ANNALS OF GASTROENTEROLOGY 2000, 13(2):122-127

Original article

Emergency surgery for inflammatory bowel disease in Greece

J.K. Triantafillidis[1], A. Emmanouilides[2], E. Merikas[2], D. Nikolakis[3], P. Cherakakis[1], Th. Ifantis[1], Irini Hereti[1], N. Argyros[1], A. Nikolaou[2]

SUMMARY

In this study the various clinicoepidemiological features of 32 patients with inflammatory bowel disease (29 with Crohn's disease and 3 with ulcerative colitis), who underwent an emergency operation during a follow-up period of 15 years, are reviewed. The three patients with ulcerative colitis who underwent an emergency operation, represent a percentage of 0.7% of 413 patients seen and followed-up in our institutions during the last 15 years, while the 29 patients with Crohn's disease represent a percentage of 19% of a total number of 155 patients diagnosed and followed-up during the same period. There were 18 men and 14 women of mean age 41±12 years. The indication for emergency surgery in the group of patients with Crohn's disease was obstructive ileus in 17, bowel perforation/peritonitis in 7, and uncontrolled hemorrhage in 5 patients. The corresponding indication for the group of patients with ulcerative colitis was uncontrolled hemorrhage in two and toxic megacolon in one patient. Obstructive ileus occurred in patients with small bowel or ileocolonic involvement, uncontrolled hemorrhage occurred mainly in patients with ileocolonic involvement, while perforation occurred almost exclusively in patients with small bowel involvement. Enterectomy and end-to-end anastomosis was performed on 22 patients with Crohn's disease while various other procedures were performed in the remaining seven patients. Ileorectal anastomosis was performed in one patient and total proctocolectomy with permanent ileostomy in two patients with ulcerative colitis. Two perioperative deaths were noticed in the group of patients with Crohn's disease and one in the group of patients with ulcerative colitis. Emergency operation for inflammatory bowel disease is mainly needed for patients with Crohn's disease. Clinicians must bear in mind that perforation of the bowel could be the first manifestation in a patient with Crohn's disease.

Key words: Crohn's disease, ulcerative colitis, surgery, emergency operation, Greece

Departments of Gastroenterology [1]Saint Panteleimon General State Hospital, Nicea, [2]Athens Medical Center, Athens, [3]Metaxas Cancer Hospital, Piraeus, Greece

Author for correspondence:

John K. Triantafillidis, MD, 8, Kerasountos str., 124 61 Haidari, Athens, Greece

INTRODUCTION

Ulcerative colitis and Crohn's disease can be presented with a variety of symptoms and complications including gastrointestinal hemorrhage, strictures, fistulas and intraabdominal abscesses. The management of complicated inflammatory bowel disease and the ability of surgeons and gastroenterologists to select the most suitable time for surgical intervention are of paramount importance for the patients' outcome, since mortality and morbidity are mostly associated with complicated disease. According to earlier[1,2] and recent[3-11] reports, emergency operations performed for complications of inflammatory bowel disease pose a significant surgical problem.

In this retrospective review we present some clinicoepidemiological data concerning 32 patients with inflammatory bowel disease (29 with Crohn's disease and 3 with ulcerative colitis) operated on during the last 15 years because of the appearance of a complication. We also discuss indication for surgery and type of surgical procedures applied as well as the long-term outcome of patients after the emergency operation.

PATIENTS - METHODS

During the last 15 years we followed a total number of 568 patients with definite diagnosis of inflammatory

bowel disease (413 with ulcerative colitis and 155 with Crohn's disease). During the follow-up period of 12+9 years, 69 patients from the group of patients with ulcerative colitis (16.8%) were submitted to total colectomy and three of the 69 (4.3%) because of the appearance of a serious complication.

During the same period 79 patients with Crohn's disease from a total number of 155 (51%), required at least one major or minor surgical procedure. In 29 of them (38.1%) the operation was performed because of the development of an emergency situation.

Table 1 shows some clinical details of the patients studied. There were 21 men and 11 women of mean age at the end of follow-up of 51±14 years for ulcerative colitis and 47±16 years for Crohn's disease patients, respectively. Twenty-five patients (78.2%) had clinical signs of acute abdomen and 10 (31.2%) had palpable abdominal mass. All patients were treated with corticosteroids plus metronidazole and other antibiotics and all were supported with parenteral administration of fluids and electrolytes. Intestinal resections were performed to the limit of macroscopic disease, without concern for the presence of microscopic disease. At completion of the operative procedure surgical findings and type of operation were recorded. For statistical analysis nominal variables were compared by using chi-square test.

RESULTS

Operative indication

The indication for the emergency operation is shown in Table 2. As indicated in the table, obstructive ileus was the main reason for emergency operation and appeared only in patients with Crohn's disease involving exclusively the ileum or the ileum and colon concurrently. Uncontrolled hemorrhage appeared in a small percentage of both groups, while peritonitis was noticed only on patients with Crohn's disease. Differences between indications for emergency operation concerning different location of Crohn's disease were statistically significant (Table 2).

Emergency operative procedure

The type of operative procedure applied is shown in Table 3. As indicated in the table, the most frequently performed operative procedure was enterectomy plus end-to-end anastomosis, followed by bypass of the diseased bowel, splitting of adhesions, and drainage of peritoneal cavity. Patients with ulcerative colitis were treated either by ileorectal anastomosis (1 patient) or total proctocolectomy and permanent ileostomy (2 patients).

Perioperative mortality and morbidity

Two deaths appeared in the Crohn's disease group, one due to acute myocardial infarction and another one due to septic shock (perioperative mortality 6.9%). One out of the three patients with ulcerative colitis who had undergone an emergency operation died in the postoperative period because of the development of septic shock (Table 4).

Significant perioperative morbidity was quite low in both groups. Only one patient from the group of patients with Crohn's disease developed disruption of the abdominal surgical wound, which was subsequently treated surgically.

Outcome

From the group of patients with Crohn's disease, 7 (24.1%), died during the follow-up period. Two patients died because of the development of cancer in the ascending colon and cecum respectively, (one and two years postoperatively). Two more patients died from cerebral stroke 8 and 10 years after the operation. Finally, one patient died two years after the operation because of bone fraction, one patient died 6 years after the operation and one patient died at the age of 33, seven years after the operation due to severe complications of the underlying Crohn's disease (Table 5).

From the group of patients with ulcerative colitis, one patient died postoperatively because of septic shock and one patient died 18 years after the emergency operation because of the development of a primary liver carcinoma (Table 5).

DISCUSSION

There are several well-identified complications in ulcerative colitis and Crohn's disease that require urgent operation in order to save the patient's life. These complications include massive hemorrhage, toxic megacolon with impending or frank perforation, fulminant colitis unresponsive to medical treatment, acute obstruction or bowel perforation and suspicion or demonstration of intestinal cancer.

According to earlier reports[2] emergency surgery performed on patients with ulcerative colitis is required in 13.5%. This contrasts to our series of patients with ulcerative colitis of whom only 4.3% were submitted to an emergency operation.

Table 1. Clinical details of patients with inflammatory bowel disease operated on because of an emergency situation

Clinical parameter	Ulcerative colitis	Crohn's disease	Total
Men	2	19	21
Women	1	10	11
Total number	3	29	32
Age at the end of follow-up	51±14	47±16	
Age at onset of the disease	41±15	35.5±17.5	
Age at diagnosis of the disease	41.6±15	38.6±17.3	
Age at the time of the emergency operation		40±16	
Location of disease			
Total colitis	3 (100%)		
Small bowel		18 (62%)	
Small & large bowel		10 (34%)	
Large bowel		1 (4%)	
First episode	1	3	4
Recurrence	2	26	28

Table 2. Indication for emergency operation

Indication	Ulcerative colitis	Crohn's disease			Total
		Small bowel	Large bowel	Small & Large bowel	
Uncontrolled hemorrhage	2	1	1	3	7 (21.9%)
Toxic megacolon	1	0	0	0	1 (3.1%)
Obstructive ileus	0	10	0	7	17 (53.1%)
Perforation/peritonitis	0	7	0	0	7 (21.9%)

$p<0.05$ (Comparisons: Indication vs different location of the disease)

Table 3. Type of emergency operation performed in the groups of patients with ulcerative colitis and Crohn's disease

Type of operative procedure	Ulcerative colitis	Crohn's disease
Ileorectal anastomosis	1	-
Total colectomy & permanent ileostomy	2	-
Enteroctomy & end-to-end anastomosis	-	22 (76%)
Other (diseased bowel bypass, splitting of adhesions, drainage of the peritoneal cavity)	-	7 (24%)

Table 4. Outcome of patients with ulcerative colitis and Crohn's disease, who had undergone an emergency operation

Outcome	Ulcerative colitis	Crohn's disease	Total
Perioperative death	1 (33%)	2 (6.9%)	3 (9.4%)
Death during the follow-up period	1 (33%)	7 (24.1%)	8 (25%)
Alive at the end of follow-up	1 (33%)	20 (70.0%)	21 (65.6%)

The rate of emergency operations required in our series of patients with Crohn's disease, fits well with that described in recent reports.[4] The rate of emergency operation for Crohn's disease declined significantly over the last 15 years.[10] This differs from data described some decades ago, when the development of septic complica-

Table 5. Causes of death during the follow-up period

Cause	Ulcerative colitis	Crohn's disease	Total
Cerebral accident	-	2	2
Advanced large bowel cancer	-	2	2
Other benign causes unrelated to inflammatory bowel disease	-	2	2
Severe disease	-	1	1
Primary liver cancer	1	-	1
Total	1	7	8

tions and acute catastrophies were the main indication for surgery. According to the results of a recently published study from England, patients with Crohn's disease of the large bowel disease require emergency operation in 20% of them.[8]

Acute toxic megacolon occurs in 6% of patients with ulcerative colitis. Postoperative complications, including sepsis, wound infection, abscess, fistula and delayed wound healing, have been reported in up to 50% of patients with toxic megacolon. There is an overall mortality after emergency surgery of 8.7%.[3] This observation suggests that more conservative surgery is appropriate in the acute setting. Toxic megacolon in Crohn's disease is quite rare. In accordance with other reports we did not notice cases of toxic megacolon in our series of patients with Crohn's colitis.

Obstructions caused by benign stricture formation occur in 11% of patients with ulcerative colitis. There were no patients with ulcerative colitis in our series operated on because of acute bowel obstruction. On the contrary, acute bowel obstruction is a frequent event on patients with Crohn's disease.[3] We did not consider subacute obstruction as an indication for emergency operation. Surgical resection of the diseased intestinal segment was the operation most frequently performed.

It is well established that perforation occurs infrequently on patients with either ulcerative colitis or Crohn's disease.[3,6] In ulcerative colitis patients, although the overall incidence of perforation during the first attack is less than 4%, the incidence rises to 10% if the attack is severe and 15%-20% in the presence of severe pancolitis. Perforation in Crohn's disease seems to be lower than that of patients with ulcerative colitis ranging between 1 and 2%.[6] The rate of perforation in our series of patients was quite similar to that reported in other countries. It is of interest that perforation of the bowel was the first clinical manifestation in two of our patients with Crohn's disease. In countries with low incidence of inflammatory bowel disease, the majority of patients with Crohn's disease had emergency surgery mainly for bleeding, perforation, abdominal masses and intestinal fistulae.[12]

Acute major gastrointestinal bleeding in uncommon in inflammatory bowel disease and most cases are due to Crohn's disease.[5] The rate of acute hemorrhage in our series was quite similar to the rates described in countries of the Western Europe and North America.[4] Uncontrolled hemorrhage is an unusual indication for colectomy in ulcerative colitis and the percentage of patients operated on for severe hemorrhage fluctuates between 0.2 and 3%. In our series this was only 0.5%. In Crohn's disease the incidence of severe hemorrhage requiring emergency surgery is almost the same as in ulcerative colitis. In a recent study[4] profound hemorrhage was an indication for surgery in 1.2% (7 out of 513 patients with Crohn's disease operated on for various reasons). It is of interest that in our series of patients with Crohn's disease, this percentage was quite higher (9.2%). Differences in the definition of "profound" or "uncontrolled" hemorrhage could explain the discrepancy.

Several types of operation have been used in patients with Crohn's disease of the large bowel presented with an emergency situation. It seems that subtotal colectomy with ileostomy and Hartmann closure of the rectum is the procedure of choice. Segmental resection of the colon is associated with high rate of recurrence (30-50% within 5 years) and reoperation (45% within 5 years). Subtotal colectomy and ileorectal anastomosis on patients with Crohn's disease is associated with 3% mortality and 5% incidence of anastomotic leakage.[3] In a recent study only 7% of 69 patients operated-on for large bowel Crohn's disease underwent ileorectal anastomosis.[8] Total proctocolectomy with Brook ileostomy for patients with Crohn's disease is rarely indicated. However it has the lowest rate of recurrence with a mortality fluctuating between 2 and 4%.[8,9] One-stage restorative proctocolectomy without a defunctioning ileostomy is associated with increased risk to life.[13] Enterectomy plus end-to-end anastomosis was the most frequent surgical

procedure applied in our patients with Crohn's disease. Stricturoplasty is a surgical procedure performed with increasing incidence during the last decade, mainly on patients with multiple stenotic areas.[14,15] However, no multiple strictures were found in any of our patients with obstructive bowel disease. Instead of performing stricturoplasty, our surgeon decided to apply the safe and widely accepted enterectomy of the stenotic bowel area plus end-to-end anastomosis.

Postoperative morbidity on patients with ulcerative colitis operated on because of an emergency situation reaches almost 92%,[2] infection being the most common problem. In accordance with the previous report, one of our patients with ulcerative colitis died in the immediate postoperative period because of a septic shock. In another study[16,17] morbidity after emergency surgery was found to be 66%. However, it seems certain that the referral patterns for surgical treatment of patients with ulcerative colitis have changed in recent years. Patients are referred for operation sooner before complications develop.[18]

It has been reported that postoperative morbidity on patients with Crohn's disease operated-on because of an emergency situation is significantly higher compared to elective procedure.[10] However no significant serious morbidity was noticed in our patients with Crohn's disease except of one who developed disruption of the surgical wound.

Postoperative mortality on patients with ulcerative colitis operated on because of an emergency situation was reported to be almost 24% in older series.[2] In a more recent study the mortality rate was less than 9%.[19] In accordance with recent reports only three postoperative deaths (2.8%) were noticed among 106 urgent operations performed on patients with ulcerative colitis at Saint Mark's hospital between 1976 and 1990.[20] No perioperative deaths were noticed in the study of Hurst et al.[4] One out of three of our patients with ulcerative colitis died postoperatively. However, the number of patients is too small to draw safe conclusions regarding the rate of postoperative mortality. Postoperative mortality rate on patients with Crohn's disease was found to be 6% for emergency operations compared to 0% on patients submitted for elective surgery.[21] The rate of mortality found in our patients with Crohn's disease was almost identical (7%) to that reported by Steegmuller et al.[21] It seems certain that today's mortality from complicated inflammatory bowel disease should be significantly lower compared to previous decades probably as a consequence of the close surveillance of the patients by the specialized team of doctors and the close cooperation between physician and surgeon.[22-24]

The long-term outcome of patients with inflammatory bowel submitted to an urgent operation is probably not different from the outcome of patients who had not undergone an emergency operation. In our series most of the causes of death during the follow-up period were unrelated to the underlying inflammatory bowel disease.

In conclusion, from the results of the present study it became apparent that in Greek patients with Inflammatory Bowel Disease emergency operation is mainly required for those with Crohn's disease. Obstructive ileus is the main indication for emergency surgery, while the most commonly performed surgical procedure applied is enterectomy plus end-to-end anastomosis. Clinicians must bear in mind that perforation and subsequent peritonitis, although rare, could be the first clinical manifestation of patients with Crohn's disease.

REFERENCES

1. Farmer RG, Hawk WA, Turnbull RB. Indications for surgery in Crohn's disease: analysis of 500 cases. Gastroenterology 1976; 71:245-250.
2. Frykholm G, Pahlman L, Enblad P, Krog M, Ejerblad S. Early outcome after emergency and elective surgery for ulcerative colitis. Acta Chir Scand 1989; 155:601-605.
3. Becker JM. Surgical therapy for ulcerative colitis and Crohn's disease. Gastroenterol Clin North Am 1999; 28:371-390.
4. Hurst RD, Molinari M, Chung TP, Rubin M, Michelassi F. prospective study of the features, indications, and surgical treatment in 513 consecutive patients affected by Crohn's disease. Surgery 1997; 122:661-668.
5. Pardi DS, Loftus EV Jr, Tremaine WJ, Sandborn WJ, Alexander GL, Balm RK, Gostout CJ. Acute major gastrointestinal hemorrhage in inflammatory bowel disease. Gastrointest Endosc 1999; 49:153-157.
6. Roy MK, Delicata RJ, Carey PD. Crohn's disease presenting with acute colonic perforation. Postgrad Med J 1997; 73:645-646.
7. D' Addazio G, Scordamaglia R, Tedeschi U, Barra M, Arpe F, Beatini L, Meola V. Emergency surgery in inflammatory bowel disease. Experience in 26 cases. Minerva Chir 1998; 53:1001-1007.
8. Yamamoto T, Keighley MR. Long-term outcome of total colectomy and ileostomy for Crohn's disease. Scand J Gastroenterol 1999; 34:280-286.
9. Rieger N, Collopy B, Fink R, Mackay J, Woods R, Keck J. Total colectomy for Crohn's disease. Aust N Z J Surg 1999; 69:28-30.
10. Coerper S, Makowiec F, Starlinger M, Becker HD. Surgery of Crohn's disease in the course of time - a retrospective analysis of 1,044 operations. Langenbecks Arch

Chir Suppl Kongressbd 1997; 114:1128-1131.
11. Cortesi N, Rossi G, Gibertini G, Giliberti G, Namenti A. Toxic megacolon. Apropos 3 cases. Minerva Chir 1997; 52:649-654.
12. Nyam DC, Ho YH, Seow-Choen F, Leong AP, Parry BR, Ho MS, Goh HS. Surgery for inflammatory bowel disease in Singapore. Singapore Med J 1996; 37:517-518.
13. Williamson ME, Lewis WG, Sagar PM, Holdsworth PJ, Hohnston D. One-stage restorative proctocolectomy without temporary ileostomy for ulcerative colitis: a note of caution. Dis Colon Rectum 1997; 40:1019-1022.
14. Hurst RD, Michelassi F. Stricturoplasty for Crohn's disease: techniques and long-term results. World J Surg 1998; 22:359-363.
15. Sasaki I, Funayama Y, Naito H, Fukishima K, Shibata C, Matsuno S. Extended stricturoplasty for multiple short skipped strictures of Crohn's disease. Dis Colon Rectum 1996; 39:342-344.
16. Heyvaert G, Penninckx F, Filez L, Aerts R, Kerremans R, Rutgeerts P. Restorative proctocolectomy in elective and emergency cases of ulcerative colitis. Int J Colorectal Dis 1994; 9:73-76.
17. Ziv Y, Fazio VW, Church JM, Milson JW, Schroeder TK. Safety of urgent restorative proctocolectomy with ileal pouch-anal anastomosis for fulminant colitis. Dis Colon Rectum 1995; 38:345-349.
18. Goudet P, Dozois RR, Kelly KA, Melton LJ, Ilstrup DM, Phillips SF. Changing refferar patterns for surgical treatment of ulcerative colitis. Mayo Clin Proc 1996; 71:743-747.
19. Mikkola KA, Jarvinen HJ. Management of fulminating ulcerative colitis. Ann Chir Gynaecol 1992; 81:37-41.
20. Melville DM, Ritchie JK, Nicholls RJ, Hawley PR. Surgery for ulcerative colitis in the era of the pouch: The St Mark's hospital experience. Gut 1994; 35:1076-1080.
21. Steegmuller KW, Schafer W, Lang E, von Flotow P, Junginger T. Perioperative risk of surgical therapy of Crohn's disease. Chirurg 1992; 63:39-43.
22. Raab Y, Bergstrom R, Ejerblad S, Graf W, Pahlman L. Factors influencing recurrence in Crohn's disease. An analysis of a consecutive series of 353 patients treated with primary surgery. Dis Colon Rectum 1996; 39:918-925.
23. Sarkar R, Bennion RS, Schmit PJ, Thompson JE. Emergency ileocolectomy for infection and inflammation. Ann Surg 1997; 63;874-877.
24. Harms BA, Myers GA, Rosenfeld DJ, Starling JR. Management of fulminant ulcerative colitis by primary restorative proctocolectomy. Dis Colon Rectum 1994; 37:971-978.