Tech Coloproctol (2006) 10:227–232
DOI 10.1007/s10151-006-0284-z

ORIGINAL ARTICLE

S. Absar • J. Mason • K. Anjum • N. Haboubi

A new combined form significantly improves accuracy of pathological diagnosis in inflammatory bowel disease in absence of the clinicopathological conference

Received: 10 August 2005 / Accepted: 14 March 2006 / Published online: 20 September 2006

Abstract Background Proper management of patients with inflammatory bowel disease depends upon a definitive diagnosis, which is best arrived at in the clinicopathological conference (CPC). The aim of the study was to assess the impact of a combined clinical and pathological form called Performa on the definitive diagnostic rate and to see if this improvement was comparable with results achieved with CPCs. **Methods** Between June 2003 and December 2003, 77 consecutive patients were included in the study. Histological data recorded on the performa were reviewed by one consultant pathologist after the initial reporting to see if there was any change in diagnosis. All cases were also discussed in the CPC as per guidelines. **Results** The use of the combined form significantly increased the definitive diagnostic rate by decreasing the unclassifiable group by 23.6%, and was comparable to that achieved by CPC. **Conclusion** In the absence of a CPC, the proposed form is an efficient substitute.

Key words IBD • Diagnosis • Combined form • Performa

S. Absar
Department of Surgery
North Western Deanery
Manchester, UK

J. Mason
Department of Gastroenterology
Trafford Healthcare NHS Trust
Manchester, UK

K. Anjum • N. Haboubi (✉)
Department of Surgical Pathology
Trafford Healthcare NHS Trust
Manchester, UK
E-mail: najibhaboubi@hotmail.com

Introduction

Inflammatory bowel disease (IBD), in its two major categories ulcerative colitis (UC) and Crohn's disease (CD), is an idiopathic, life-long, relapsing chronic inflammatory condition of the gastrointestinal tract, which may have devastating effects on the patient [1]. The incidences of UC and CD are 10–20 per 100 000 per year and 5–10 per 100 000 per year, respectively, and the prevalences are 100–200 per 100 000 and 50–100 per 100 000, respectively [2, 3]. Up to 240 000 people are affected by IBD in the United Kingdom, and these patients represent a large portion of those seen in the colorectal and gastroenterology clinics even though many are managed by general practitioners [4]. Proper diagnosis and management of IBD depends upon good history and clinical examination, corroborated with results from diagnostic imaging and endoscopic and histological examinations [5–7]. Pathologists encounter problems in diagnosing IBD in the absence of a full history and other clinical information, which should be on the histology request form [5–9]. This may lead to an inconclusive histopathological report that, in turn, makes it difficult for the clinician to manage and follow-up these patients.

In previous reports [7, 10], our group maintained that in addition to good biopsy material there are three important factors which help in reaching accurate histological diagnosis and making appropriate clinical decisions:

1. Adequate information for the histopathologist,
2. standard definition of histological terms, and
3. maintenance of communication between the clinician and the histopathologist through the clinicopathological conference (CPC).

In clear-cut cases, the histopthologist is often able to give an accurate diagnosis and further sub-classify IBD into UC and CD, but this is not possible when the histological findings are atypical. The problem arises when non-distinguishing histological changes are seen, upon

which the histopathologist is unable to give a specific diagnosis as to the nature of IBD. In such cases and in the absence of CPCs, the histopathologist may leave the diagnosis open, and the clinician must come to a definitive conclusion on corroboration with clinical findings and other tests. This usually leads to repeat of diagnostic procedures like further endoscopic examination and re-biopsies, which not only increases the burden on different departments like Endoscopy and Histopathology but also necessitates further call-up and review of the patient. Proper management of the patient cannot be initiated and follow-up plans cannot be formalised unless there is a firm diagnosis.

Our group and others have previously shown that the best results are achieved when the final diagnosis is arrived at the much valued CPC [9–11], which we strongly encourage. Due to the fact that CPCs are not being held in every hospital, we investigated the possibility of having a combined histology and endoscopy form to help the pathologist to narrow the diagnosis and hence offer the clinician a more definitive conclusion. Therefore, the aims of the study were to assess the impact of the combined clinico-endoscopic form, along with a pattern-based report by the pathologist, on the ability to reach a definitive diagnosis and to determine if this was comparable to the diagnostic accuracy reached with the CPC.

Patients and methods

The form called "Performa" (Fig. 1) was designed to be simple and comprehensive, so that the information could be easily recorded and reproduced. All patients undergoing endoscopic biopsy for suspected IBD between June 2003 and December 2003 in our hospital were included in the study. All data were prospectively collected on the specially designed form and subsequently transferred to a Microsoft Excel spreadsheet and Access database and analysed. The form was designed to contain all relevant information on a single page. It was filled up at the time of endoscopy and was given to one consultant pathologist (AK) after the initial reporting to see if the form increased the accuracy of the histological diagnosis. Any change in diagnosis was noted. All cases were, at the same time, discussed in the CPC conducted by another pathologist (NH) to come to a final diagnosis and the results were compared. The pathologist (AK) was unaware of the final CPC diagnosis as these were directly recorded in the patient's notes.

All patients who underwent endoscopic biopsy and histological examination (when the endoscopist felt that there were inflammatory changes present in the bowel) were included in the study. Regular endoscopists (consultants, middle grade or specialist registrars with consultant supervision) performed all endoscopies. Information was recorded at the time of endoscopy on the form, which was sent with the regular histopathology form. Only the regular form was available to the reporting histopathologist. The new form was then given to the consultant histopathologist (AK) to further analyse the results in light of the newly available clinical and other investigative results. Hence, at the time of initial reporting, the histopathologist did not have all the information in the form but only the information sent by the endoscopist on the regular form. Histological examination of the biopsy specimen was carried out according to a previously published protocol [7].

The first part of the form (Fig. 1) focuses on patient information and other details required for record purpose. The rest of the form is broken up into sections. Section 1 shows the present clinical episode, its onset, duration and the main symptoms starting with diarrhoea and whether it is bloody or watery. Section 2 regards the endoscopic findings: the procedure, biopsies, mucosal features, presence of ulceration, extent and pattern of disease, severity and any suspicion of dysplasia or neoplasia. A diagram is included to help to mark any area of suspicion or abnormality. Sections 3 and 4 include radiological features and other laboratory investigations [11, 12]. Section 5 regards the history of the disease, with total duration, whether it has been persistent or remittent, if any previous biopsies were taken, and treatments initiated or ongoing [5, 13–20]. There is space for any other relevant information to be included in this section. Section 6 regards other gastrointestinal problems and diseases, including family history. In section 7, the clinician records his personal impression and the diagnosis. The histopathological section (section 8) is divided into several sections using already published definitions like focal, continuous or discontinuous nature of the disease, degree of activity whether mild, moderate, severe or absent and if there are any features of chronicity [7, 20–23]. Finally the common diagnoses that the histopathologist can give are shown with option to write any additional diagnosis as felt suitable. The results of the diagnosis obtained using this form were gauged against the gold standard diagnosis reached at CPC.

Results

There were 77 consecutive patients who underwent endoscopy and biopsy for inflammation in the bowel during the period between June 2003 and December 2003; of these, 47 were males and 30 were females (Table 1). The age varied from 18 to 79 years. Patients in the age group of 51–60 years had the greatest frequency of suspected changes on endoscopy. However, 22 of the endoscopically suspicious mucosal changes were found to be normal on histological examination.

The most common site of inflammation was the rectum (33 of 77 cases), followed by the sigmoid colon (24 cases) (Table 2). Overall, 36 patients had endoscopic changes that were continuous, while in the remaining they were focal or segmental (Table 3).

In the initial microscopic examination, 23 reports were classified as IBD which could not be further classified as UC or CD. With the use of the proposed form, this unclassified group of IBD decreased to 10 cases; in the CPC 2 additional cases which were previously not classifiable, were also classified as UC (Table 4).

TRAFFORD HEALTHCARE NHS TRUST

Surname: Forename:
Consultant: GP:
Pathologist:

DEPARTMENT OF HISTOPATHOLOGY

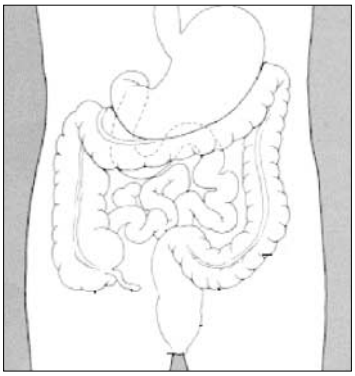
Sex: D. o. B:
Source: Case Note No:
Lab number: Copy For:

I Present clinical episode

Date of onset: / / Duration: days
Main symptoms:
1) Diarrhoea Watery ☐ Bloody ☐
2)
3)
4)

II Endoscopy findings

Procedure: Date: / /
Biopsy site(s):
Mucosal features:
Ulceration:
Extent of disease:
Pattern: Focal ☐ Segmental ☐ Continuous ☐ Skip ☐ Pancolitis ☐
Severity: Mild ☐ Moderate ☐ Extensive ☐
Suspicion of neoplasia: ☐



III Radiological features

Procedure(s): Findings:
1)
2)
Radiologist's impression:

IV Laboratory and microbiology

1- Stool test:
2- Stool culture:
3- Blood test:

V Disease history

Total duration: _____ days/months
Duration type: Persistent ☐ Remittent ☐
Previous biopsy: Yes ☐ No ☐
Treatment:
- Surgery:
- Radiotherapy:
- Chemotherapy:
- Medicines:
- Other:

VI Additional information (if appropriate)

☐ Other disease(s) present
☐ Previous GI surgery
☐ Familial history

VII Clinical impression: ……

Differential diagnoses:
i)
ii)
iii)

VIII Microscopy

Focal ☐ Continuous ☐ Discontinuous ☐
Activity: Absent ☐ Mild ☐ Moderate ☐ Severe ☐
Features of chronicity: Present ☐ Absent ☐

Differential diagnosis:
Crohn's disease ☐ Ulcerative colitis ☐
Infective colitis ☐ Transient colitis ☐
Microscopic, collagenous, lymphocytic colitis ☐

Other comments:……..…...
……..……..

Fig. 1 The Performa, a form for collecting clinical and endoscopic data regarding patients with inflammatory bowel disease

Table 1 Age and gender of patients having biopsy for suspected inflammatory bowel disease

Age group, years	Patients with endoscopic changes		Patients with histological changes	
	Total, n	Males, n (%)	Total, n	Males, n (%)
<20	1	1 (100)	1	1 (100)
21–30	9	3 (33)	7	3 (43)
31–40	14	7 (50)	11	6 (55)
41–50	14	10 (71)	10	6 (60)
51–60	19	13 (68)	13	8 (62)
61–70	12	8 (67)	8	5 (62)
71–80	8	5 (63)	5	3 (60)
Total	77	47 (61)	55	32 (58)

Table 2 Sites of inflammation seen endoscopically

Site of inflammation	Main site, n	Secondary site, n
Caecum and ascending colon	8	3
Transverse colon	5	3
Splenic flexure and descending colon	7	7
Sigmoid colon	24	34
Rectum	33	22

Table 3 Pattern of inflammation seen endoscopically

Pattern of inflammation	Patients, n
Continuous	36
Focal	18
Segmental (discontinuous)	23

Table 4 Diagnostic advantage gained in histological diagnosis, for 77 patients. Values are numbers of patients

Diagnosis	Initial diagnosis, n	Diagnosis with use of proposed form, n	Improvement in diagnosis with form, n	Diagnosis confirmed at CPC, n	Improvement in diagnosis with CPC, n
Normal, n	22	22	0	22	0
Unclassifiable IBD	23	10	-13	8	-15
Ulcerative colitis	20	28	+8	30	+10
Crohn's disease	6	11	+5	11	+5
Other	6	6	0	6	0

Discussion

Inflammatory bowel disease is a complicated condition that affects the intestine and several extra-intestinal sites [24]. The diagnosis of IBD is confirmed by clinical evaluation and a variable combination of biochemical, endoscopic, radiological, histological and sometimes nuclear medicine investigations [25]. The two major categories of IBD, ulcerative colitis and Crohn's disease, show in many cases common histopathological features, but there are cases in which no distinguishing histological features are seen [26–30]. In the first category of cases, history, clinical findings, investigations and endoscopic findings greatly help the histopathologist in coming to a conclusion as to the nature of IBD. About 5% of patients with IBD affecting the colon are unclassifiable after considering clinical, radiological, endoscopic, and pathological criteria, because they have some features of both conditions and has been called by some groups as having indeterminate colitis (IC). The term IC, however, has unfortunately suffered from different definitions [25, 31] and in our hospital we do not apply such a diagnosis on mucosal biopsies. The histopathologist quite often is forced to give an indefinite diagnosis because of lack of information [32]. Time and treatment also impact on histological changes, and the clinician should try to include this information [33].

With a suspicion of a diagnosis of inflammatory bowel disease (IBD), the pathologist must have adequate and complete clinical, laboratory, radiological and endoscopic information and, if possible, the previous histopathological examinations. This is necessary because the diagnosis of IBD is made with exclusion criteria and different pathological entities may have similar macroscopic findings; moreover, the characteristic lesions are often absent [34].

Histological diagnosis of any condition by and large is greatly dependant on the availability of adequate and

accurate information in the form of history, clinical signs and symptoms, nature of tissue, the provisional diagnosis, etc. This greatly holds true for the histological examination of tissue for IBD [30]. In the absence of adequate information, the histopathologist may find it difficult to make a complete diagnosis and may ask for more clinical information, which not only delays diagnosis but also hinders the smooth management of the process. Providing adequate information on a blank form is often a difficult task and lacks uniform application. This simple and easy form, which takes a few minutes to fill, not only helps the histopathologist in coming to a diagnosis but also helps in excluding other conditions which mimic IBD [35–37].

A clear and definitive diagnosis makes it easy for the clinician to understand and interpret the result and to manage patients appropriately. The use of standard definitions of histological terms not only makes it easier to understand them but also helps in exchange of information between different people involved in the management of the patient and for research and audit purposes [38, 39]. A correct diagnosis, adequate assessment of disease activity and effective cancer surveillance make endoscopy crucial in the management of IBD and allow early management of complications [40]. The CPC holds great potential in achieving this end as well as in auditing diagnostic performance [41]. In places where this is not being held regularly, this form could help the clinicians.

The benefit seen in this pilot study in improving diagnosis is interesting, and further use of the form or its modification may validate this. There were instances where the use of the form enabled the histopathologist to give a confirmatory diagnosis of ulcerative colitis or Crohn's disease rather than simply IBD. It is an effort to increase the diagnostic yield in IBD in departments where the facilities of CPCs are not always available and the study shows that the form is an efficient substitute.

Acknowledgement We are grateful to Mrs. Margaret Irving for typing and correcting the manuscript.

References

1. Fish D, Kugathasan S (2004) Inflammatory bowel disease. Adolesc Med Clin 15:67–90
2. Loftus EV Jr (2004) Clinical epidemiology of inflammatory bowel disease; incidence, prevalence and environmental influences. Gastroenterology 126:1504–1517
3. Shivananda S, Lennard Jones JE, Logan R et al (1996) Incidence of inflammatory bowel disease across Europe: is there a difference between north and south? Results of the European Collaborative Group on Inflammatory Bowel Disease (EC-IBD). Gut 39:690–697
4. Rubin GP, Hungin AP, Kelly PJ et al (2000) Inflammatory bowel disease: epidemiology and management in an English general practise population. Aliment Pharmacol Ther 14:480–486
5. Haboubi NJ, Schofield PF (1994) Large bowel biopsies in colitis. A clinico-pathological correlation. J Royal Soc Med 87:16–17
6. Theodossi A, Spiegelhalter DJ, Jass J et al (1994) Observer variation and discriminatory value of biopsy feature in inflammatory bowel disease. Gut 35:961–968
7. Haboubi NJ, Schofeld PF (2000) Reporting colonic mucosal biopsies in inflammatory conditions: a new approach. Colorectal Dis 2:66–72
8. Odze R (2002) Diagnostic problem and advances in inflammatory bowel disease. Mod Pathol 16:347–358
9. Carpennter HA, Talley NJ (2000) The importance of clinicopathological correlation in diagnosis of inflammatory conditions of the colon: histological patterns with clinical implications. Am J Gastroenterol 95:878–896
10. Haboubi NY, Shaath NM, Safarani MN, Ghafar F (2004) Improved diagnostic accuracy of inflammatory bowel disease: a clinicopathological collaborative approach. Tech Coloproctol 8:117–121
11. Tamboli CP, Neut C, Desreumaux P, Colombel JF (2004) Dysbiosis in inflammatory bowel disease. Gut 53:1–4
12. Wada Y, Matsui T, Matake H et al (2003) Intractable ulcerative colitis caused by cytomegalovirus infection: a prospective study on prevalence, diagnosis and treatment. Dis Colon Rectum 46[Suppl 10]:S59–S65
13. Kleer C, Appleton H (1988) Ulcerative colitis, patterns of involvement in colorectal biopsies and changes with time. Am J Surg Pathol 22:983–989
14. Odze R, Antonioli D, Peppercorn M, Goldman H (1993) Effect of topical 5-aminosalicylic acid (5-ASA) therapy on rectal mucosal biopsy morphology in chronic ulcerative colitis. Am J Surg Pathol 17:869–875
15. Danielsson A (1995) Non-systemic steroid as enemas in the treatment of ulceration colitis. In: Tytgst GNJ, Bartelsman JFWN, Van Deventer SJH (eds) Inflammatory bowel disease. Kluwer Academic, Dordrecht, pp 565–647
16. Gimes P, Du Boulay C, Smith CL, Holdstock G (1986) Relationship between disease activity and colonoscopic findings in patient with colonic inflammatory bowel disease. Gut 27:92–95
17. Hawkey CJ, Dube LM, Rountree LV et al (1997) A trial of zileuton versus mesalazine or placebo in the maintenance of remission of ulcerative colitis. Gastroenterology 112:718–724
18. Robert WG, Simson TJ, Berlin RG et al (1997) Leukotrienes in ulcerative colitis: results of a multicentre trial of a leukotriene biosynthesis inhibitor, MK-591. Gastroenterology 112:725–732
19. Ectors N, Deiessen A, Gebose K (1998) Reversibilite des lesion histologiques. Acta Endoscop 28:221–232
20. Bernstein C, Shanahan F, Anton P, Weinstien W (1995) Patchiness of mucosal inflammation in treated ulcerative colitis. Gastrointestinal Endosc 42:232–237
21. Powell-Tuck, Day DU, Buckell NA et al (1982) Correlation between defined sigmoidoscopic appearances and other measurements of disease activity in ulcerative colitis. Dig Dis Sci 27:533–537

22. Gebose K, Riddell R, Ost A et al (2000) A reproducible grading scale for histopathological assessment in ulcerative colitis. Gut 47:404–410
23. Smedth K, Olaison G, Franzen L, Sjodahl R (1996) The endoscopic picture reflects transmural inflammation better than endoscopic biopsy in Crohn's disease. Eur J Gastoenterol Hepatol 8:1189–1193
24. Martins NB, Peppercorn MA (2004) Inflammatory bowel disease. Am J Manag Care 10:544–552
25. Carter MJ, Lobo AJ, Travis SP, IBD Section, British Society of Gastroenterology (2004) Guidelines for the management of inflammatory bowel disease in adults. Gut 53[Suppl 5]:V1–V16
26. Riley SA, Mani V, Goodman MJ et al (1991) Microscopic activity in ulcerative colitis: what does it mean? Gut 32:174–178
27. Shepherd NA (2002) Granuloma in the diagnosis of intestinal Crohn's disease: a myth exploded? Histopathology 41:166–168
28. Tanaka M, Riddell RH, Saito H et al (1999) Morphologic criteria applicable to biopsy specimens: an effective distinction of inflammatory bowel disease from other forms of colitis and of Crohn's disease from ulcerative colitis. Scand J Gastroenterol 1:56–67
29. Haboubi NY, Kamal F (2001) Non-specific colitis, is it a justifiable diagnosis? Colorectal Dis 3:263–265
30. Bentley E, Jenkins D, Campbell F, Warren B (2002) How could pathologists improve the initial diagnosis of colitis? Evidence from an international workshop. J Clin Pathol 55:955–960
31. Haboubi NY (2001) Colitis indeterminate. J Colorectal Dis 3:147–148
32. Tsang P, Rotterdam H (1999) Biopsy diagnosis of colitis. Possibilities and pitfalls. Am J Surg Pathol 23:423–430
33. Gebose K (2001) Pathology of inflammatory bowel disease (IBD): variability with time and treatment. Colorectal Dis 3:2–12
34. Fociani P, Carsana L, Zerbi P et al (2003) Histopathological differential diagnosis in inflammatory bowel diseases. Ann Ital Chir 74:641–649
35. Haboubi NJ, Kaftan S, Scofield PF (1992) Radiation colitis is another mimic of chronic inflammatory bowel disease. J Clin Pathol 45:272
36. Shepherd NA (1991) Pathological mimics of chronic inflammatory bowel disease. J Clin Pathol 44:726–733
37. Schumacher G, Kollberg B, Sandstedt B (1994) A prospective study of first attacks of inflammatory bowel disease and infectious colitis. Scand J Gastroenterol 29:318–332
38. Jenkins D, Balstitis B, Gallivan S et al (1997) Guidelines for the initial biopsy diagnosis of suspected chronic idiopathic inflammatory bowel disease. The British Society of Gastroenterology. J Clin Pathol 50:93–105
39. Shirandana S, Hordijk ML, Tenkute FWJ et al (1991) Differential diagnosis of inflammatory bowel disease: a comparison of various diagnostic classifications. Scand J Gastroenterol 26:167–173
40. Hommes DW, van Deventer SJ (2004) Endoscopy in inflammatory bowel diseases. Gastroenterology 126:1561–1573
41. McBroom MH, Ramsay AD (1993) The clinicopathological meeting. A means of auditing diagnostic performance. Am J Surg Pathol 17:75–80