Clinical and pathological correlations in inflammatory bowel disease

Reaffirmation of histologic criteria for diagnosis

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A decade ago, we[1] and others[2] emphasized the importance of correlation between clinical and pathological features in inflammatory bowel disease (IBD). These studies demonstrated that most cases of IBD could be differentiated into Crohn's disease or ulcerative colitis, although a small number had indecisive features, both clinically and histologically. There were 16 (11%) such patients in our study.[1] Further, despite much emphasis on the noncaseating sarcoid-type granuloma for the diagnosis of Crohn's disease, our study documented this finding in only 55% of those with Crohn's disease confirmed by other histologic criteria.[1] That the problem of exact histologic differentiation of ulcerative colitis and Crohn's disease persists has been recently reaffirmed by Kirsner[3] who stated "typical pathological findings notwithstanding, the features in an individual case may be indecisive." He also noted that "granulomas are identified in approximately 50% of patients."

Because of our continued interest in this subject, and to reevaluate our experience in the histologic confirmation of the diagnosis of IBD, we undertook a study of 366 consecutive surgically resected specimens from patients with known IBD clinically.

There were 121 patients with a diagnosis of ulcerative colitis and 245 with Crohn's disease. Pathological features are listed in the *Table.*

Table. Pathological features of ulcerative colitis and Crohn's disease

Pathological features	Ulcerative colitis		Crohn's disease	
	No. of cases	%	No. of cases	%
Transmural inflammation	34	28	240	98
Serositis	33	27	235	96
Granulomas	0	0	122	49
Lymphedema	4	3	215	88
Fissuring	0	0	186	76
Crypt abscesses	115	95	137	56
Mucosal dysplasia	56	46	5	2

Thus, highly characteristic pathological features correlated with the characteristic clinical features of the diseases. In ulcerative colitis, the most characteristic histologic criterion was finding a crypt abscess in 95% of cases. Correlating with this finding were the mucosal changes grossly, the relative lack of transmural involvement, and the complete absence of granulomas. Histologically, these features correlated with clinical features characteristic of ulcerative colitis.

For patients with Crohn's disease, transmural inflammation with serositis was the most common pathological feature in 96% of the cases. Lymphedema and fissuring were the next most common pathological features in 88% and 76% of the cases respectively. These findings correlated well with the characteristic features of "cobblestone mucosa" and the propensity for development of fistulae. Although crypt abscesses were found in 56% of the cases with Crohn's disease, they were often in areas of mucosa with relatively normal mucosa adjacent. This is in striking contrast to the mucosa of ulcerative colitis, which is diffusely and uniformly involved. Therefore, although the crypt abscess is a nonspecific finding, its presence in association with diffuse and uniform involvement of the mucosa and submucosa only is an important differential point in ulcerative colitis as contrasted with Crohn's disease.

Noncaseating sarcoid-type granulomas were found in only 49% of the cases of Crohn's disease. Particular attention was focused on finding granulomas in the resected specimens, and emphasis was placed on the clinical correlation as well. This was done also in our earlier study[1] in which we differentiated the clinical features of granulomatous and nongranulomatous forms of Crohn's disease. However, subsequent experience has not shown this to be a reliable clinical differential point. Among the 122 patients with granulomas in this series, 46 cases were from surgically resected specimens from patients with Crohn's disease who had undergone more than one resection. Of these 46 cases, granulomas were found in 26 cases, in specimens from both surgical procedures; 14 with granulomas in the first surgical specimen, but not in subsequent resected specimens; and six with granulomas in the second specimen not having had granulomas in the first specimen. There was no notable clinical correlation with the presence or absence of granulomas as a histologic characteristic of Crohn's disease. Based on timing of the resected specimen, it would appear that a granuloma has a "life history" of about 3 months based on timing of elected resections in this group of patients with Crohn's disease.

During this period, 12 patients were found to have carcinomas, one involving the small intestine, eight in the colon, and three in the rectum. Nine of these patients had ulcerative colitis; in seven of these the carcinoma was in the proximal colon, and in two instances the carcinoma was in the rectum. Two of the patients had Crohn's disease, with a

carcinoma being found once in the small intestine and once in the rectum. One patient had ulcerative proctosigmoiditis and a rectal carcinoma subsequently developed. For the patients with ulcerative colitis, the finding of the carcinomas correlated well with the presence of mucosal dysplasia, as emphasized by Morson.[4] Awareness of the potential importance of mucosal dysplasia in the long-term surveillance of patients with ulcerative colitis is being increasingly recognized.[5, 6]

In summary, this study reaffirms the ability to differentiate the clinical and histologic features of Crohn's disease and ulcerative colitis in the vast majority of cases. There are highly characteristic histologic features in each disease, and these correlate well with clinical features. Our studies have not indicated prognostic features among the histologic characteristics, either as to recurrent disease or severity of disease. Particularly disappointing as a histologic parameter of significance clinically, is the granuloma in Crohn's disease. Mucosal dysplasia does appear to be a clinically and histologically important prognostic feature in patients with long-standing ulcerative colitis. More work in this area clearly needs to be done, both in definition and documentation of dysplasia, and in prospective studies to define clinical criteria and correlate them with mucosal dysplasia and subsequent development of carcinoma. This study does reaffirm that well-defined histologic criteria are present in most cases of ulcerative colitis and in Crohn's disease, and that by careful clinical and pathological observation, differentiation between the two diseases can be made in more than 90% of cases.

References

1. Farmer RG, Hawk WA, Turnbull RB Jr: Regional enteritis of the colon; a clinical and pathologic comparison with ulcerative colitis. Am J Dig Dis **13:** 501–514, 1968.
2. Lennard-Jones JE, Lockhart-Mummery HE, Morson BC: Clinical and pathological differentiation of Crohn's disease and proctocolitis. Gastroenterology **54:** 1162–1170, 1968.
3. Kirsner JB: Problems in the differentiation of ulcerative colitis and Crohn's disease of the colon; the need for repeated diagnostic evaluation. Gastroenterology **68:** 187–191, 1975.
4. Morson BC: Rectal and colonic biopsy in inflammatory bowel disease. Am J Gastroenterol **67:** 417–426, 1977.
5. Fuson J, Sullivan BH, Farmer RG, et al: Endoscopic cancer surveillance in chronic ulcerative colitis. Presented at annual meeting of the American Society for Gastrointestinal Endoscopy, Las Vegas, Nevada, 1978.
6. Nugent FW, Haggitt RC, Colcher H, et al: Malignant potential of chronic ulcerative colitis; preliminary report. Gastroenterology **76:** 1–5, 1979.