria for best practice reports</th>
<th>Length of the specimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of the tumour</td>
<td>Gross appearance of tumour</td>
</tr>
<tr>
<td>Histopathological type</td>
<td>Degree of tumour differentiation</td>
</tr>
<tr>
<td>Lauren classification</td>
<td>Extent of tumour spread</td>
</tr>
<tr>
<td>Involvement of the resection ends by tumour</td>
<td>Involvement of the circumferential resection margin by tumour</td>
</tr>
<tr>
<td>Complete local excision</td>
<td>Background abnormalities</td>
</tr>
<tr>
<td>Involvement of lymph nodes by tumour</td>
<td></td>
</tr>
</tbody>
</table>

Items abstracted but not included in best practice standards

Number of lymph nodes examined

Number of lymph nodes positive

Division of lymph nodes by distance (< or > than 3 cm) from tumour.
Methods
All cases of gastric and oesophageal cancer treated in NHS hospitals in Wales between 1 September 1995 and 31 August 1996 were included in a comprehensive audit, the remit of which included clinical management and follow up at one year, as well as histopathology reporting of resection specimens. The clinical director of each participating histopathology laboratory was contacted to request permission for inclusion of their departmental reports in the study. Copies of all gastric and oesophageal cancer resection pathology reports were subsequently obtained. The presence or absence of a statement on items of information in these reports was recorded on a proforma by three experienced data collectors, and transferred to a computer database by an optical mark scanner. The accuracy of data recording was validated by a histopathologist checking the abstracted information from a randomly selected 10% of resections against the original pathology report.

Table 1 shows the pathology information items included in the proforma. These items were selected following discussions at local multidisciplinary upper gastrointestinal cancer meetings, and on the basis of guidelines presented in standard histopathology reference books. Reports which contained information on all items were considered to satisfy best practice standards. A subset of data, considered to represent the minimum information necessary for an adequate report, is shown in Table 2. To date, no nationally agreed standards for reporting gastric and oesophageal cancer specimens exist in the United Kingdom, and the audit criteria were not circulated to participating pathologists before the period of data collection. The results therefore reflect reporting practice before any interventions aimed at quality improvement.

Results
In all, 282 pathology reports were included in the audit, 72% of which were resections for gastric cancer and 18% for oesophageal cancer. Figure 1 shows the number of reports obtained from each laboratory, which varied from three to 34. Gastric resections were received from all 34 laboratories; oesophageal resections were submitted to 14 laboratories. Resections performed for pathology other than carcinoma (four non-Hodgkin lymphomas, one gastric stromal sarcoma, one oesophageal melanoma), were excluded from the study. Two further resections were excluded from the analysis as no residual local tumour could be identified in the resection specimen following preoperative chemoradiation therapy.

Validation of the abstracted data by a pathologist in a random sample (over 10%) of the reports showed a high level of agreement with the interpretation of the original report for the majority of information items. Occasional interpretative errors were identified with respect to gross appearance (diffusely infiltrating tumours) and differentiation (anaplastic tumours), leading to a slight underestimation of the frequency of reporting of these two items in the final results. However, interpretation of items necessary for minimum acceptable reporting standards was accurate. Data items regarding the total number of lymph nodes examined and the number of positive nodes were excluded from best practice criteria, as such data were not standardised in the reports and were subject to interobserver error when abstracted by the data collectors. For example, some laboratories received nodes, or groups of nodes, as multiple separate surgical specimens which were then reported individually. The data item regarding identification of positive nodes in gastrectomies as being within or beyond 3 cm of the tumour was also excluded from the best practice standard, as it is no longer a requirement of the TNM staging system.

Table 2  Minimum criteria for an adequate report

<table>
<thead>
<tr>
<th>Information Item</th>
<th>Percentage of All Gastric Resections Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of specimen</td>
<td>99.5</td>
</tr>
<tr>
<td>Distance along greater/lesser curves</td>
<td>83.3</td>
</tr>
<tr>
<td>Tumour size</td>
<td>88.2</td>
</tr>
<tr>
<td>Distance from nearest resection end</td>
<td>86.7</td>
</tr>
<tr>
<td>Gross appearance of tumour</td>
<td>86.7</td>
</tr>
<tr>
<td>Histological tumour type</td>
<td>97.0</td>
</tr>
<tr>
<td>Degree of tumour differentiation</td>
<td>83.3</td>
</tr>
<tr>
<td>Lauren classification</td>
<td>52.7</td>
</tr>
<tr>
<td>Extent of invasion</td>
<td>97.5</td>
</tr>
<tr>
<td>Completeness of local excision</td>
<td>83.7</td>
</tr>
<tr>
<td>Background abnormalities</td>
<td>73.4</td>
</tr>
<tr>
<td>Involvement of lymph nodes</td>
<td>98.0</td>
</tr>
</tbody>
</table>

Table 3  Percentage of all gastric resection reports containing statements on individual data items audited (all Wales)
The overall percentage of reports containing statements on each of the individual data items included in the study is shown in tables 3 and 4. No item was present in every report, although specimen length, tumour type, depth of invasion, and the presence or absence of lymph node involvement were recorded in the vast majority of cases (> 95% of all reports). Involvement of the proximal and distal ends of the oesophageal resections was well reported (96.2%), but the circumferential resection margin was often neglected, being mentioned in less than two thirds of cases. A clear statement regarding local excision of gastric tumours was missing in nearly one sixth of reports. Background abnormalities were recorded more often in the stomach than in the oesophagus (73.4% and 48.1%, respectively). The poor recording of Lauren classification in gastric resections was partly due to the frequent use of the terms “signet cell” or “signet ring” carcinoma when referring to the diffuse form of gastric cancer described by Lauren.¹

The percentage of reports from individual laboratories reaching minimum acceptable and best practice reports are shown in table 5, along with the results for Wales as a whole. These results must be interpreted with caution in view of the small numbers of resections performed in some centres. Minimum standards were reached in only 77% of gastric resections and 53% of oesophageal specimens. All laboratories reached minimum standards in some gastric reports but only one laboratory did so consistently. Three of the 14 laboratories reporting oesophageal resections failed to reach minimum standards in any reports; again, only one laboratory included the minimum data set in 100% of reports. Best practice reporting in a percentage of cases was achieved by eight of 14 laboratories reporting oesophageal cancers and 12 of 16 laboratories for gastric resections. There was no correlation between the number of gastro-oesophageal resections received by individual laboratories and the percentage of reports reaching minimum standards (Spearman rank correlation coefficient, ρ = -0.29, p > 0.10). In addition, good performance in gastric reporting by an individual laboratory did not correlate with good performance in oesophageal reporting (fig 2).
The total number of lymph nodes examined and the number of positive lymph nodes were recorded in 67% of cases. The median number of nodes examined in oesophageal resections was 6 (range 1 to 19), and in gastric resections, 8 (range 1 to 36).

Discussion

High quality pathology reporting of cancer resection specimens is essential for management of individual patients, for establishing the efficacy of new preoperative staging techniques and adjuvant treatment, for cancer registration, and for organisation of cancer services. It is therefore of concern that in our audit, only 77% of gastric cancer reports and 53% of oesophageal cancer reports satisfied the minimum standards for an adequate report. The data items selected for minimum standards—tumour type, local excision, depth of invasion, and involvement of lymph nodes—comprise the basic information necessary for clinical management and tumour staging. Completeness of local excision of tumour is the critical factor in defining potentially curative surgery, and the local excision of tumour is the critical factor in management and tumour staging. Completeness of excision could be identified by the pathological reports. Thus although a report may have included (in the pathologist’s opinion) all the information required to deduce whether resection was complete (that is, depth of tumour invasion and status of longitudinal resection margins), such reports would not satisfy the minimum standard criteria unless a specific, unambiguous statement regarding completeness of excision could be identified by the data collectors. A wide range of clinical staff, including surgeons, physicians, oncologists, palliative care teams, and general practitioners may need to interpret pathology reports on cancer resection specimens, and such reports should therefore be readily comprehensible to the non-histologist. For oesophageal specimens, involvement of the proximal and distal resection margins was almost always commented upon (96.2%) but the status of the circumferential resection margin was frequently ignored, being included in only 62% of reports. A retrospective study of oesophageal cancer resections has shown that, as in the rectum, circumferential resection margin involvement by tumour is related to subsequent local recurrence and decreased survival.10 Pathologists clearly need to be aware of advances in clinical practice, and be prepared to adapt their reporting of resection specimens accordingly. Regular communication between pathologists and surgeons at multidisciplinary cancer management meetings should provide an opportunity to identify difficulties at a local level, and ultimately improve and maintain quality of pathological practice.

Achievement of minimum reporting standards as defined by this audit does not require specialised training or interest in gastrointestinal disease, and should be within the capacity of all diagnostic histopathologists. Indeed, analysis of the individual data items required to meet minimum standards shows that tumour type, depth of invasion, and nodal involvement were generally well reported (97.5%, 97.2%, and 96.5%, respectively, for gastric and oesophageal resections combined), and that omission of these items from reports is infrequent and inadvertent. Likewise, although less than 20% of reports overall met best practice reporting standards, only five of the 23 individual items audited were recorded in less than 80% of reports. These results suggest that inconsistency in reporting, rather than persistent poor performance, is responsible for the majority of substandard reports. In this respect, our results are very similar to the findings of the audit of colorectal cancer reporting, also in Wales, published by Bull et al.7 There is no reason to believe that performance of Welsh NHS laboratories is any worse or better than elsewhere in the United Kingdom, although we are not aware of any comparable published audit data for gastric and oesophageal cancer reporting in other NHS regions.

Several investigators have proposed the implementation of standardised pathology proformas as a means of ensuring consistent incorporation of pathological data into all reports.11 12 The effectiveness of template proformas in improving the information content of mastectomy specimen reports and colorectal cancer resection reports has recently been demonstrated.13 14 Clinicians may also find standardised reports easier to interpret and extract information from. In addition, template proformas facilitate computerised data recording and retrieval for use in audit, clinical trials, and cancer registration. It is noteworthy that all the pathology reports included in this audit were composed in free form text. Reluctance of histopathologists to use preprinted proforma reports may stem from a perception that proformas are more time consuming to complete than free text reports, or are less aesthetically pleasing to the pathologist compared with composing sentences and paragraphs. However, we believe that the argument in favour of widespread use of template proformas for histopathology reporting of cancer resections is convincing.

The construction of minimum datasets for oesophageal and gastric cancer reporting, with emphasis on evidence based practice, should provide a framework for devising template proformas which are acceptable to both pathologists with ever increasing workloads and clinicians in need of accurate and complete prognostic information.

We wish to thank all of the pathologists and staff of the 16 NHS histopathology laboratories in Wales who have kindly provided access to the pathology reports, and Rita Carter and Kathy Morris who collected the data from individual hospitals. We also thank the Clinical Effectiveness Support Unit (Wales) for data processing facilities and the Welsh Office for financial support.
1 Some of the data presented in this paper have been published in abstract form (J Pathol 1998;186(supp):9A).


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