Endoscopic biopsies

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The diagnostic reliability of endoscopic biopsies in diagnosing colitis

R Fiocca, P Ceppa

Endoscopic biopsies from the gastrointestinal tract form a large proportion of the specimens that are analysed in pathology units, and at present inflammatory lesions outnumber neoplastic diseases in endoscopic biopsy material. A large bulk of evidence supports the use of colonoscopic biopsies as an essential step in the diagnostic work up of inflammatory bowel diseases. Because no single pathognomonic lesion has been identified to date for the most common forms of colitis, the diagnosis usually derives from a complex evaluation of multiple elementary lesions and their topographical distribution. Few studies have analysed in detail the reliability and/or reproducibility of the histological changes that are used to distinguish inflammatory bowel disease from other forms of colitis, and Crohn's disease (CD) from ulcerative colitis (UC).[1–4]

The paper by Bentley and colleagues[5] in this journal (http://jcp.bmjjournals.com/cgi/content/full/55/12/955) represents a noteworthy effort towards a better understanding of the diagnostic reliability of the elementary lesions currently used to diagnose colitis. It explores the basis of pathological disagreement and leads to some conclusions that we might expect and others that we would not. The conclusions may be summarised as follows:

- Full colonoscopy biopsies provide more accurate diagnoses than rectal biopsies, especially for CD.
- The overall diagnostic accuracy of endoscopic biopsies is, in any case, lower in CD than in UC.
- The discussion of diagnostic criteria and guidelines among pathologists improves the diagnostic accuracy, especially in CD.
- Expert gastrointestinal (GI) pathologists are not able to provide more accurate diagnoses than non-experts.

Among the expected findings, this workshop based approach confirms that rectal biopsies alone are highly informative in cases of UC, but provide unsatisfactory results in CD. The patchy distribution of histological changes and frequent rectal sparing in CD account for the increase in diagnostic sensitivity when multiple sites are sampled.

> "In ulcerative colitis most lesions are limited to the mucosa and submucosa and consequently can be properly assessed by endoscopic biopsies"

The overall lower diagnostic accuracy in recognising CD compared with UC in endoscopic biopsies, even when multiple biopsy sites are examined, is another expected result. Granulomas have shown the highest likelihood ratio for CD, although they are an inconsistent finding (detectable in about 50% of CD cases). However, several helpful diagnostic features that contribute to the diagnosis of CD can be identified in the deep layers of the bowel wall alone, which are not accessible by endoscopic biopsy sampling (that is, transmural inflammation and fibrosis). In contrast, in UC most lesions are limited to the mucosa and submucosa and consequently can be properly assessed by endoscopic biopsies.

After discussing the guidelines, the diagnostic accuracy reached by both experts and non-experts increased in the study by Bentley *et al*.[5] This result is not surprising for pathologists who are not experts in GI diseases, but warrants further comment with regard to "expert" GI pathologists. We recently participated in two studies dealing with the reproducibility of the recognition and grading of atrophy in the stomach.[6 7] Both studies involved international panels of expert GI pathologists but led to opposing conclusions, the first study showing a low grade of reproducibility in grading atrophy and the second demonstrating substantial agreement among a group of Japanese, European, and American pathologists. These apparently opposing results prove that it is not merely a matter of experts versus non-experts, but that other factors are probably involved. In fact, in the comparative study by Offerhaus,[6] the participants did not meet before the study to discuss the crucial points of diagnosing atrophy. They agreed on a "theoretical" definition of gastric atrophy, but no attempt was made to define detailed histological criteria for recognising atrophy. In contrast, criteria for atrophy were accurately defined in the study by Rugge *et al*,[7] and the final round of 48 histological slides was preceded by the circulation of other slide sets and pictures. They were used to identify the possible sources of disagreement, which were then discussed by all the participants. The differences in results between the two studies demonstrate that even among expert GI pathologists application of otherwise accepted diagnostic criteria may be variable, and they also show that variations in experimental planning greatly influence the outcome of comparative studies.

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The observed absence of differences in the diagnostic performance between experts and non-experts is intriguing and warrants further comment. The paper by Bentley *et al* implies that specialisation in pathology is not very useful, at least in terms of increasing the diagnostic performance.[5] This contrasts with the growing worldwide trend towards a subspecialisation in surgical pathology. Most pathologists feel that an important difference does exist between experts and non-experts in terms of "real" diagnostic efficacy. This is why most major centres assign a specialised pathologist to GI tract diseases. In our opinion, there are some points that make the context of an international workshop different from routine diagnostic practice, and which could help us to understand why no differences were seen between experts and non-experts.

With regard to GI endoscopic biopsies, a great improvement in the diagnostic performance can be achieved by positive interaction between gastroenterologists and a dedicated pathologist. This interaction usually provides the pathologist with more complete clinical and endoscopic information. As a rule, the dedicated GI pathologist makes arrangements with the clinician regarding the most suitable biopsy sampling and frequently uses a standard report for assessing the features of colorectal biopsies. Comprehensive guidelines for reporting the diagnostic features of inflammatory bowel diseases have been published recently.[8 9] As far as other colorectal diseases are concerned, the use of standard reports or checklists proved to be the most important corrective factor ensuring that all predictive histopathological parameters are fully reported.[10 11] The differences between expert and non-expert pathologists

apply to common, everyday diagnostics, and refer to organisational activities that cannot be reproduced in the context of an international workshop, where all pathologists are provided with the same information and biopsy sampling. We believe these points make an important difference.

The degree of personal motivation for non-expert pathologists in the environment of an international workshop is probably higher than would be found in routine practice. An increase in interest and attention would probably have a considerable positive impact. Moreover, in the paper by Bentley *et al*,[5] even non-experts were asked to define the histological features that they thought were important for diagnosis. It is probable that all experts have a clear idea about what they personally believe are the most important diagnostic criteria. Briefly, we think that the environment of an international workshop increases the diagnostic performance of non-experts compared with their everyday diagnostic practice.

The participants in the workshop were asked to provide a definite diagnosis and to describe the criteria they followed to reach their diagnosis. The workshop rules did not allow for generic diagnoses, such as "chronic, non-specific inflammation", which are still frequently being used by non-experts in their daily practice. As rightly emphasised by Tsang and Rotterdam,[12] the lack of a definite diagnostic conclusion is a weak point in many diagnoses provided by non-experts.

In the study by Bentley *et al*,[5] expert GI pathologists correctly identified 64% of CD and 74% of UC cases. These figures may be considered discouraging, at least with regard to the individual patient. However, these figures refer to one single, initial diagnosis and are based exclusively on the histological findings. In reality, the diagnosis of colitis derives from an integrated evaluation of clinical, endoscopic, and histological findings. Moreover, definitive diagnosis may require time, patience, and further follow up examinations. Taken together, an integrated approach increases the overall accuracy rates and make the clinicopathological diagnosis of colitis much more reliable.

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