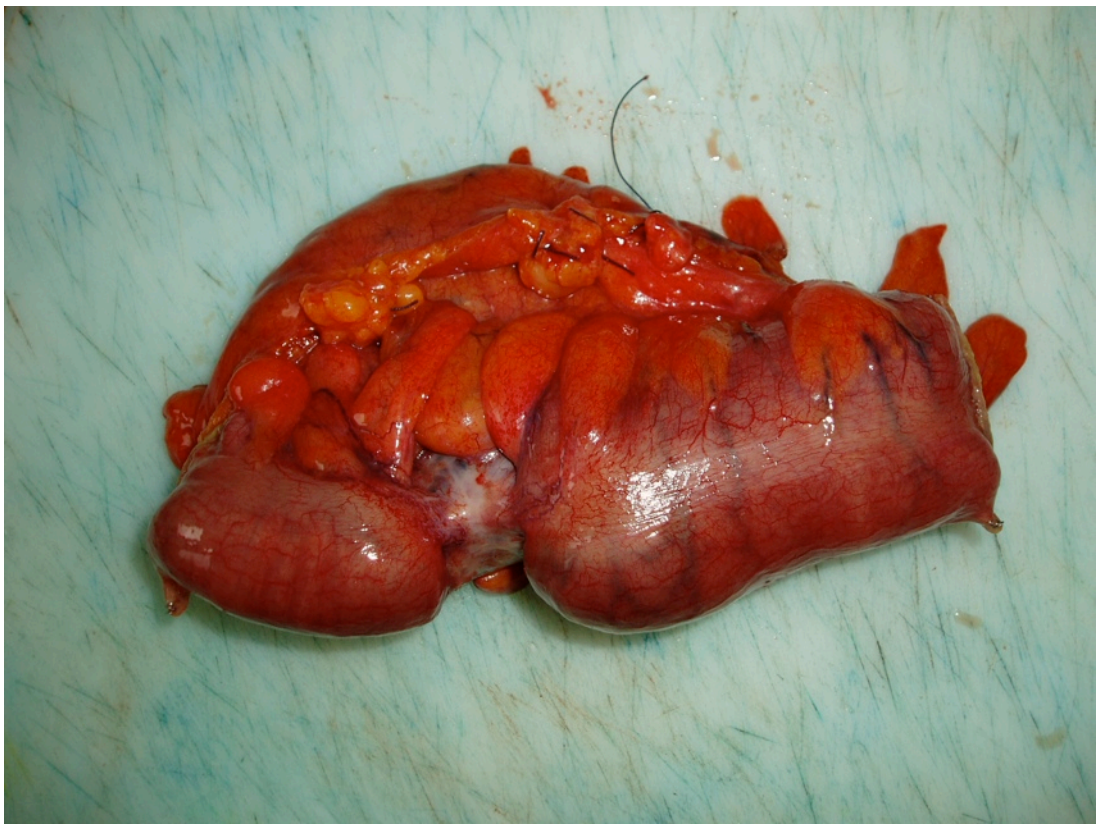
AUDIT OF COLORECTAL REPORTING

2011

Are we meeting the quality standards set by the RCPath?

May 2012



AUDIT OF COLORECTAL CANCER REPORTING 2011

Are we meeting the quality standards set by the RCPath?

Introduction

Hospital x receives in excess of 100 colorectal resections each year, which are examined and reported according to the standards set by the Royal College of Pathologists. In addition to introducing minimum data sets, the College have also set minimum quality standards for

- the yield of lymph nodes from resection specimens
- the frequency of serosal involvement and
- the incidence of extramural vascular invasion (EMVI).

The Standards

The number of regional lymph nodes which are positive for metastatic tumour is one of the most important prognostic indicators for survival of patients with colorectal carcinoma and it's presence is one of the indications for chemotherapy. It is therefore important that this is measured both accurately and reproducibly. As the sensitivity of identifying metastases in lymph nodes from a resection increases with the sample size, the Royal College of Pathologists recommend that in a series of at least 50 resections, a mean number of 12 lymph nodes should be examined.

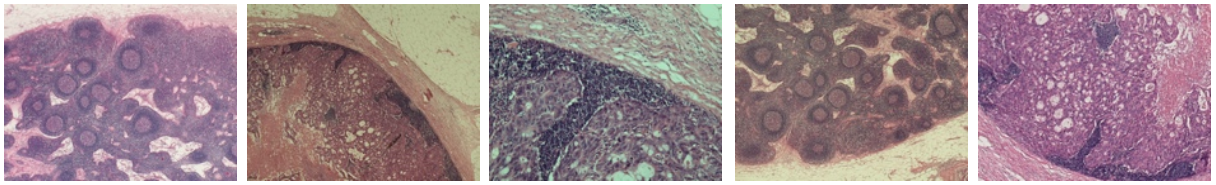
The number of lymph nodes identified in a resection specimen is highly dependent on the practice of the individual pathologist, although it may be influenced to a lesser degree by the extent of the resection and the variability of lymph node numbers at at different sites. Pre-operative radiotherapy can also influence the yield.

Tumour stage is also of prognostic significance and influences the treatment plan. Identifying a T4 tumour in most cases depends on the pathologist identifying whether tumour cells breach the peritoneal surface. This has been shown to be dependent on the pathologist taking appro-

priate blocks and thereafter identifying peritoneal involvement histologically. The College guidelines state that peritoneal involvement should be identified in at least 10% of rectal and 20% of colonic tumours.

The identification of Extramural Vascular Invasion (EMVI) is of particular importance in Dukes B carcinoma as it can be used to stratify this group prognostically and identify those node negative patients who would benefit from further treatment. There is known to be a broad range in the incidence of reporting this feature, but the College guidelines indicate that the frequency of finding EMVI should be at least 25%.

I therefore have audited all colorectal resections received by the department in 2011 in order to establish whether these targets have been met. I have also produced results for individual pathologists, so that each can compare their results with the average. My aim is to develop consistency in approach to specimen handling.



Aims

- to establish the departmental average number of lymph nodes sampled per colorectal case
- to provide similar data for the reporting frequency of peritoneal involvement and EMVI
- to provide results for each consultant
- to compare the results with the audits from previous years

Method

Each colorectal cancer specimen has an audit form containing the minimum data set completed by the pathologist at the time of reporting. I reviewed all of these forms for 2011 and

analysed the data. Any missing data items were added by myself after consultation with the pathology report retrieved from the departmental files.

Results

A total of 134 cases were identified for the period 1st Jan-31st Dec 2011, compared with 109 in the previous year. Early cancers confined to the bowel wall are the least common, whilst Dukes C tumours are commonest Fig 1.). Together, those groups without lymph node metastases (ie Dukes A + B), account for the majority of tumours (58%). This is similar to the figures for 2009 and 2010 which were 60% and 59% respectively. In comparison with those years, however, the number of Dukes' A tumours exceeded 25%, possibly related to the positive effect of the Bowel Screening Programme in picking up early cancers.

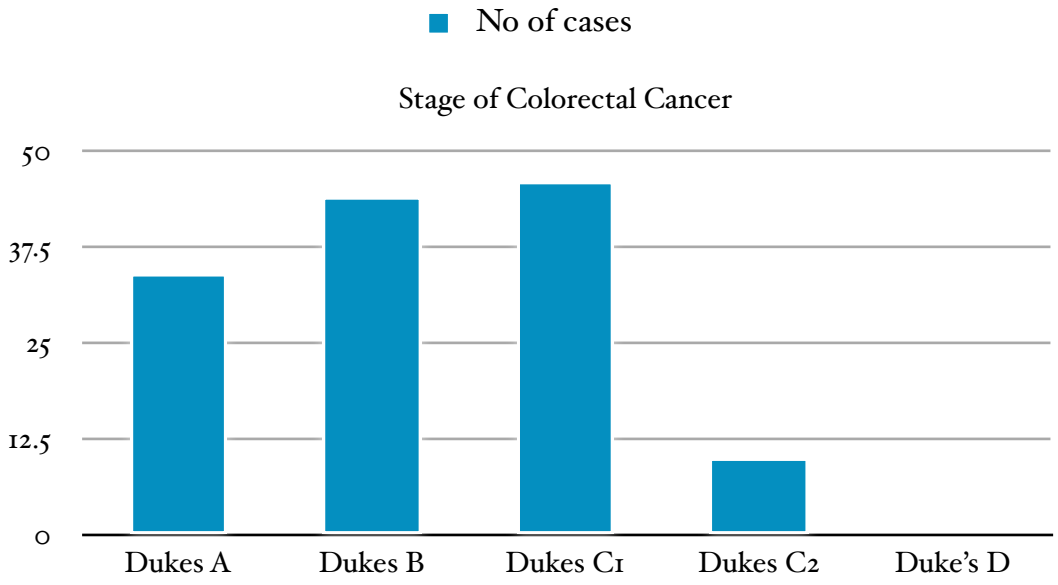


Figure 1.

LYMPH NODE YIELD

The average departmental lymph node yield is 13.5 compared to the previous years' averages of 17.6 and 14.2. Thus the department as a whole is meeting the RCPath standards. This includes all resections, even those post chemo-radiation, as this is not specified on the audit form. 50% of cases had less than 12 nodes identified, in comparison with 24% and 38% last 2 years.

PATHOLOGIST	NO OF CASES	MEDIAN LYMPH NODE COUNT	AVERAGE LYMPH NODE COUNT	% OF CASES WITH POSITIVE NODES
1	34	13	13.5	38%
2	30	13	15.4	33%
3	20	10	12.5	55%
4	34	10	14.7	47%
5	0	NA	NA	NA
6	16	11	14	38%

Table 1.

Table 1 shows the breakdown for individual consultants. Obviously the number of cases for each is less than 50, and therefore there may be bias introduced. Despite this, each individual meets the minimum guideline. The median number of nodes retrieved is a better reflector of general practice as the effect of a small number of cases with a particularly high node yield is minimised.

The following table includes the audits for the years 2008 - 2010. The mean number of lymph nodes retrieved in 2008 was 13.6, in 2009 was 14.2 and in 2010 was 17.6.

PATHOLOGIST	NO OF CASES 2008	NO OF CASES 2009	NO OF CASES 2010	AVERAGE LYMPH NODE COUNT 2008	AVERAGE LYMPH NODE COUNT 2009	AVERAGE LYMPH NODE COUNT 2010
1	43	34	34	14	14	19
2	35	29	20	13	13	12
3	17	22	18	15	16	21
4	18	11	20	11	14	19
5	16	7	12	17	12	19
6			4			15
Trainees	6	14	0	15	17	NA

Table 2.

Figure 2. illustrates the likelihood of finding positive lymph nodes in relation to the sample yield. Most positive nodes are identified when 16-25 nodes are retrieved. Thus in any individual case, the pathologist should continue searching for nodes even when the "magic 12" is reached.

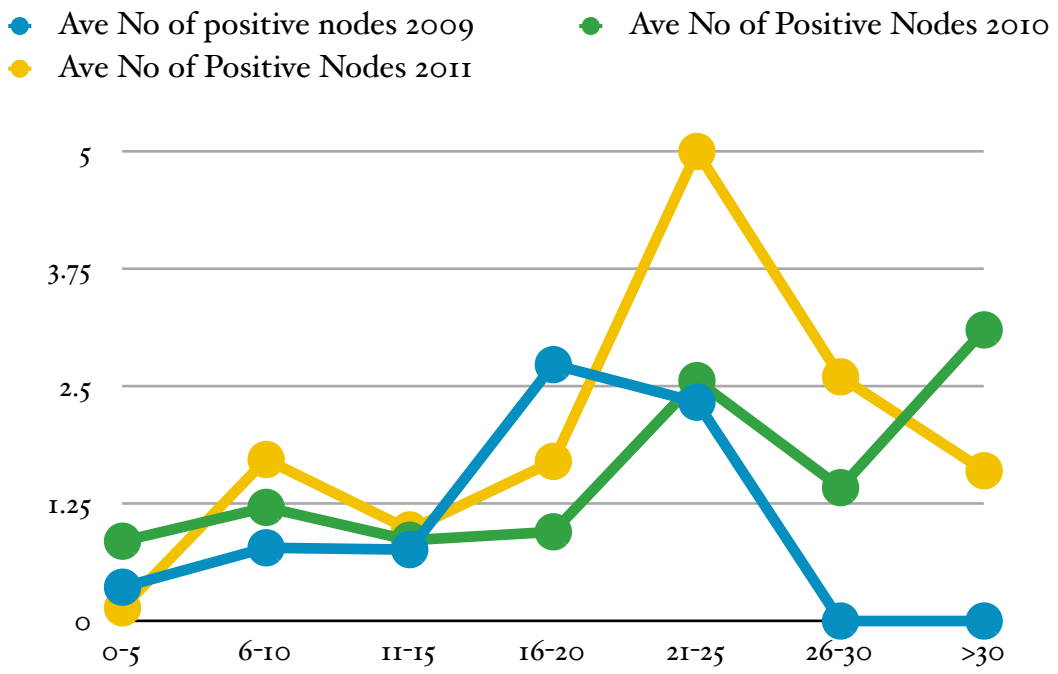


Figure 2.

SEROSAL INVOLVEMENT

Table 3 shows the percentage of T4 tumours reported by each pathologist. The College guidelines state that peritoneal involvement should be identified in at least 10% of rectal and 20% of colonic tumours. There are insufficient cases for each pathologist to calculate individual frequencies of reporting peritoneal involvement in rectal versus colonic tumours. However in this series from 2011 there were 35 rectal tumours and the incidence of peritoneal involvement was 9%. This is lower than the RCPath recommendation, but at least 11 of these patients had neoadjuvant preoperative therapy recorded on the audit form. This is likely to down-stage these tumours.

For colonic tumours (99 cases) the frequency of peritoneal involvement is 33%, which is well above the College minimum and comparable to some reported series in the literature. Our overall rate including both rectal and colon cancers is 27%. This figure is 5% higher than last year last year, although there is marked variation amongst individuals.

PATHOLOGIST	No of Cases	T4 tumours
1	34	35%
2	30	20%
3	20	20%
4	34	10%
5	12	33%
6	16	25%

Table 3

EXTRAMURAL VASCULAR INVASION

The incidence of reporting extramural vascular invasion was also assessed from the audit forms. Once again, it is quite variable (Table 4). Overall the average has fallen from a peak in 2007 of 56% to an average of 35%. This is still above the College guideline which indicates a broad range is acceptable, with a minimum of 25%.

PATHOLO-GIST	2009	2010	2011
1	32%	50%	47%
2	45%	50%	27%
3	32%	50%	25%
4	27%	35%	41%
5	0%	33%	NA
6	NA	50%	25%

Table 4.

Conclusion

This audit has shown that the Pathology Department in Hospital x is meeting the RCPath Standards with regard to lymph node retrieval from colorectal resections for carcinoma and the identification of extramural vascular invasion and peritoneal involvement.

The average yield of 14 nodes per case is comparable with the audit figures obtained in 2008 and 2009 of 13.6 and 14.2 respectively, although it is lower than that of 2010 (17.6). Of more significance is the fact that it has vastly improved since the audit carried out over the period 2000-2002 when the average yield was 10.8. The introduction of the College minimum data sets and educational material relating to specimen handling has facilitated this.

There was variability in the methods used by pathologists to harvest nodes, but, after previous audits, most specimens are left for an additional 24 hours in Carnoy's solution to clear the fat. As there is no delay to specimen turnaround by this method (the elastic H&E stain already adds an additional day to the processing of the tumour blocks), this is the practice recommended in our departmental SOPs.

The overall incidence of reporting peritoneal involvement meets the RCPath standards, but the incidence of peritoneal involvement in rectal tumours is just below the 10% recommended. However this audit only includes 34 rectal tumours, whilst audit of 50 non-screening cases is recommended. This is the first year I have specifically collated the audit data including site, so it may be better to re-audit next year using 2 year's data to increase the numbers to a more meaningful level. In order to exclude bowel screening cases these would have to identified separately and then the data from individual cases removed.

The incidence of identifying extramural vascular invasion has decreased since the audit of 2007. All tumour blocks are now routinely stained with elastic H&E to facilitate identification, so perhaps we should increase our awareness of this again. However, this series includes cases identified by bowel screening and it may be that we are picking up earlier tumours with less likelihood of extramural vascular invasion. This is supported by the fact that in 2011 we saw a greater proportion of T1 tumours and Dukes A tumours than in previous years.

In conclusion, the accurate staging of Colorectal Cancer patients is dependent on the pathologist. This audit has demonstrated that the quality standards set by the RCPath are being met

overall, although our numbers for 1 year are too small for the accurate assessment of peritoneal involvement by rectal cancer. Of some note is the fact that our lymph node yields have been falling and in 50% of cases less than 12 lymph nodes were identified. Underestimation of lymph node status impacts upon the decision to offer post operative chemotherapy, and may lead to under-treatment of patients. By increasing colleagues awareness of the audit findings it is hoped that increased awareness will promote standards.

Action Plan

- feedback audit results to consultants and trainees
- ensure that trainee pathologists are appropriately supervised
- re-audit next year and combine 2 years' findings