

**DISSERTATION ON**  
**CLINICAL PROFILE AND DIAGNOSTIC EVALUATION**  
**OF FRANK BLEEDING PER RECTUM IN CHILDREN**  
**BETWEEN 1 AND 12 YEARS OF AGE**

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## **CERTIFICATE**

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## **INDEX**

<b>1. Introduction</b>	<b>1</b>
<b>2. Review of literature</b>	<b>17</b>
<b>3. Justification of the study</b>	<b>26</b>
<b>4. Aim of the study</b>	<b>27</b>
<b>5. Methods and Materials</b>	<b>28</b>
<b>6. Results</b>	<b>30</b>
<b>7. Discussion</b>	<b>45</b>
<b>8. Summary</b>	<b>51</b>
<b>9. Conclusion</b>	<b>53</b>

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**Annexure**

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# PROFORMA

NAME :

AGE :

SEX :

ADDRESS:

IP NO. ;

HISTORY

1. Rectal Bleeding

a) Painless

b) Duration

c) No.of episodes

d) Quantity

e) Previous episodes

f) Any other bleeding manifestation

Hematemesis

Tarrystools

Epistaxis

Bleeding from gums

2. Abdominal Pain

3. Abdominal Distension

4. Fever

5. Constipation
6. Loose stools
7. Any drug in take
8. Others

Family history of similar episodes

Any other underling illness/Treatment history

#### ON EXAMINATION

Nourishment

Pallor

Jaundice

Clubbing

Petechiae

Edema

Any cutaneous marker

Any signs of liver cell failure

#### VITALS

Temperature

Respiratory rate

Heart rate

Blood pressure

#### SYSTEMIC EXAMINATION

Per Abdomen



Liver

Spleen

Any other masses

Free Fluid

## PERRECTAL EXAMINATION

Examination of other systems

CVS

RS

CNS

## INVESTIGATIONS

Complete Hemogram, notion occult blood

LFT

Coagulation Profile

UGI Scopy

USG Abdomen/Doppler

Colonoscopy

Double Contrast Barium

Meckel's Scan

## INTRODUCTION

Rectal bleeding is an alarming symptom in children with heterogenous causes which warrants careful diagnostic workup. Early detection of the cause will aid in early initiation of appropriate treatment. Incidence of rectal bleeding in children is essentially unknown. No population based data on the incidence of this problem is presently available. The incidence is about 20/1,00,000/year as per the Western literature.

The profile of rectal bleeding in children is rather different from that of adults. Even though many studies are available from northern India from centres like PGI, Chandigarh and AIIMS, New Delhi, studies are not available from southern India. Hence this study has been conducted to analyze the clinical and etiological profile of rectal bleed in children in a large tertiary care pediatric centre from Southern India and also to look into the outcome of colonoscopy.

### **DEFINITION**<sup>23</sup>

Lower Gastro Intestinal bleeding is bleeding from GI tract distal to Ligament of Teitz.

## **CLASSIFICATION<sup>23</sup>**

Lower GI bleeding is classified under 3 groups according to amount of bleeding.

### **I. OCCULT BLEEDING**

This can occur at any age. Usually these children present with anaemia. The causes are many allergic colitis, non – specific colitis worms etc.

### **II. MODERATE BLEEDING**

Patients present with bleeding per rectum but are hemodynamically stable.

### **III. MASSIVE BLEEDING**

The patients present with hemodynamic instability, with a systolic BP is less than 90 mm of Hg. Usually these children have decreased hematocrit and require resuscitation with blood transfusion.

## **CAUSES OF RECTAL BLEEDING IN CHILDREN<sup>23</sup>**

### **INFANTS**

1. Polyp and Polyposis Syndromes
  - a) Juvenile Polyps
  - b) Peutz Jeghers
  - c) Familial adenomatous polyposis
2. Anal Fissure
3. Rectal Prolapse
4. Colitis
5. Bleeding disorder

### **OLDER CHILDREN AND ADOLESCENCE**

1. Polyps
2. Trauma
3. Anal Fissure
4. Meckels Diverticulum
5. Vascular Malformation
6. Inflammatory bowel diseases
  - i) Ulcerative colitis

ii) Crohns

7. Bleeding disorders

## **ADULTS**

1) Diverticular diseases

- Diverticulum

- Diverticulitis

2) Inflammatory bowel disease

a) Crohn's disease

b) Ulcerative colitis

3) Benign Anorectal disease

Hemorrhoids

Anal Fissure

Fistula in Ano

4) Neoplasms

Malignancies of colon, Rectum and anus

5) Vascular:

Angiodysplasia

Arterio venous malformation

Other causes include

- Dieulafoy lesion
- Portal colopathy
- Rectal varices
- Solitary Rectal Ulcer syndrome'
- Vasculitides of small bowel or colonic ulceration
- Massive upper GI bleed at times can present as lower gastro intestinal bleeding.

Differential diagnosis according to clinical presentation is possible most of the times

- Passage of bright red blood per rectum or spots of red blood on toilet implies bleeding from anal or rectal lesions possibly due to anal fissures, juvenile polyp or allergic proctocolitis.
- Bright red blood mixed with mucus and associated with diarrhoea abdominal cramps and tenesmus with or without fever suggests colitis which may be due to infection, Inflammatory bowel disease, SRU and allergic Colitis..

- Painless rectal bleeding suggests Meckel's diverticulum, intestinal duplication, Polyp or angiodysplasia, Variceal bleeding etc.

A thorough history and detailed physical examination is mandatory in all these children. It is also necessary to rule out substances mimicking blood before proceeding to search of source of bleeding.

## **CONDITIONS COMMONLY CAUSING BLEEDING PER RECTUM<sup>1</sup>**

### **POLYPS:**

Juvenile polyps comprise 80% of childhood polyps. It is a mucous retention polyp and histologically features of a cluster of mucoid lobes surrounded by flattened mucus secreting glandular cells. There is no malignant potential. The peak age is 5-6 years. Solitary polyps are common. Diagnosis is by double contrast barium studies and colonoscopy.

Endoscopic polypectomy is the treatment of choice for simple solitary polyps and the specimen should be subjected for histopathological analysis.

### **FAMILIAL ADENOMATOUS POLYPOSIS:<sup>1</sup>**

Family history of colon cancer is an important indicator of future risk of colorectal cancer. Once the risk is appreciated, screening for early

detection of cancer must be done. This involves genetic analysis of APC gene, surveillance endoscopy periodically. Besides multiple adenomatous polyps of colon, a variety of extra colonic manifestations are associated. Mucosal neuroma, osteomas are some of them. Histopathological examination determine presence of adenomatous epithelium with dysplastic changes. Total colectomy with ileorectal or ileoanal anastomosis is the recommended surgical option for these children.

Gardener syndrome comprises of multiple colorectal polyps, periampullary polyps, osteomas (mandibular) lipomas, fibromas, epidermoid cyst and desmoid tumour.

Turcot syndrome comprises of primary brain tumour/medulloblastoma and multiple colorectal polyposis.

Peutz-Jegher Syndrome: This condition is associated with melanin hyperpigmentations of lips or oral mucosa. The polyps are usually multiple and they are hamartomas. Whole of GIT may be involved but jejunum and ileum are the most common sites. The risk of malignant potential has been reported to 2-3%. Treatment depends on severity of symptoms and extent of involvement.



Breast and gynecologic tumours are seen most frequently associated with Peutz Jegher Syndrome.

### **SOLITARY RECTAL ULCER SYNDROME<sup>23</sup>**

Aetiology is multifactorial. The term SRUS is a misnomer. Both ischemia and trauma appear to be the significant causative factors. Dysfunctional defecation associated with an anterior rectal prolapse either occult or overt is important association. Reflex contraction of puborectalis muscle may traumatise the mucosal prolapse, causing ischemia and ulceration of the lead point which in turn causes a further desire to defecate & strain. Lesions are typically seen on anterior rectal wall 5-8 cm from anal verge but may occasionally be found elsewhere.

Microscopically there is fibrous obliteration of lamina propria with smooth muscle fibres splaying out into Lamina propria. The muscularis mucosa is hypertrophied with distorted crypts. The epithelium is hyperplastic and glands may be displaced deep to muscular mucosa. Treatment aims to relieve symptoms with bulk laxatives and high fibre diet. Surgical treatment for SRUS are variably successful in adults but the role of surgery has to be studied in detail in children. Uncontrolled bleeding may require other modalities like argon plasma coagulation, laser therapy.

## **MECKELS DIVERTICULUM<sup>1</sup>**

It is a remnant of embryonic yolk sac, which may also be referred to as omphalomesenteric duct or vitelline duct. It occurs in 2-3% of all infants as 3-6 cm outpouching of ileum along the antimesenteric border, 50-75 cm from the ileocecal valve. It may be associated with partial or complete bowel obstruction. A meckel's diverticulum may occasionally be inflamed and may lead to perforation and peritonitis. The most sensitive diagnostic tool is Meckel radionuclide scan, performed after intravenous infusion of technetium-99m pertechnetate. The acid secreting cells of ectopic gastric mucosa take up pertechnetate and visualisation of Meckel's aid in diagnosing. Treatment of symptomatic Meckel's Diverticulum is surgical excision.

## **INFLAMMATORY BOWEL DISEASES<sup>1</sup>**

Consists a group of disorders in which intestines become inflamed, probably as a result of an immune mediated reaction of the body against its own intestinal tissue antigen.

Two major types are crohn's and ulcerative colitis. Indeterminate colitis is the one where the histopathology is not conclusive of UC or Crohns. As name suggest ulcerative colitis is limited to colon, whereas

crohn's disease though can involve any part of GIT the most common site is the small intestine.

Relapses and remissions are common to both. Genetic, infectious, immunologic and psychological factors have been implicated in influencing the pathogenesis of the disease.

### **COMPARISON OF CROHNS DISEASE AND ULCERATIVE COLITIS<sup>1</sup>**

Features	Crohns Disease	Ulcerative Colitis
Rectal Bleeding	+ / -	Common
Diarrhea	Variable	Common
Abdominal pain	Common	Variable
Abdominal Mass	Common	Absent
Perianal disease	Common	Unusual
Erythema nodosum	Common	Less Common
Colonic disease	50 - 75%	100%
Ileal disease	Common	None except Back water ileitis
Strictures	Common	Unusual
Fistula	Common	Unusual
Toxic Megacolon	None	+
Sclerosing cholangitis	Less common	Present
Risk of cancer	Increased	Greatly increased
Skip lesion	Common	Unusual
Crypt abscess	Less Common	Common
Granuloma	Common	Unusual

Colonoscopy with biopsy can be more helpful than radiologic or radionuclide studies in evaluating Crohn's disease. However colonoscopy should not be performed when fulminant colitis is suspected as there is high chance of perforation .

Treatment for mild colitis involve sulfasalazine whereas for moderate to severe colitis, corticosteroids are useful as an induction therapy. Surgical treatment for intractable or fulminant colitis is total colectomy with ileoanal anastomosis.

### **FISSURE-IN ANO:<sup>1</sup>**

It is a small laceration of mucocutaneous junction of anus. It is an acquired lesion secondary to forceful passage of hard stool mainly seen in infancy, also in older children. Sometimes peripheral to laceration, patient has a little skin like appendage which actually represents epithelialized granulomatous tissue and is called as tag. Goal of treatment is to soften the stool, with the usage of laxatives. Sitz bath and antibiotics may be needed if there is pain and inflammation.

### **ANGIODYSPLASIA**

Colonic angiodysplasia are arteriovenous malformations located in the cecum and ascending colon. Colonic angiodysplasias are an acquired lesion affecting elderly persons older than 60 years These lesions are

composed of clusters of dilated vessels mostly veins in the colonic mucosa and submucosa. Colonic

Angiodysplasias are believed to occur as a result of chronic intermittent low – grade obstruction of submucosal veins as they penetrate the muscular layer of the colon. The characteristic angiographic findings are clusters of small arteries

During the arterial phase of the study accumulation of contrast media in vascular tufts early opacification and persistent opacification due to the late emptying of the draining veins. If mesenteric angiography is performed at the time of active bleeding extravasation of contrast media is visualized.

Unlike diverticular bleeding angiodysplasia tends to cause slow but repeated episodes of bleeding Therefore patients with angiodysplasia present with anemia and syncopal episodes. Infrequently angiodysplasias can cause an abrupt loss of large quantities of blood. Angiodysplasias can be easily recognized by colonoscopy as 1.5- to 2-mm red patches in the mucosa. Actively bleeding lesions can be treated with colonoscopic electrocoagulation.

Incidentally discovered lesions should be left alone.

## **ISCHEMIC COLITIS**

Ischemic colitis, the most common form of ischemic injury to the digestive system, frequently involves the watershed areas including the splenic flexure and the rectosigmoid junction. In most cases the precipitating event cannot be identified. Colonic ischemia is a disease of the elderly population and is commonly observed after patients sixth decade of life. Ischemic colitis is not associated with significant blood loss or hematochezia, although abdominal pain and bloody diarrhea are the main clinical manifestations.

Benign anorectal disease (eg, hemorrhoids anal fissures, anorectal fistulas) can cause intermittent rectal bleeding. Massive rectal bleeding due to benign anorectal disease has also been reported The VA database<sup>4</sup> review revealed that 11 % of patients with lower GI bleeding had hemorrhage from anorectal disease. Patients who have rectal varies with portal hypertension may develop painless massive lower GI bleeding therefore examining the anorectum early in the workup is important. If active bleeding is identified treat it aggressively. Note that the discovery of benign anorectal disease does not exclude the possibility of more proximal bleeding from lower GI tract.

## **INVESTIGATIONS**

Baseline work up include complete hemogram, peripheral smear, serum electrolytes, liver function tests, motion for occult blood, coagulation profile and blood grouping & typing.

Colonoscopy: A very useful diagnostic and therapeutic modality .Colonoscopy is a procedure that allows to locate the cause of rectal bleeding and also perform polypectomy in case of polyp. It is a thin flexible tube that ranges from 48 inch to 72 inch long. It is used to screen the entire large bowel and terminal part of small intestine.

This procedure needs bowel preparation with magnesium sulphate or Poly ethylene glycol. Conscious sedation during procedure is preferable.

## **IMAGING STUDIES<sup>23</sup>**

99m Technetium labelled scintigraphy is a sensitive diagnostic tool and can detect bleed as low as 0.1ml/mt. The sensitivity is 20-95% Bleeding site is identified accurately by intra luminal accumulation of 99M Tech scan. Selective mesentric angiography, helical CT scan of abdomen, nuclear scintigraphy are useful when routine work up fails.

Double contrast barium enema examination can be justified only for elective evaluation of unexplained bleeding. It should not be used in acute hemorrhagic phase as it makes further diagnostic evaluations impossible. Enteroclysis is often valuable in investigation of unexplained lower GI bleeding in small intestine.

Selective mesenteric angiography is useful in the diagnosis of GI bleeding. The value of Mesenteric angiography in the diagnosis and management of lower GI bleeding has been well known. The extravasations of contrast material indicates a positive study finding. Mesenteric angiography can diagnose a rate of more than 0.5 mL / min. In a patient with active GI bleeding the radiologist concentrates on the mesenteric vessel most likely to be responsible (eg. the inferior mesenteric artery in bright red rectal bleeding is identified, the other major mesenteric vessels including the superior mesenteric artery and studied. In some cases aberrant vascular anatomy can contribute to colonic or small bowel circulation patients with upper GI bleeding may present in an uncommon clinical fashion.

Helical CT scan of the abdomen and pelvis can also be used when routine workup fails to determine the active GI bleeding. Multiple criteria including vascular extravasations of the contrast medium contrast



the bowel wall, thickening of the bowel wall, spontaneous hyperdensity of the peribowel fat, are used to establish the bleeding site with helical CT should be performed using intravenous contrast. Therefore, helical CT could be a good diagnosis acute lower gastrointestinal bleeding to help the physician identify the bleeding site.

## REVIEW OF LITERATURE

### 1. Goenka M.K. Kochhar. R. Mehta SK<sup>12</sup>

Spectrum of lower gastrointestinal hemorrhage an endoscopic study of 166 patients.

Background : The Spectrum of lesions causing lowest gastrointestinal 'hemorrhage shows marked geographic variation. The study was aimed to determine this Spectrum in our region using endoscopic examination .

Methods : 166 patients presenting with lower Gastrointestinal hemorrhage were investigated using colonoscopy as the first investigation.

Result : Lesions responsible for bleeding could be identified in 141 patients (84.9%) In patients (15.1%) the etiology of bleed could not be determined either because of failure to identify a lesion (10 patients ) or because of an incomplete examination (15 patients). Major causes of lower gastrointestinal bleeding including idiopathic ulcerative colitis (19.3) acute colitis (12.0%) colonic polyps (10.2%) radiation colitis (9.01%) solitary rectal ulcer (7.8%) Colonic carcinoma (7.2%) colonic tuberculosis (4.2%) and enteric fever (3.0%) **CONCLUSION:**

Endoscopic examination is very useful in evaluating patients with lower Gastrointestinal hemorrhage. The predominant causes of lower gastrointestinal bleeding in our experience are different from those reported from western countries.

2. **Khurana A.K. Saraya. A., Jain N., Chandra M., Kulshreshta R.<sup>7</sup>**

Profile of lower gastrointestinal bleeding in children from a tropical country. Eighty five children were evaluated endoscopically for recurrent lower gastrointestinal (GI) bleeding. The male : female ration was 2.4% with a mean age of 6 years (range 8 months to 2 years). After adequate bowel preparation endoscopic evaluation was done using Olympus CF 101

Colonoscope. Sedation was given only to look for extent of disease in 8 cases and to ascertain site of bleeding when no lesion could be seen on Sidmoidscopy. Juvenile polyps were seen in 40 cases amoebic ulcer in 20 Solitary rectal ulcer in 4 and polyposis Syndrome in 5 cases. Sidmoidscopy alone is safe and adequate in ascertaining the cause of prolonged recurrent lower GI bleeding.

### 3. **FI – MOUZAN MI etal** <sup>13</sup>

Yield of Colonoscopy in children with rectal bleeding.

Objective Rectal bleeding is a common complaint in children and is the most common indication for procedure in children. Methods: Analysis of the medical records of all children below 18 years of age who underwent colonoscopy from 1993 to 2002, in King Khalid University Hospital, Riyadh Kingdom of Saudi Arabia for the evaluation of rectal bleeding. Results : Eight nine children presented with bleeding per rectum, accounting for 49% of the indications for colonoscopy. The majority (92%) was Saudi nationals the age range was from 5 months to 18 years and the male to female ratio was 1.1:0.9. They were 22 children between 0-12 years and between 13-18 years. The overall yield of colonoscopy was 57/89 (64%):

However the yield was slightly better 22/32 (69%) for children 0-12 years In a subset of children (22 patients, 21 of them were in the age group 0-12 years ) where rectal bleeding per rectum are presented in the table indicating that colitis was the most common cause 30/57 (36%) followed by polyps in 15% (27%) whereas rectal ulcers chronic anal fissures and hemorrhoids accounted for 5% each. However, age – related

analysis shows that colitis occurred more commonly in older children and polyps were found almost with equal frequency in both age groups.

**CONCLUSION :** The diagnostic yield of colonoscopy is very high especially in children presenting with bloody diarrhea.

4. **Sotomayor J, Bordas JM, Parri F, Julia V, Mondelo F, Morales L, Teres J.**<sup>14</sup>

Fiber Colonoscopy in children under 18. The aim of the study was to evaluate the indications of colonoscopy, diagnostic accuracy and efficacy treatment of procedure in young patients aged less than eighteen years using standard forward Colonoscopes Olympus CF LB2, CF LBW and CF HL 20.

Among 5,400 procedures done along eleven years 37.6 per 100 of which were performed in children under ten years. In this group general anaesthesia was employed without complications. The most frequent indication of colonoscopy in young patients was rectal bleeding (62.5 per 100) Related to the frequency in this series the control of graft versus host disease in patients submitted to bone marrow transplantation was the second

Indication (11 per 100), followed by the study of chronic anaemia (4.2 per 100) and control of the chronic inflammatory bowel disease (4.2 per 100)

Diagnostic accuracy reached 93.75 per 100. In per 100 of the cases the exploration were considered unsatisfactory because inadequate cleaning of the colon. The most frequent diagnostic was “normal colon” (29.6 per 100).

Of the cases) Poly was found in 21.2 per 100 of the cases. Polypectomy was performed in all indicated cases. One patient with multiple polyposis were submitted to surgery. Colonoscopy reached the right colon in 25.4 per 100.

Of the cases. In 54 per 100 of the procedures reached splenic angle and in 83.8 per 100 of the cases all Sigmoid colon was explored From this experience we suggests that colonoscopy using standard endoscopes is a very useful diagnostic and therapeutic technique in child and in young people.

5. **Kalaoni M. Radhakrishnan S, al Shamali M, Hasan F, al Nakib B,<sup>15</sup>**

Findings of colonoscopy in children experience from Kuwait. This report summaries retrospective analysis of 173 colonoscopic examination performed on 159 children over a period of 9 years in Kuwait. Ninety six children were males with a male to female ratio of 1.5:1. The main indications for colonoscopy were rental bleeding polyps, and suspected inflammatory bowel disease. Examination was done under complete upto the Caecum and 89 (51 percent) up to the terminal ileum. The most common pathology was polyps in 42 children. All but one were hamartomatous and mainly localized to the rectum and sigmoid colon. The majority had a single polyp. One child had adenomatous polyposis coli. One hundred and forty two polps were removed endoscopically with no Complications. Inflammatory bowel disease was present in 34 (21% ) Children (17 crohn's disease, 11 ulcerative colitis and 6 indetermine colitis.) Tuberculosis of the ileo – caecal region was diagnosed in two cases. Seven patients had rectal ulcers presentating as rectal bleeding. In 11 (7 %) the lesions were limited to the right side of the colon or terminal ileum. These results suggests that colonic pathology not uncommon in children in Kuwait. The disease pattern is similar to that reported in western countries. As we have observed in adults

inflammatory bowel disease is seen in significant numbers among children in this region. In this survey we have observed a change in the disease frequency Crohn's disease being more common than ulcerative colitis. Without adequate examination the existence of inflammatory bowel disease and this possible changing pattern of disease would have gone unrecognized.

6. **Rasinski A, Ryzkoj, Rondio H, Celinska – Cendro D.**<sup>16</sup>

“Fiber – optic endoscopy of the lower gastro intestinal tract in children.” Between 1978 and 1985, 565 lower gastrointestinal endoscopies were performed in the children. In 221 cases the cause of rectal bleeding was explored, in 227 the suspicion of colitis and in 25 of polyposis was verified. To evaluate the results of treatment (Polypectomy, Surgical procedures and medical therapy in inflammatory bowel disease) 121 examinations were done. With increasing experience the complete colonoscopy was performed more often. Cecum and ileum terminate was reached in almost all children in whom it was needed (75% of all examinations). Colonoscopy performed by an experienced colonoscopist lower gastrointestinal tract disease in children the evaluation of colitis should be based on visual findings with biopsy confirmation.



7. Bhargava DK, et al studied colonoscopy for unexplained lower gastrointestinal bleeding in 53 subjects in a tropical country. Juvenile polyps (77%) and non specific colitis and ulcers (23%) were the identifiable cause of bleeding in children. Rectum and sigmoid colon were the sites mainly involved.<sup>11</sup>
8. Balkan E. et al. in a prospective study done during 1985 – 1996 in 100 children observed endoscopy was positive in 60, in which rectal polyp, non specific proctitis, solitary rectal ulcer was documented in 32, 16 and 4 cases respectively.<sup>10</sup>
9. de Ridder et.al., VanLingen AV, Tanini JA Beninga MA.. Studied Rectal Bleeding in children over 2 years: Endoscopy was done to bring out the source of lesion.<sup>17</sup>
10. Farzaneh Motamed et al., in his prospective study on colonoscopic examination in 164 children with Lower GI bleeding at Pediatric unit of Digestive Disease research centre, Gharib Ave, Tehran between March 2006-2007 had M:F ratio of 1.6. This study aimed at the outcome of colonoscopy and associated features with Lower GI bleeding.<sup>5</sup>

11. Mandhan et al in his prospective study on endoscopy in 229 children between Oct 1998- April 2002, observed colorectal polyp in 75%, non specific proctitis in 18%, SRU in 3.5% ,lymphonodular hyperplasia in 3% and foreign body in 0.5%.<sup>9</sup>
  
- 12 Likhayat Ha, et al., in his 3 year study on rectal bleeding in 194 Egyptian Children found colonoscopy was a very useful technique.<sup>18</sup>

## **JUSTIFICATION OF THE STUDY**

Rectal bleeding is a common and alarming symptom in children attending pediatric GE clinic often causing great anxiety among parents and primary care takers.

Information regarding etiological profile in bleeding per rectum in children is available from northern India however no studies from South India on this aspect. Our hospital is one of the premier institution in south east Asia with various specialties catering to the health needs of children from Tamil nadu and neighbouring states.

Bleeding per rectum is common problem often encountered in pediatric GE clinic. Hence this study was undertaken to look in to various aspects which includes profile, etiological diagnosis in children with bleeding per rectum from a large urban referral centre from South India.

## **AIM OF THE STUDY**

1. To study the clinical profile of children in the age (1-12 yrs) of either sex with frank bleeding per rectum.
2. To evaluate the role of colonoscopy in children with bleeding per rectum.

## **METHODS AND MATERIALS**

### **1. STUDY DESIGN**

Prospective study

### **2. STUDY PERIOD**

November 2006 - November 2008.

### **3. STUDY PLACE**

Department of Gastroenterology

Institute of Child Health & Hospital for Children

Chennai. Tamil Nadu

### **4. STUDY POPULATION**

Children in age range of 1-12 years attending the department of Gastroenterology at ICH with frank bleeding per rectum were enrolled for the study.

### **5. METHODOLOGY**

All children in age range of 1-12 years who presented with frank bleeding per rectum were enrolled in the study. The data were entered in

a detailed pre-structured proforma. After good history taking and complete physical examination, necessary investigations were done in all these children. All the children were subjected to upper GI endoscopy and colonoscopy. Double Barium Contrast study was done in selected cases.

## **6. STATISTICAL ANALYSIS:**

The data from these children were analysed using SPSS WINDOW VERSION 11.0.

## **RESULTS**

During the study period of November 2006 to 2008 totally 85 children in the age range of 1-12 years who presented to the department of gastroenterology, Institute of Child Health & Hospital for Children with the complaint of frank bleeding per rectum were enrolled for the study. The informations were duly filled in a pre structured proforma. The data were analysed using SPSS WINDOW VERSION 11.0

The following details were analysed:

1. Demographic data
2. Characteristics of rectal bleeding
3. Clinical profile
4. Colonoscopic findings.
5. Histopathological examination

## DEMOGRAPHY

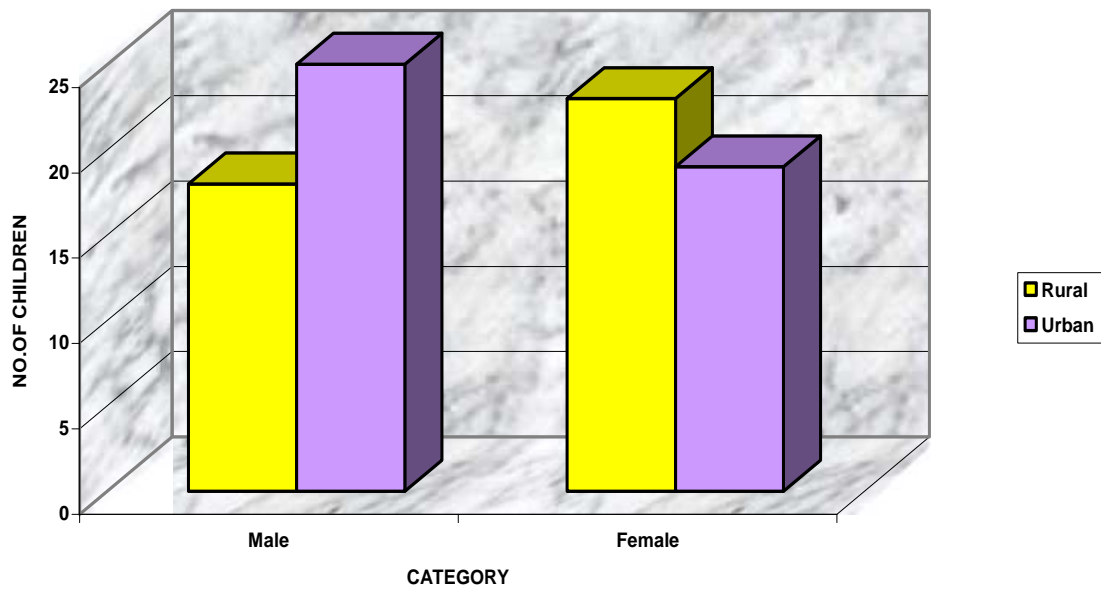
**Table 1. showing age gender and residence details of the children with rectal bleeding**

AGE IN YEARS	SEX			%
	M	F	T	
1 - 3	17	11	28	32.94
>3-6	11	18	29	34.12
>6-9	8	8	16	18.82
>9-12	7	5	12	14.11
<b>Total</b>	43	42	85	100
Residence				
Rural	18	23	41	48.23
Urban	25	19	44	51.77
<b>Total</b>	43	42	85	100

The mean age of occurrence is  $5.4 \pm 1.9$  years. There is no sex predilection in the study population.



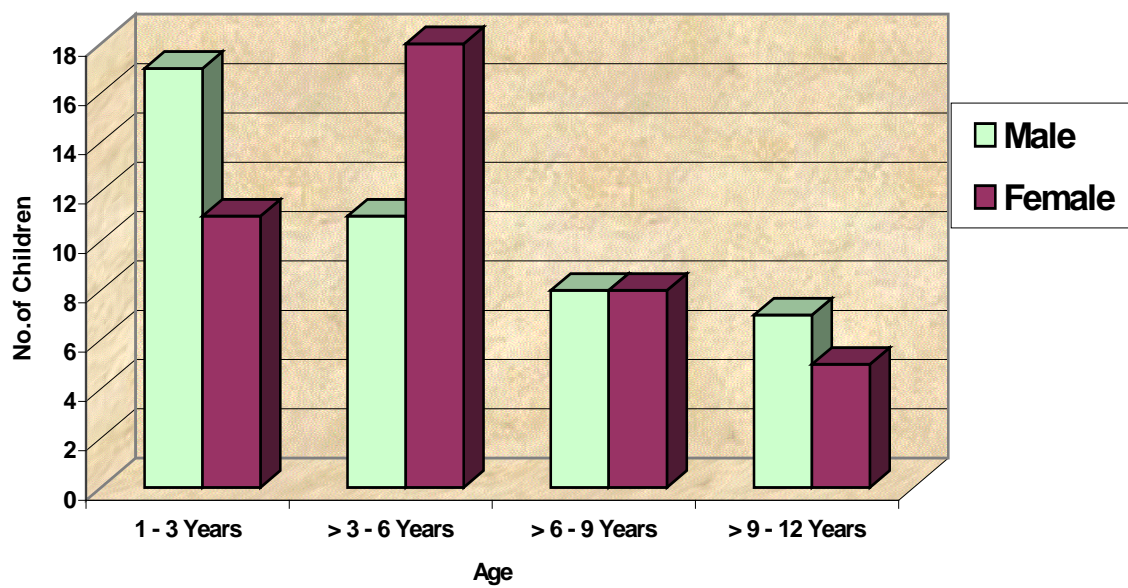
BAR DIAGRAM SHOWING CHILDREN FROM RURAL AND URBAN AREA WITH RECTAL BLEEDING



**Fig No.1**

Our study showed no statistically significant difference in urban vs rural children presenting with bleeding per rectum.

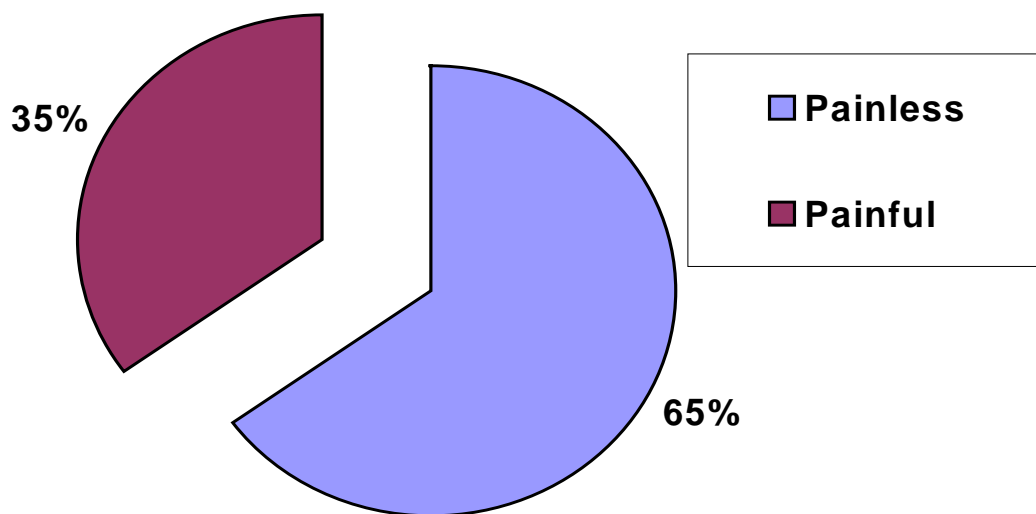
### Bar Diagram Showing Age & Sex of Children with Rectal Bleeding



**Fig. No.2**

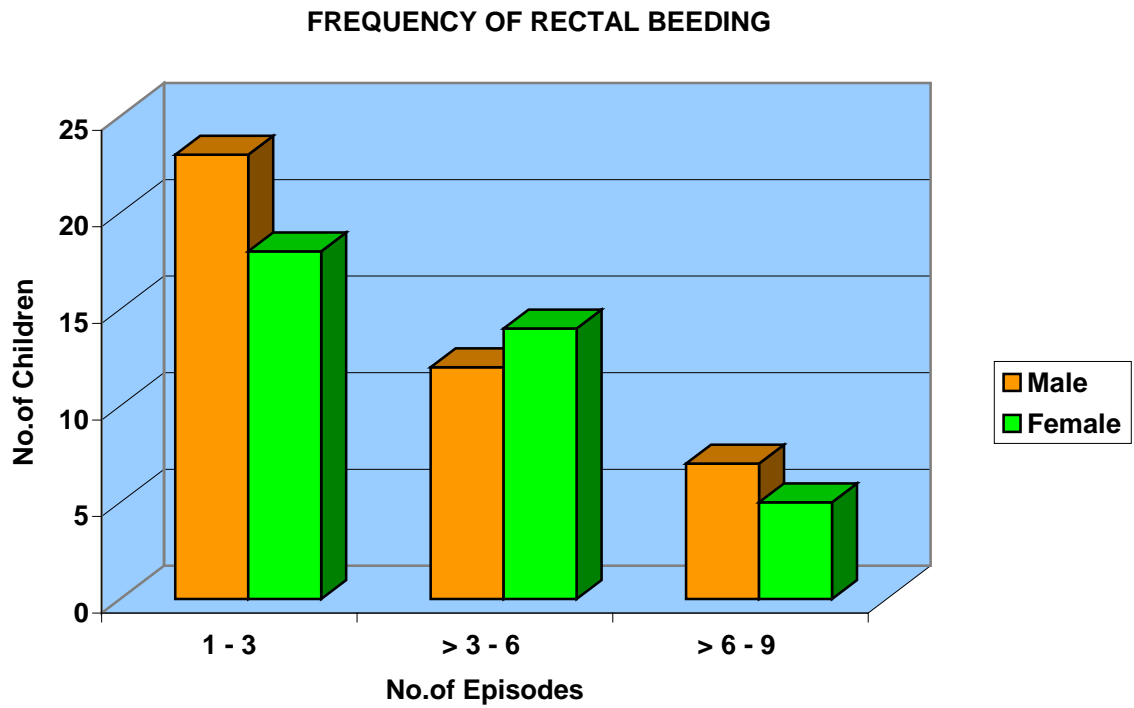
In our study, 73 children (85.88%) are less than 9 years of age, out of which 36 (42.35%) were males and 37 (43.52%) were females.

### Pie Chart Showing Characteristics Of Bleed



**Fig : 03**

In our study 55 (65%) of children had painless rectal bleeding and 61(72%) had previous episode of bleeding. None of them had massive bleeding requiring resuscitation .



**Fig. No.4**

Our study had shown 70 out of 85 children (82%) had bleeding episode less than 6 over a observed period of 2 years.

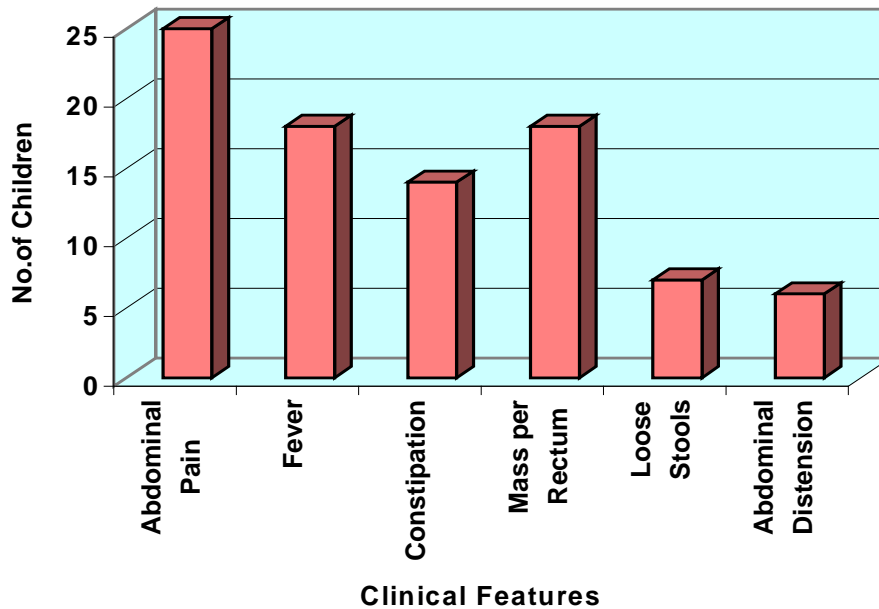
**Table 2 shows Duration of Rectal Bleeding**

<b>DURATION (IN MONTHS)</b>	<b>NO.OF CHILDREN(NO)</b>		
	<b>M</b>	<b>F</b>	<b>T</b>
< 5	38	13	51
6 -12	14	12	26
12 - 24	3	1	4
24 – 60	2	1	3
> 60	1	0	1

The mean duration of bleed was  $7.9 \pm 8.1$  months and 77 (90.5%) children had duration of bleeding less than 1 year.

## CLINICAL PROFILE

### Bar Diagram showing Clinical Profile of patients with Rectal Bleeding



**Fig.No.5**

Out of 85 children studied, 25 (29%) had abdominal pain, 18 (21%) had fever, 14 (16%) had constipation, 9 (8%) had mass descending per rectum, 7 (8%) had loose stools and 6(7%) had abdominal distension.

UG I Scopy was done in all children: 3 children had antral gastritis and in one who had nodular gastro duodenitis proved positivity for H.pylori on histopathological examination.

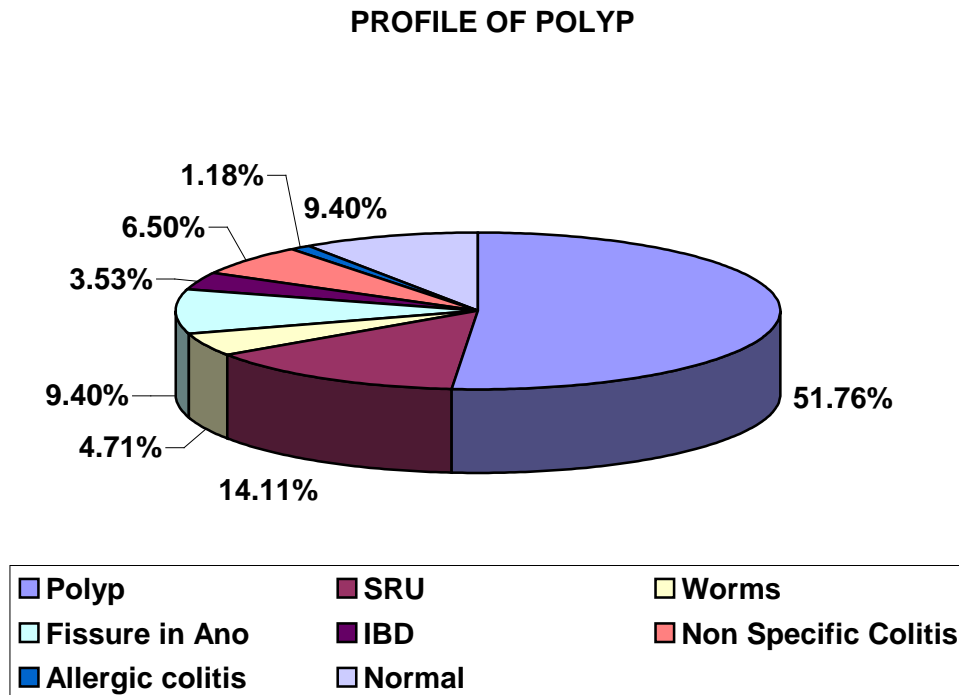
## **COLONOSCOPIC FINDING**

All children in our study were subjected to colonoscopy. Colonoscopy was performed with olympus CF 101 Fibreoptic colonoscopy fitted with a video adapter. Pre procedure work consisted of bleeding time, clotting time, platelet count and Hb% in all these children. Oral and written consent was obtained from the care taker after explaining the procedure.

## **PREPARATION**

Bowel cleansing was done using  $\text{MagSO}_4$  for 3 consecutive days Perorally these children were allowed to take clear liquid diet two days prior to the procedure with bowel wash at bed time. None had complications during the procedure.

## Pie chart showing details of Colonoscopy



**Fig No.6**

Out of 85 children, polyp was noted in 77 children,, SRU in 12(14.11%), worm infestations 4 (4.71%), fissure in ano in 8(9.4%), IBD in 3 (3.53%), non specific colitis in 5(6.5%) 1 (1.18%) had Allergic Colitis)

One child who presented with bleeding gums had no identifiable cause.



**Table No.4 Showing percentage of polyp in different age range**

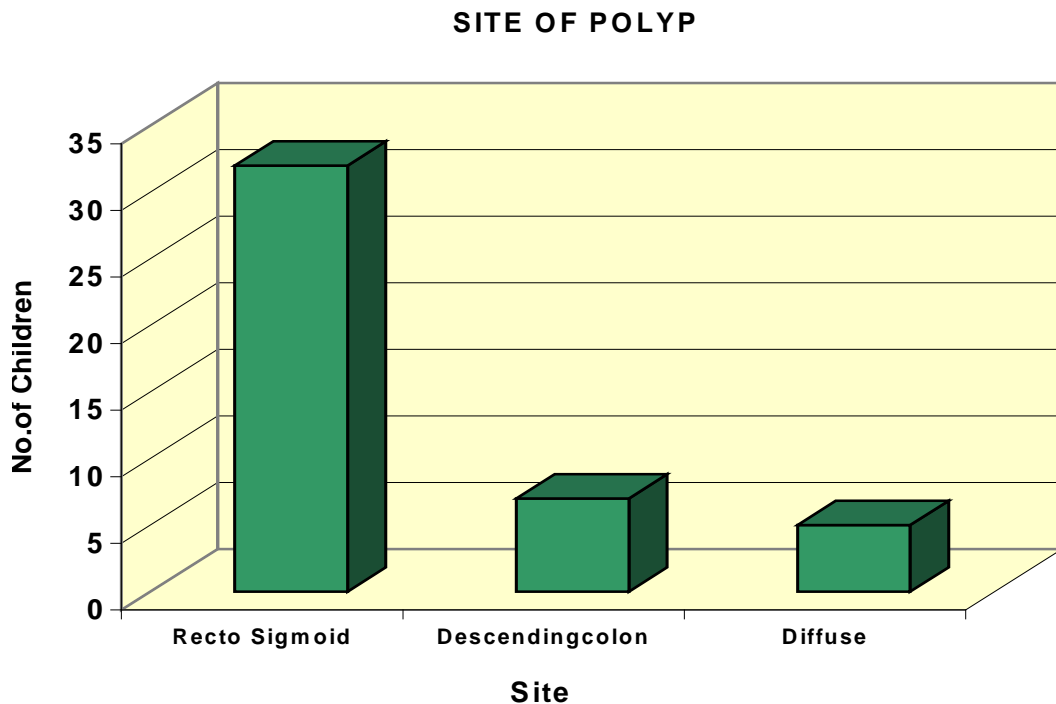
AGE IN YEARS	SEX			%
	M	F	T	
1-3	2	2	4	9.09%
>3-5	17	12	29	65.9%
>5	8	3	11	25.0%

Polyp was found commonly in the age range of 3-5 years accounting for 65.9% of study population. The male : female ratio was 1.5:1 with slight male preponderance.

**Table No. 5 showing polyp characteristics in our study**

	<b>Profile of Polyp</b>	<b>No.of Children</b>
Site	Recto sigmoid	32
	Descending colon	7
	Diffuse	5
Size	0.5 - 1 Cm	16
	1 - 2 Cm	28
Number	Single	39
	Multiple	5
Type	Pedunculated	36
	Sessile	8
HPE	Juvenile Polyp	41
	Adenoma	1
	Hamartoma	2

The common site of occurrence of polyp is recto sigmoid (72%) region. 39 (88%) subjects had solitary polyp and 36 (81%) had pedunculated polyp HPE revealed Juvenile Polyp in 41 (93%) children.



**Fig.No.6**

Polypectomy was done using snare with blended current in cases of pedunculated polyps. Surgical management was adopted for one child with histopathological evidence of adenoma with dysplastic changes.

Two children were diagnosed to have Peutz jehers syndrome.

Children who had solitary rectal ulcer, were treated with laxatives and oral sulfasalazine along with dietary modulation. One child who had profuse bleeding was referred for surgical management.

Life Style modification included high fibre diet, plenty of oral fluids along with toilet training. Laxatives and sitz bath were advised for children with fissure in ano with regular follow up in pediatric GE clinic.

All children with trichuriasis had protein energy malnutrition. These patients, were prescribed tablet mebendazole 100mg twice a day orally for 7 consecutive days along with nutritional rehabilitation. Correction of anaemia was done by oral iron supplementation. The entire family members were also given oral antihelminthic drugs. Advice regarding personal hygienic was given to prevent re infection.

IBD was diagnosed in 3 children all of them proven to be ulcerative colitis. Two who had severe colitis were started on oral steroids and tapered gradually and sulfasalazine was introduced.

8 (9.4%) children who had no findings on colonoscopy were subjected to double contrast barium study. However all these children had normal barium enema with no further recurrence of bleed during the study period.

Association of rectal bleeding with various factors were analysed using chisquare test. No statistically significant association was found

between rectal bleeding with respect to age, sex, residence, type and duration of bleeding. However there was strong positive correlation between colonoscopic findings and rectal bleeding which was proved to be statistically significant (P value of less than .001).

## DISCUSSION

Rectal bleeding is an alarming symptom in children and causes great anxiety among parents and primary care takers often requiring pediatric Gastroenterologist and pediatric surgical consultation. Good clinical history and thorough physical examination is mandatory in these children.

Although causes are usually simple and requires little or no treatments, sometimes there symptoms are cues to more serious and life threatening conditions such as bleed due to portal hypertension, ulcerative colitis and vascular malformation etc. Colonoscopy is a very useful diagnostic and therapeutic technique in children presenting with frank bleeding per rectum.

During our study period of 2 years from Nov.2006-Nov,2008, totally 85 children in age range from (1-12 years) were included. 62.11 % children presented only with rectal bleeding as the sole clinical manifestation.

Motamed et al in his study on 'Colonoscopic Findings in 164 children with Lower gastro intestinal 'bleeding' conducted at children's medical centre hospital, Tehran University, during 1 year period has found only 87% had rectal bleeding as compared to 62.11% in our study.<sup>5</sup>

Arrola, et al in his study had shown 80% of the subjects had rectal bleeding as an isolated clinical manifestation.<sup>6</sup>

Considering the gender aspects, the male : female ratio was 1:6 according to Motamed, et al.<sup>5</sup> Khurana AK, et al, studied 85 children for 1 year period has given a value of M:F ratio as 2.4:1.<sup>7</sup>

Garcia Sanchez M et al, who had studied 50 patients between January 1998 and April 2000, at Unidad clinica de Aparatwe Digestivo, Cordoda, Spain, has given the sex ratio of M:F ratio as 1:1 similar to our study.<sup>8</sup>

The incidence of rectal bleeding was the same in urban vs rural children in most of the studies.

Mandhan P, et al at Liaquat Medical College Hospital, Pakistan<sup>9</sup> evaluated the role of endoscopy in 229 children with lower gastro intestinal bleeding, over a period of four years between October 1998 - April 2002. This study revealed maximum prevalence of rectal bleeding was seen in children below 9 years of age.

As per Balkan et al, the mean age was 7.2 years whereas according to Khurana AK et al the mean age was 6 years.<sup>10</sup> In our study 73 children (85.88%) were less than 9 years of age with the mean age of  $5.4 \pm 1.9$

years. Mean duration of rectal bleeding in our study is 7.9 months  $\pm$  8.1 similar to 9 months as per Balkan et al, who evaluated 100 children during 1989-1996.<sup>10</sup>

65% of our subjects had painless rectal bleeding when compared to 70% as per Motamed et al.<sup>5</sup>

### **CLINICAL PROFILE OF CHILDREN WITH RECTAL BLEEDING**

Motamed et al had studied the symptoms associated with rectal bleeding in 164 children during March 2006 - 2007 at Pediatric Unit of Digestive Disease research centre, Gharib Ave Tehran.<sup>5</sup> The results are compared with our study.

### **COMPARISON OF CLINICAL PROFILE OF CHILDREN WITH RECTAL BLEEDING IN OUR STUDY WITH MOTAMED et al.,<sup>5</sup>**

<b>CLINICAL PROFILE</b>	<b>NO.OF CHILDREN</b>	
	<b>Motamed Et al 2006-2007</b>	<b>Our Study</b>
Abdominal Pain	10	25
Fever	5	18
Constipation	2	14
Diarrhoea	4	7
Weight Loss	2	14
Anaemia	12	29
Mass Per rectum	7	8



Symptom association was more in the present study ( 38% )in comparison to Motamed et al., study <sup>5</sup> wherein he has given a value of 22%

### **COLONOSCOPY FINDINGS:**

90.5% of our children had findings in colonoscopy when compared to 75.25% in Mandhan et al study, 81% by Bhargava et al and 62% by Khurana et al.<sup>7,9,11</sup> Even in the very best of centers, colonoscopy is likely to be negative in 10-30% of subjects. Some of the causes of negative colonoscopy are hidden position of the lesion between intestinal folds, incomplete colonoscopy, inadequate bowel preparation, presence of polyp in non examined segment, auto amputation of polyps.

According to Motamed et al, polyps topped the list of source of bleeding which accounted for 34.7%. Mandhan et al studies revealed 75% of cases were due to polyp, whereas Bhargava et al showed 62.8% of children had polyps and as per Khurana et al. it was 50%<sup>7,9,11</sup> . Similar results were observed in our study with polyp being the most common cause of rectal bleeding in children ( 51.7%)

The prevalence of polyp as per Western literature was 4 to17% in comparison to our own study.

The most common site of polyp was recto sigmoid region which is seen in 72.7% of patients with polyp which is similar to other studies.<sup>5,7,9,11</sup> According to Bhargava et al solitary polyp was more common (75%) in their children, in comparison to that of our study ( 88.6% ).<sup>11</sup>

The most common age range for polyp was 3-5 years as per the author Shiraz which is also similar to our study, whereas it was 4-6 years as per Mandhan et al.<sup>9</sup>

### COMPARISON OF POSITIVE COLONOSCOPY WITH VARIOUS STUDIES

	<b>Mandhan et al 1998-2002</b>	<b>Balkan et al 1989-1996</b>	<b>Mohamed et al 2006-2007</b>	<b>Bhagera et al 1980-91</b>	<b>Our study at ICH</b>
Polyps	75%	53.3%	34.7%	62.8%	51.76%
Non specific proctocolitis	18%	26.67%	22.5%	11.62%	3.53%
SRU	3.5%	6.6%	9%	27.9%	14.11%
IBD	--	3.3	-	6.9%	3.53%
Worms	-	3.1%	-	-	4.71%
Foreign Body	0.5%	-	-	-	1.18%
Vascular	-	1.6%	0.9%	4.6%	--
LNH Lymphonodular hyperplaxia	3%	-	22.5%	2.1%	

Complications during colonoscopy which needed resuscitation was encountered by Mandhan et al whereas no other studies including ours had complications during or after the procedure.<sup>9</sup>

## SUMMARY

Children in the age range of 1-12 years who presented with frank bleeding per rectum were enrolled in our study and their clinical profile and colonoscopy findings analysed.

The incidence of polyp in children is almost equal in rural and urban population without any sex predilection.

The mean age of occurrence of bleeding per rectum is  $5.4 \pm 1.9$  years.

62% of our study population had isolated rectal bleeding.

65% of them had painless rectal bleeding which correlates well with other studies.

Colonoscopy revealed polyps as the main cause of rectal bleed, similar to many other studies from other Asian nations.

The majority of polyps were situated in the rectosigmoid region and were solitary in nature.

Most of them are juvenile polyps. As such adenomas do exist, they are relatively uncommon than seen in western countries. In our study

worm infestation as a source of rectal bleeding accounted for 4.71% which was rarely found as a cause in other studies.<sup>10</sup> Vascular causes like haemorrhoid, AV malformation were found as source of bleeding in studies from North India whereas we have not come across such causes.<sup>5,10,11</sup> However colonoscopy may be negative in case of suspected vascular lesions. Further diagnostic modalities like radio nuclide scintigraphy, double contrast barium studies and angiography may be warranted.

Lymphnodular hyperplasia had a significant association as per Motamed et al which shows the influence of diet pattern at that area.<sup>5</sup> Association of IBD with rectal bleeding is very minimal when compared to adult population.<sup>11,12</sup> Our study also concluded that colonoscopy is as an important modality to locate as well as to treat the cause of frank bleeding per rectum in children.

## CONCLUSION

1. Clinical profile of children with frank bleeding per rectum is similar to that in many asian countries.
2. The source of bleeding is similar to that seen in many studies from Northern India as well as from other Asian nations.
3. Colonoscopy can locate source of bleeding in majority of the children who presented with frank bleeding per rectum.