

Histopathological lauren classification of gastric carcinoma with biopsy specimen and a histological difference with dysplasia

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Abstract

Background: The aim of this study was to show whether endoscopic biopsy specimens are adequate quality to enable reliable classification of gastric cancer, about differentiation, the presence of signet ring cells, or histologic type, and a histological difference with Dysplasia.

Method: In the present study, 154 patients with gastric carcinoma, with biopsy and surgical specimens were analyzed; and compared with the biopsy for suspected gastric carcinoma. In the gastric carcinoma biopsy specimens, (154 cases) the sensitivity and specificity were 86% and 82% respectively for intestinal type, and 87% and 90% respectively for the diffuse gastric carcinoma. The results of the pathology between endoscopic biopsy and surgical specimen analysis were 70%.

Conclusion: In gastric carcinoma, the degree of misclassification is largely independent of whether the source of the material is a biopsy or surgical specimens, and this is important in the preoperative planning of the surgical strategy.

Introduction

In clinical practice, the Lauren classification seems to be of significance as a prognostic indicator and as a basis for decision with regard to surgical strategy [1,2]. The advent of a flexible endoscope and its worldwide use in gastroenterology practice has made use in gastroenterology practice has made a major impact in the management of gastric cancer. Whereas the intestinal type of gastric cancer spreads only a few millimeters into grossly normal stomach wall, tumor cells can be found several centimeters beyond the macroscopically visible margins of the diffuse type of tumor, recasting wider surgical margins in the later type [2]. Signet ring cell cancer corresponds largely to the diffuse type of gastric cancer, having similar prognosis [3,4]. Because the tissue available for histology and classification is less in biopsy specimens than in surgical specimens, we evaluate the importance of the histology based on biopsy by the Lauren method; and the prevalence of signet ring cells carcinoma.

Methods

An experienced pathologist classified and reviewed 154 biopsy specimens and surgical specimens from tumors in accordance with Lauren types. In all cases were assessed the grade of differentiation and the presence of signet ring cells carcinoma.

The biopsy specimens were stained using the hematoxylin-eosin procedure. The standard for classification the results after histology were on the basis of surgical specimens. For all endoscopic biopsy materials, the histopathology estimated the type after Lauren classification, the presence of signet ring cells, and the tumor grade of differentiation. In Lauren P definition [5] the intestinal type is characterized by large cells with a definitive glandular pattern, and the "diffuse" type has poorly differentiated cells and rarely forms glandular structures. The rapport from histology shown that in biopsy specimens the image of

histology was uniform, and in surgical specimens, the heterogeneity made classification difficult, but not in all cases. For signet ring cells carcinoma, we used the description from Herman K [6], characterized by a large volume of intra cytoplasmic mucin sufficient to compress the nucleus against the periphery of the cell. In the histopathology we introduced the Japanese classification of gastric cancer after publication from M. Rugge *et al.* [7] (Table 1).

Results

In the present analysis, a table of 154 histologically confirmed gastric adenocarcinoma was the study base. In all cases were verified by both gastric biopsy and resection specimens, and those are the form of present analysis. The histopathology in the biopsy and surgical specimens are given in Table 2. The result of the present study shown that there were no major differences between the histological types between the biopsy and surgical specimens. The concordance between diagnosis based on biopsy and surgical specimens in gastric carcinoma with Lauren classification shown 78% agreement (Table 3).

The concordance between diagnosed based on biopsy and surgical specimens regarding histological differentiation of gastric carcinoma is shown in Table 4. In the suspicions for invasive gastric carcinoma in some specimens, clearly neoplastic epithelium is present, but invasion cannot be clearly identified (Figure 1).

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Key words: endoscopic biopsy, gastric cancer, Lauren classification

Received: December 14, 2018; **Accepted:** January 03, 2019; **Published:** January 10, 2019

Table 1. Japanese classification of gastric cancer [7]

Category	Definition	Histologic description
Group I	Normal mucosa, with no atypia	Normal and benign lesion with no atypia; including intestinalized epithelium and hiperplastic epithelia
Group II	Lesion showing atypia but diagnosed as benign	1. Native or intestinalized epithelium with atypia, frequently associated with inflammation 2. Hyperplastic polyps showing atypia caused by erosion
Group III	Borderline lesion between benign and malign	It applies frequently to adenomatous lessions and rarey to lesions difficult to diagnosed as either benign or malignout.
Group IV	Lession strangely suspected for carcinoma	Lession strangely suspected for carcinoma
Group V	Carcinoma	Adenocarcinoma

Table 2. The histologic classification in 154 adenocarcinoma of the stomach lauren classification, signet ring carcinoma in biopsy and surgical specimens

Classification	Biopsy specimen %	Surgical specimen %
	Lauren classification	
Intestinal	61,0	59,1
Diffuse	31,6	40,2
Mixed	3,2	8,0
Unclassified	4,2	2,7
Total	100,0	100,0
	Prevalence of signet ring carcinoma	
0%	59,1	54,9
1-24%	18,9	22,0
25-49%	11,0	13,1
50-74%	8,4	5,9
75-100%	3,0	2,2
Unclassified	3,6	2,0
Total	100,0	100,0
	Differentiation	
High	7,0	10,0
Medium	30,9	28,9
Low	5,0	57,6
Undifferentiated	51,9	1,0
Unclassifiable	3,4	2,9
Total	100,0	100,0

Table 3. Concordance between biopsy and surgical specimens in gastric carcinoma regard to Lauren classification

Biopsy and surgical specimens		
	Intestinal	Diffuse
Sensitivity	85%	87%
Specificity	81,1%	91%
False positive	13%	21%
False negative	15%	12,9%

Table 4. Differentiation concordance in gastric carcinoma between biopsy and surgical specimens

Biopsy and surgical specimens with concordance differentiation			
	Moderate	Poor	Undifferentiated
Sensitivity	45%	63%	82%
Specificity	95%	87%	77%
False positive	53%	35%	17%
False negative	55%	37%	19%

Discussions

Despite almost universal trends of declining mortality rates, gastric carcinoma remains a major health problem. Surgery is recognized as the only treatment offering cure of the disease, but in most cases, it does not accomplish the task, as reflected by the fact that 5-year survival rates in most countries remain under 20% [8-10].

The advent of the flexible endoscope and its worldwide use in clinical practice has made a major impact in the management of gastric cancer. This impact has been most prominent in Japan, were close to 50% of gastric cancer are diagnosed in their early stage, limited to the mucosal and submucosal layers [7,11,12]. In the present study in 42%

of the tumors, the biopsy specimens were the only ones available of the incident cases. In this study, the sensitivity of biopsy specimens was 85% in intestinal and diffuse Lauren type of gastric carcinoma. In previous studies, the authors have found 72-75% agreement between biopsy and surgical specimens with regard to the histological classification of Lauren [1,13-15].

An Italian study found a sensitivity of 85% and 64% and a specificity of 77% and 91% for intestinal and diffuse type carcinoma. The Lauren classification may also be of clinical importance there are reports of better survival among patients with the intestinal type compared with the diffuse type of gastric cancer [1,16-21]. For the surgery preoperatively, it is difficult to discern the border between tumor-

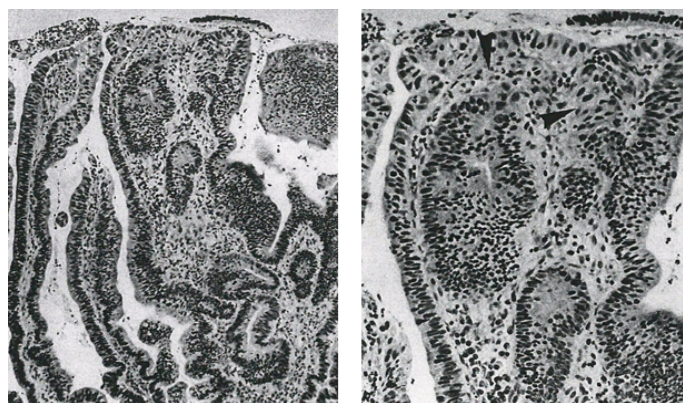


Figure 1. A) atypical epithelium, B) The presence of positive invasion of the lamina propria and the definition “suspicion for invasion” is adequate in such situation

infiltrated and normal gastric wall macroscopically. Because it is very difficult to discern the real invasion of the tumor cells, intramurally, in the resected specimens for the diffuse type of gastric carcinoma, the cancer infiltration of the resected margins in higher frequency [22-25].

These observations justify the importance of preoperative information about the Lauren type, as adequate resection margins are required for the intestinal or diffuse carcinoma [26,27]. For Hornig et al (28), in the diffuse type, a proximal resection margin of 10 cm in situ is described, whereas 4 cm in situ is considered enough in the intestinal tumors [28-30].

In the present study, signet ring cells were identified in 42% of all resected specimens, lower than the 60% found in a small American Study [31]. A recent, essentially population-based American Study found signet ring cell cancer in 8% [16]. Histopathologic subtyping of biopsy specimens obtained at gastroscopy is possible with acceptable reliability with regard to the Lauren classification. This observation is of importance in preoperative planning of surgical strategy. The morphology of gastric carcinoma shows a substantial variation of histopathological differentiation. Among the various classification systems that were developed in the past, the most widely used are those proposed by Lauren, and the World Health Organization (WHO).

The extent of luminal resection depends on tumor size, location, depth of invasion, and histological type as reflected by Lauren classification. If a carcinoma biopsy is falsely interpreted as being the intestinal type, the extent of resection would be too small, in the reciprocal case with an inadequate diagnosis of a diffuse type cancer) perhaps too extensive. On the other hand, if an intestinal type carcinoma diagnosed in the biopsy shows a diffuse growth pattern in the resected specimens, a subtotal gastrectomy, and a reduced safety margin would embrace the risk of a local recurrence, with the higher risk of metastases.

Therefore, the reliability of a preoperative Lauren classification of biopsied gastric cancer is a relevant problem in surgical oncology. Jonasson reported a disagreement between histological diagnosis based on preoperative biopsies and resection in 65 of 382 patients (17%). Davesarr reported an overall histological diagnostic disagreement between the pre and postoperative classification in 28%, and Amarosi in 23%. For Jonasson, the agreement for diffuse carcinomas in biopsies was only in 75% [32].

Conclusion

The diagnosis of a diffuse-type carcinoma is a reliable result of the histopathological evaluation of biopsy specimens, whereas the diagnosis of an intestinal type has to be judged critically. Especially if only a small number of biopsies could be investigated, biopsies should be performed.

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