Pediatric Crohn's Disease in South India

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Crohn's disease is a chronic inflammatory bowel disorder characterized by discontinuous, transmural, granulomatous inflammation involving any location of the gastrointestinal tract. A retrospective analysis of 10 children diagnosed as Crohn's disease (CD) is presented from Chennai, South India. The children were between 5-15 years of age and majority had primary colonic involvement. Complications such as stricture and fistula were identified. These children were managed medically except one who underwent surgery.

Keywords: *Crohn's disease, Pediatric.*

CROHN'S disease is still an enigma despite 70 years of observation and research since Crohn, Ginzburg and Oppenheimer summarized the classic description of the disease in 1932(1). Crohn's disease (CD) and ulcerative colitis are the two important forms of inflammatory bowel disease (IBD) and a cause of chronic morbidity in children and adolescents. The incidence of IBD in children is less when compared to adults(2,3). In India Crohn's disease was thought to be uncommon and often treated as tuberculosis(4). Recently many cases of CD have been reported in our country(5). This report describes our experience with 10 children and adolescents with Crohn's disease.

Subjects and Methods

A retrospective analysis of 10 children diagnosed as CD during the period 1997 to 2003 in Kanchi Kamakoti CHILDS Trust Hospital (KKCTH) was done. The cases were diagnosed on the basis of history and endoscopic finding with or without histological evidence of CD. Their records were analyzed for demographic data, clinical features, colonoscopic report, treatment and follow up findings. All the children had detailed documentation of family history, clinical examination, laboratory work up, colonoscopic evaluation, biopsy and histopathological examination. Ultrasound of abdomen was done for all and contrast enhanced computerized tomography in 8 patients. Barium meal follow through was done in 2 cases where CT abdomen was not performed due to financial constraint. All the patients had upper gastrointestinal endoscopy and colonoscopy. Multiple biopsies (6-8 in number) from the involved area in the colon were taken. Biopsy from the antral mucoas was taken only in three. The children were on regular follow up (fornightly for the initial 3 months, followed by monthly thereafter).

Results

The age distribution of these children was 5 to 15 yrs. The male:female ratio was 1:9. A family history of IBD was obtained in one

child and 5 had received ATT before presentation. All cases had documented weight loss (>10% of their baseline weight). The other clinical presentations were abdominal pain(8), diarrhea with frank blood(7) and fever(6). The hemoglobin was between 8 to <10g/dL in 3 and 1 child had < 8 g/dL, all the 4 received packed cell transfusion. All the children had elevated ESR (range from 60-80 mm/h). Significant hypoalbuminemia less than 2.5 g/dL was documented in 4 children who received enteral alimentation for a period of 1 to 2 weeks and also 20% IV albumin when required. One child had recurrent significant hypoalbuminemia that was managed with 20% albumin infusions.

The demographic data, site of GI involvement are shown in *Table I*. Esophago-gastro- duodenoscopy revealed normal antral mucosa in all the children. One child had esophageal ulceration with stricture for which dilatation was done. Antral biopsy was taken in 3 children and features of focal enhanced gastritis (FEG) was identified in only 1 child and the other 2 had non-specific gastritis. Colonoscopy was done in all the children and 8 showed characteristic findings of deep, irregular and fissuring ulcers, skip lesions with normal intervening mucosa. The distribution of colonic lesions were sigmoid and descending colon more than the ascending colon in 6, one had transverse colon more involved than the sigmoid and descending colon, one child had only ascending colon and caecal involvement. The rectum was spared in all the children. The colon was normal in 2 children of which one had evidence of CD on antral biopsy and the other had terminal ileal involvement on ileoscopy. Ileoscopy was done in 7 and terminal ileum was involved in one, whereas ileum could not be entered in the remaining 3 cases. Of the 8 children with CECT studies, colonic thickening was reported in 3, small bowel involvement in 2 as

TABLE I–*The Demographic Data and Site of GI Involvement.*

Case No.	Age (yr)	Sex	Colon	Small bowel	Other sites	Complications and treatment	Therapy initial and maintenance*
1	13	F	++	–	–	Rectovaginal fistula	5-ASA*
2	9	F	++	–	–	Perianal fistula, Anti TNF,	5-ASA +Azathioprine*
3	10	F	++	–	–	–	5-ASA + Budesonide*
4	13	F	–	++	–	–	5-ASA + low dose prednisolone*
5	9	F	++	–	–	–	5-ASA + low dose prednisolone*
6	5	M	++	–	Esop	Esophageal stricture Endo. Dilatation	5-ASA + low dose prednisolone*
7	12	F	–	++	–	Intestinal obstruction Surgical resection	5-ASA + Azathioprine*
8	13	F	++	–	–	–	5-ASA*
9	11	F	++	–	–	–	5-ASA*
10	15	F	++	–	–	–	5-ASA*

*All children were initially started on 5-ASA (Amino salicylic acid) and prednisolone.

evidenced by long segment narrowing of ileum and thickening of ileum in one, jejunal and proximal ileal involvement in the other and mesenteric lymphadenopathy in 3 children. The abdominal ultrasonogram documented thickened bowel loops with central hyperechoic areas (pseudo kidney appearance) and long segment narrowing of the ileum in those with small bowel disease. Colonic involvement was identified only in 2 of the 8 cases. Barium meal series was done in those children for whom CECT was not done and who had no clinical or ultrasonographic evidence of small bowel involvement. The study also did not reveal any involvement of their small intestine, one child had esophageal stricture. Histopathology was noncaseating granuloma in 5 of 8 colonoscopic procedures. The remaining 3 had completed a course of ATT and diagnosed as CD based on history and endoscopic appearance of the ulcers and skip lesions.

Since all the children had moderate CD on the basis of clinical manifestation(6), they were started on 5 amino salicylic acid 50 mg/kg/day in 2-3 divided doses and continued.

Prednisolone was started at a dose of 1-2 mg/kg/day (max 60 mg/day) as a single dose for 6-8 weeks and was tapered over 2-4 weeks. Azathioprine was introduced in those who were steroid dependent or those who developed relapse on steroids or in cases with persistent disease activity. In our series 2 required azathioprine (2.5 mg/kg/day), 1 required oral budesonide and 2 were on low dose (2.5 mg/day) of daily prednisolone. The patient on azathioprine developed perianal fistula, which did not close with increased dose of azathioprine (3 mg/kg/day), ciprofloxacin and metronidazole. She was managed with anti TNF-α (Infliximab) 5 mg/kg as infusion at 0, 2 and 6 weeks interval. The weight was monitored in all the children after initiation of specific therapy and 8/10 attained the expected weight for age. The therapy also curtailed their school absenteeism and helped in reviving their extracurricular activities.

Discussion

Crohn's disease is an important cause of chronic morbidity in childhood and adolescents. The incidence of CD in pediatrics is 0.2-8.5 per 100,000 in the west(2). The usual age of presentation of pediatric IBD is 10-16 year(2). Children less than 5 years of age constitute 4% of CD, 25-40% present before the age of 20 years(7). In our series the cases were 5-15 years of age, with a median age of 11.5 years. CD is seen in both sexes, a female predominance has been reported in some studies. The M : F of 1 : 9, seen in this report could be due to ethnic variation and different genetic mutation.

In CD the site of involvement of the gastrointestinal tract dictates the clinical presentation and isolated colonic involvement is seen in 15-20% of children(8). In this study involvement was seen in 8 of which one had perianal fistula. Fewer cases with small bowel disease may be due to varying genetic mutations. In early onset IBD a similar pattern has been reported(9). NOD 2 variant gene on chromosome 16 has been linked to CD with ileal involvement(10).

Frank rectal bleed is seen in 25% of children and occurs with colonic involvement(8). Of the 8 children with colonic involvement 7 had frank blood in stools. The transmural nature of the disease leads to the formation of abscess, fistula and fissure in CD. Perianal fistulae, recto-vaginal fistula, ileal stricture and esophageal stricture as complications were noted separately in 4 children. Extra intestinal manifestations such as arthtritis, erythema nodosum, apthous ulceration of mouth and uveitis are seen in

Key Messages

- Pediatric CD is not uncommon in south India.
- Awareness and high index of suspicion is required to suspect and diagnose CD.

25% of CD(8). Only one child had oral ulcer as an extra intestinal manifestation.

Non-caseating granuloma is the hallmark of CD, which was identified in 5 of 8 cases with colonic involvement. Ileoscopy is a recommended procedure; the ileum was entered in 7 and only one showed involvement. Microgranuloma on antral biopsy increases the diagnostic yield(11), this was identified in 1 of the 3 antral biopsies.

CD is commonly misdiagnosed as tuberculosis in India, the features that help to differentiate TB from CD are that the ulcers tend to be transverse in TB and longitudinal in CD. Perianal involvement is seen in CD and not in TB. Granulomas are ill-formed non-caseating, numerous and smaller in CD whereas they are caseating, well formed confluent and larger in TB. Lymphnode involvement can occur without bowel involvement in TB but not so in CD(12,13). In our study 5 children were treated as TB initially and later were diagnosed as CD. Contrast enhanced computerized tomography of abdomen is useful to identify small bowel involvement(14), as also documented in our study.

5-Aminosalicylates like sulfasalazine and mesalamine are the initial drugs. Corticosteroids are useful in acute stages of moderate to severe CD or when aminosalicylates are ineffective but are not beneficial in maintaining remission(15). Immunosuppressive drugs like azathioprine, cyclosporin, 6-mercaptopurine, methotrexate are beneficial in steroid dependent or nonresponders(16). Anti TNF-α. (Remicade, Infliximab) has proved effective in short-term therapy of moderate to severe CD in children(17). Anti TNF-α. was administered in the child with perianal fistula and 2 of the 3 fistulae closed. Enteral nutrition with either elemental or polymeric diets showed 20-80% remission in subjects(18). The common indications for surgery are uncontrolled hemorrhage, perforation, obstruction, fistula and carcinoma. The child with ileal stricture underwent surgical resection and end-to-end anastomosis. CD is a chronic inflammatory bowel disease that needs a multidisciplinary approach by pediatrician, surgeon, pediatric gastro-enterologist, psychologists, nutritionists and nurses.

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