Crohn's Perforation: Not so Uncommon in the Indian Population

Banerjee Chirantan · Sarkar Niladri ·
Mukhopadhyay Madhumita · Sarkar Sabyasachi ·
Dasgupta Sibaji · Kumar Jay

Received: 24 August 2011 / Accepted: 5 March 2012 / Published online: 4 May 2012
© Association of Surgeons of India 2012

Abstract Crohn's Disease is a chronic, idiopathic, transmural inflammatory disease affecting predominantly distal ileum, the common presentation include stricture and fistula formation. Free perforation in the peritoneal cavity is rare. To study the presentation and management of Crohn's perforation. A retrospective study of 9 cases of perforative peritonitis later diagnosed due to Crohn's disease on histopathological examination. Among the 9 patients, 8 were males and 1 was female. The ages of the patients ranged from 30 to 58 years, with mean age of 41.8 years. 6 patients were in the age group of 30–45 years. 8 patients were not known to be suffering from Crohn's. Resection followed by anastomosis was done in 4 cases including the case of known Crohn's, while resection followed by end ileostomy with mucous fistula was done in remaining cases. Resected specimens were sent for histopathological examination in all cases. Though Crohn's perforation is rare it should be kept in mind when dealing with single or multiple perforation of the small intestine even in the developing countries. Though the number of cases in our series are too few to come to a conclusion, we found that ileostomy seems a prudent alternative to traditional resection anastomosis.

Keywords Crohn's disease · Free perforation · Management

Introduction

Crohn's Disease is a chronic, idiopathic, transmural inflammatory disease affecting predominantly distal ileum, though any part of the alimentary tract may be involved.[1] Incidence of the disease is highest in North America & Northern Europe, and is much less common in Asia.[1, 2]. However, due to urbanization & change in dietary habits, the disease is becoming more frequent among Asians including Indians[3]. Though the peak age of incidence of the disease is between 15 and 25 years, it can affect individuals of any age, but is rare in children under the age of 6 years[2]. Classically females are affected more, but a slight male preponderance may be seen in some population including Asians[2]. The common presentations of Crohn's disease include stricture formation due to fibrostenotic lesions, fistula formation due to perforating disease and diarrhea and hematochezia due to aggressive inflammatory disease[4]. Free perforation in peritoneal cavity with peritonitis is rare in Crohn's disease [2, 4, 5]. In fact, Crohn in 1957 stated that "free perforation never occurs, - or at least I have not seen it"[6]. However, such cases have been reported in various literature [5, 7]. Though such reports are very few, we found nine such cases within a span of four years.

Materials and Methods

This paper is a retrospective study of 9 cases of perforative peritonitis later diagnosed due to Crohn's disease on histopathological examination. The diagnosis was based on HP features of non-caseating granulomas with langerhan's giant cells and absence of mycobacterium. All the cases were treated at the department of surgery Calcutta National Medical College between May 2007 to May 2011.

B. Chirantan (✉) · S. Niladri · M. Madhumita · S. Sabyasachi ·
D. Sibaji · K. Jay
Department of General Surgery, Calcutta National Medical
College and Hospital,
23/4, Sagar Manna Road,
Kolkata 700060 WB, India
e-mail: drcbn@gmail.com

Fig. 1 Ileal perforation with creeping of mesenteric fat. The *red arrow* shows creeping of mesenteric fat and the *green arrow* shows ileal perforation

Results

Among the 9 patients, 8 were males and 1 was female. The ages of the patients ranged from 30 to 58 years, with mean age of 41.8 years. 6 patients were in the age group of 30–45 years. Of the 9 patients, 8 were not known to be suffering from Crohn's. The only patient with known Crohn's disease was not taking any medications for Crohn's disease at the time of perforation. All patients presented at ER with features suggestive of peritonitis, and 6 patients showed free gas under diaphragm on straight x-ray abdomen. On laparotomy, more than 1 perforation in terminal ileum was detected in 3 patients. Operation was tailored in individual patients depending on the general condition of the patients, degree of peritoneal soiling, time since symptoms, condition of the gut, expertise of the operating surgeon & provisional diagnosis made on laparotomy. Resection followed by anastomosis was done in

4 cases including the case of known Crohn's, while resection followed by end ileostomy with mucous fistula was done in remaining cases. Resected specimens were sent for histopathological examination in all cases. In 1 patient, the classical creeping of mesenteric fat was noted during laparotomy itself [Fig 1].

Out of these 9 cases, only 1 patient died post operatively. The patient had various co-morbidities including hypertension and diabetes and developed acute renal failure on 1st post operative day. The patient underwent dialysis but died on 9th post operative day. 1 patient in the resection anastomosis group developed entero-cutaneous fistula post operatively following ileo-ascending anastomosis [Table 1]. The fistula formed in the posterior abdominal wall through intact skin. The patient underwent relaparotomy after 6 months, and the fistula including the diseased ileum, previous anastomosis, cecum, ascending colon was excised. A reanastomosis was done and the patient recovered uneventfully. All patients with ileostomy, except the one who died, underwent closure of ileostomy after 3 months of medical therapy for crohn's or after 6 months of primary surgery, whichever was later.

Discussion

Crohn's disease is the most common primary surgical disease of the small bowel world-wide. Annual incidence is 3–7 cases / 1,00,000 of the general population [1]. Exact aetiology remains unknown and various possibilities have been proposed. Mycobacterium paratuberculosis and measles virus are often implicated, but presently more stress is given to cell-mediated & humoral immunological response directed against intestinal cells, in genetically prone individual [1].

However, as already stated, primary perforative peritonitis due to Crohn's disease is a rarity [1, 4, 6] but the incidence of

Table 1 Details of patients included in this study

Age	Sex	Known case of Crohn's	On therapy	Site of perforation	Treatment	Outcome
42 yrs	Male	No	No	Terminal ileum, single	Resection anastomosis	Discharged
34 Yrs	Male	No	No	Terminal ileum, single	Resection anastomosis	Discharged
48 Yrs	Male	No	No	Terminal ileum, multiple	Illeostomy	Discharged
40 yrs	Male	No	No	Terminal ileum, single	Resection anastomosis	Developed Entero-cutaneous fistula in post-op period, treated later successfully
45 yrs	Male	Yes	No	Terminal ileum, single	Resection anastomosis	Discharged
30 yrs	Male	No	No	Terminal ileum, multiple	Illeostomy	Discharged
42 yrs	Female	No	No	Terminal ileum, multiple	Illeostomy	Discharged
58 yrs	Male	No	No	Terminal ileum, single	Illeostomy	Died post operatively due to renal failure on 9th post op day
37 yrs	Male	No	No	Terminal ileum, single	Illeostomy	Discharged

free perforation is much higher among Japanese individuals suffering from Crohn's disease than their Western counterparts [7]. Guliás Piñeiro A, et al. [8] also reported a high incidence of free perforation in Spain. Whether the same holds true for Indian patients is a matter of debate, but clustering of so many cases in a single institute in this short period of time points towards this.

Of the perforation cases reported in various literatures, ileum, especially terminal ileum is most commonly affected. Other less common sites include other parts of ileum, colon, and jejunum [7–10]. In our study, sites of all perforations were terminal ileum, which corresponds to available reports. Though females are affected slightly more by the disease, perforation seems to occur more frequently among males as is evident from various studies [5, 7], and in our study, 8 among 9 cases were males.

Therapy, including steroid therapy has not been proved to have any conclusive association with free perforation [5, 7], though in our series, none of the patients were on any therapy whatsoever. Multiple perforation due to Crohn's is a known phenomenon [7]. However it has been noted in about 20 % cases by Ikeuchi H, Yamamura T. [7]. In our series, the incidence seem to be about 33 %, but as this is a study with low volume, no definite conclusion can be drawn. Multiple perforations carry poorer prognosis [7], but no patient with multiple perforation died in our series, possibly because ileostomy was done in all cases. Ileostomy seems to be, a good option in high-risk patients, specially if aetiology of the perforation is doubtful, though most suggest primary repair as the technique of choice [5, 7, 8]. The only death in our series was due to acute renal failure, whose renal function was already compromised due to pre-existing diabetic & hypertensive nephropathy.

The mean age in our series is 41.8 years, while that in most groups is early to mid thirties [4, 7, 9]. This can be accounted by the fact that paediatric Crohn's is rare in India as compared to more developed country [11].

David M. et al. [5] has reported distal obstruction to be the precipitating factor for free perforation and advised resection of the diseased segment including the stenotic lesion. However we did not find such lesions in any

case. Moreover, minimal surgery of the gut is the prescribed regime at present, and resection of any extra gut, however diseased is inadvisable. All efforts should be done to preserve as much of the gut as possible [2]. In our study, there is one mortality in the ileostomy group, and one morbidity (fistula formation) in the anastomosis group, but superiority of any one procedure over other is not compared in the study. Every case is unique, and on table decision is to be taken about the procedure to be performed.

Though Crohn's perforation is rare it should be kept in mind when dealing with single or multiple perforation of the small intestine even in the developing countries. Though the number of cases in our series are too few to come to a conclusion, we found that ileostomy seems a prudent alternative to traditional resection anastomosis.

References

1. Sabiston's textbook of Surgery, Courtney M Townsend, R David Beauchamp, Bv Mark Evers, Keneth L. Mailox, 18th Ed, P-1297–1298
2. Maingot's abdominal operations, Micheal .J Zimmer, Stanley W. Ashley, 11th edition, P-522–529
3. Makharia GK, Tandon RK (2008) Emergence of Celiac Disease and Crohn's Disease in India. *Medicine Update* Vol. 18
4. Schwartz's Principles of Surgery, F. Charles, Brunicaudi, 9th Ed, P-995
5. Steinberg DM, Cooke WT, Alexander-Williams J (1973) Free perforation in Crohn's disease. *Gut* 14:187–190
6. Crohn, B. B. (1957). Indications for surgical intervention in regional ileitis. *Arch. Surg.*, 74, 305–311
7. Ikeuchi H, Yamamura T. Free perforation in Crohn's disease: review of the Japanese literature. *J Gastroenterol.* 2002;37 (12):1020–7.
8. Guliás Piñeiro A, Madriñán González M, Prego Mateo E (2001) Acute peritonitis due to perforating crohn's disease. (Original article in Spanish). *Gastroenterol Hepatol* 24(7):346–348
9. Werbin N, Haddad R, Greenberg R, Karin E, Skornick Y. Free perforation in Crohn's disease. *Isr Med Assoc J.* 2003 Mar;5 (3):175–7.
10. Fisher J, Mantz F, Calkins WG (1976) Colonic perforation in Crohn's disease. *Gastroenterology* 71(5):385–388
11. Malathi Sathiyasekaran and So. Shivbalan. Crohn's Disease. *Indian Journal of Pediatrics*, Volume 73—August, 2006