The quality of pathological reports of postoperative specimens in rectal cancer: an audit from the Mazovia region

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Background: Recently, pathologists have recommended new standards of post operative specimen evaluation in rectal cancer. These new standards include: macroscopic assessment of the quality of surgical excision of mesorectum, microscopic measurement of circumferential resection margin and the assessment of at least 12 mesorectal lymph nodes regarding the presence of metastases. The purpose of our study was to find out whether those standards have been implemented into a routine practice in Poland.
Material and methods: This is a retrospective evaluation of pathological reports of postoperative specimens in 51 consecutive rectal cancer patients who were referred to our institution from 19 hospitals for postoperative chemoradiation between January 2006 and December 2007. Items were audited in pathological reports that were mentioned in the background.
Results: Only 14% of pathological reports included the macroscopic assessment of the quality of surgical excision of mesorectum and 57% reported microscopic measurement of circumferential resection margin. The median number of retrieved lymph nodes was 9, with a range between 0 and 36.
Conclusion: The quality of pathological reports was unsatisfactory. Actions should be taken on a national level to improve the current situation. There is an urgent need for providing pathologists with adequate guidelines.

Key words: rectal cancer, pathological report, mesorectum.

Introduction

The risk of local recurrences of rectal cancer depends on the quality of surgery. In the nineties, the total mesorectal excision (TME) for low and mid lesions and the subtotal mesorectal excision (STME) for the upper lesions were set as new standards. With the TME technique, the tissue compartment containing the rectum and whole mesorectum is removed by sharp dissection under direct vision along the avascular plane between two layers of pelvic fascia down to the level of the levators. In the STME technique, the distal part of mesorectum is not removed and dissection ends 5 cm below the lower border of the tumour. The implementation of TME/STME, as compared to the previously performed blunt dissection, has resulted in a reduction of local recurrence from about 30% to 10% [1-3]. The completeness of mesorectal excision is a strong prognostic factor for local control [3]. The evaluation of the quality of mesorectal resection should be carried out by a pathologist using macroscopic assessment of mesorectal surface according to the 3-point grading system (Tab. I). Currently, this evaluation is a standard procedure and should be a part of a pathological report [3].

Table I. Grading system for the quality of surgery [7]

Plane of resection	Definition	Implication
Mesorectal fascia	smooth circumferential margin, no defects deeper than 5 mm, intact mesorectum	Ist degree. Complete, good prognosis
Mesorectal fat	irregular mesorectal surface, moderate bulk to the mesorectum.	IInd degree. Intermediate
Muscularis propria	defects down onto the muscularis propria, very irregular circumferential margin	IIIrd degree. Incomplete, poor prognosis

Table II. Evaluation of the quality of pathological reports from academic centres and local hospitals

	Academic centres (n = 24)	Local hospitals (n = 27)	Total (n = 51)
Reports including the macroscopic assessment of the quality of surgical excision of mesorectum	7 (29%)	0	7 (14%)
Microscopic measurement of the circumferential resection margin	14 (59%)	15 (56%)	29 (57%)
Median number of retrieved lymph nodes	10	8	8

The length of circumferential resection margin (CRM) is another important prognostic factor. CRM is defined as a microscopically measured distance between the circumferential resection border and the nearest microscopic cancer extension either from a primary tumour or from involved lymph nodes [3-5]. More than 20 years ago, a British pathologist Quirke *et al*. [4] demonstrated that the presence of cancer cells at the circumferential margin was an unfavourable prognostic factor. Positive CRM should be diagnosed when cancer cells are seen within 1 mm from the circumferential resection border [3]. The increasing length of CRM correlates with the decreasing risk of local recurrence and distant metastases [5]. Microscopic measurement of CRM is now a standard procedure [4, 5].

In accordance with the TNM classification guidelines for rectal cancer staging, a minimum of 12 mesorectal lymph nodes must be examined to accurately assess whether nodal metastases are present or not [6]. The number of lymph nodes found by the pathologist is related to the amount of resected mesorectum by a surgeon as well as to a skill of the pathologist who is retrieving lymph nodes from postoperative specimens. A low number of retrieved nodes reduces the chance of detection of nodal metastases. It was shown that patients, in whom less than 8 lymph nodes free of metastases had been found in postoperative specimens, have a similar prognosis to patients with lymph nodes metastases [7]. In addition, the total number of lymph nodes retrieved from specimens is an important prognostic factor as the low number correlates with poor long-term outcomes [8].

Apart from TNM staging, the above-mentioned three prognostic factors, namely the quality of mesorectal resection, the length of CRM and the total number of lymph nodes found in the postoperative specimens, inform us about the prognosis. In addition, they are necessary in order to help us make a decision whether to use postoperative radiotherapy or chemotherapy. Furthermore, the assessment of the quality of surgery performed by the pathologist provides valuable feedback to a surgeon informing him or her whether an improvement of the resection technique is needed.

The purpose of this paper is to assess whether those three new standards of pathological evaluation of postoperative specimens are applied in daily practice.

Material and methods

This is a retrospective evaluation of pathological reports of postoperative specimens in 51 consecutive rectal cancer patients who underwent postoperative radiotherapy at the Department of Radiotherapy of the Maria Skłodowska-Curie Memorial Cancer Centre in Warsaw. Pathological reports came from

19 centres from the Mazovia region. Twenty four patients were operated in the academic institutes and the remaining 27 patients in local hospitals. Four centres referred more than five patients.

Pathological reports were evaluated in order to address the following three questions: Was macroscopic assessment of the quality of surgical excision of mesorectum carried out according to the scale shown in Table 1? Secondly, was CRM measured microscopically? Finally, how many lymph nodes were evaluated for the presence of metastases?

Results

The results are shown in Table 2 and they were divided separately for academic centres and local hospitals. Only seven out of 51 pathological reports (14%) included the macroscopic evaluation of macroscopic assessment of the quality of surgical excision of mesorectum. This assessment was found in 7 out of 24 reports (29%) from academic centres and in none of the 27 reports from the local hospitals.

The microscopic measurement of CRM was reported in 29 pathologic descriptions (57%); similar percentages were reported for academic institutes and local hospitals.

The median number of lymph nodes evaluated for the presence of metastases was 9, with a range between 0 and 36. No lymph nodes were found in two reports (4%). Only 17 reports (34%) included evaluation of 12 or more lymph nodes, which is in concordance with the TNM recommendations.

Discussion

Our data show that the quality of pathological reports is unsatisfactory. However, there are some weaknesses in our study that should be acknowledged. Firstly, the number of evaluated pathologic reports was small. Secondly, there are some doubts as to whether the criterion for the sample selection (patients undergoing postoperative radiotherapy in one centre during two years) is appropriate. Therefore, it is uncertain whether the sample is representative. For the above reasons, our results should be treated with caution.

Despite some limitations of our study, it is important to note that similar results were reported by other authors. From 1979 to 1992, the North Central Cancer Treatment Group organized an audit of the rectal cancer treatment standards [9]. Only 21% of pathological descriptions included the measurement of CRM. Another audit of more than thousand pathological reports was conducted in Wales in 1993 [10]. Only half of these reports included the evaluation of completeness of mesorectal excision at the circumferential resection margin. Moreover, only in 1/3 of all reports the number of evaluated lymph nodes was in line with the recommendation. This led the National Health Service to launch monitoring activities to improve the effectiveness of rectal cancer treatment [10].

To summarize, in Poland, the results of colorectal cancer treatment are inferior as compared to the European average [11]. Experience from other countries has shown that one way of improving those unsatisfactory outcomes is to provide pathologists with adequate guidelines for evaluation of postoperative rectal cancer specimens [9, 12]. Better quality of pathologic reports will improve the decision-making process regarding indications for adjuvant treatment and will provide valuable feedback to surgeons informing them whether improvement of the resection technique is needed.

The publication of the present work aims to start a discussion in a community of pathologists about means needed to improve the quality of pathological reports.

References

1. Frykholm GJ, Glimelius B, Pahlman L. Preoperative or postoperative irradiation in adenocarcinoma of the rectum: Final treatment results of a randomized trial and an evaluation of late secondary effects. Dis Colon Rectum 1993; 36: 564-572.
2. Rogers SO Jr, Wolf RE, Zaslavsky AM, et al. Relation of surgeon and hospital volume to processes and outcomes of colorectal cancer surgery. Ann Surg 2006; 244: 1003-1011.
3. Quirke P, Steele R, Monson J, et al. MRC CR07/NCIC-CTG CO16 Trial Investigators; NCRI Colorectal Cancer Study Group. Effect of the plane of surgery achieved on local recurrence in patients with operable rectal cancer: a prospective study using data from the MRC CR07 and NCIC-CTG CO16 randomised clinical trial. Lancet 2009; 373: 821-828.
4. Quirke P, Durdey P, Dixon MF, et al. Local recurrence of rectal adenocarcinoma due to inadequate surgical resection. Histopathological study of lateral tumour spread and surgical excision. Lancet. 1986; 328: 996-999.
5. Nagtegaal ID, van de Velde CJ, van der Worp E, et al. Macroscopic evaluation of rectal cancer resection specimen: clinical significance of the pathologist in quality control. J Clin Oncol 2002; 20: 1729-1734.
6. Sobin L, Wittekind C. UICC TNM Classification of Malignant Tumours. New York, John Wiley & Sons, 2005.
7. Caplin S, Cerottini J, Bosman F, et al. For patients with Dikes' B (TNM stage II) colorectal carcinoma, examination of six or fewer lymph nodes is related to poor prognosis. Cancer 1998; 83: 666-672.
8. Tepper J, O'Connell M, Niedzwiecki D, et al. Impact of number of notes retrieved on outcome In patients with rectal cancer. J Clin Oncol 2001; 19: 157-163.
9. Stacchi L, Nelson H, Sargent DJ, et al. Impact of surgical and pathological variables in rectal cancer: A United States community and cooperative group report. J Clin Oncol 2001; 19: 3895-3902.
10. Bull AD, Biffin AH, Mella J, et al. Colorectal cancer pathology reporting on regional audit. J Clin Pathol 1997; 50: 138-142.

11. Pawlęga J. Istotna poprawa przeżyć chorych na raka jelita grubego, piersi i stercza w Polsce. Nowotwory J Oncol 2008; 58: 193.
12. Nagtegaal ID, van Krieken JH. The role of pathologists in the quality control of diagnosis and treatment of rectal cancer – an overview. Eur J Cancer 2002; 38: 964-972.

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