

Research Article

Colonoscopic polypectomy in Egyptian children: A single-center experience

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Abstract

Background: Gastrointestinal polyps are important cause of rectal bleeding in the pediatric age group. Juvenile polyps are the most common type of gastrointestinal polyps in children accounting for 90%.

Aim: The aim is to study the nature of colonic polyps and to review the effectiveness of total colonoscopy in the management of gastrointestinal polyps in Egyptian children (single-center experience).

Patient and methods: The study included 150 children with confirmed colonic polyps with colonoscopy, presented with bleeding per rectum. Colonoscopy performed under general anesthesia. Findings of the polyps such as location, size and number seen during colonoscopy, the number of polyps removed and their histopathology findings were also recorded. The removed polyps immediately sent for histopathological study. Complications related to the procedure or anesthesia observed and recorded.

Results: Polyps were juvenile in 144 children (96%); adenomatous in five patients (3.33%), and Non-Hodgkin lymphoma was the cause in one patient (0.66%). Polyps were solitary in 92 patients (61.33%) while 58 patients (38.66%) showed more than two polyps.

Conclusion: Juvenile polyps constitute the most common type of polyps in children; total colonoscopy for evaluation of rectal bleeding in children is very important to avoid missing polyps in the right colon. Finally, colonoscopic polypectomy is a simple, safe and useful therapeutic method in Egyptian children with colonic polyps.

Introduction

The term “colonic polyp” refers to any growth that protrudes into the colonic lumen. Benign polyps of the colon are very common and usually are asymptomatic. Polyps in symptomatic children usually present by painless intermittent rectal bleeding which is a common reason for referral to pediatric surgeons. Polyps are more common in the left colon and, hence, most can be removed by the aid of rigid rectosigmoidoscopy [1]. However, in recent years, the importance of routine colonoscopic evaluation has begun to be emphasized in order to detect the more proximally located or multiple polyps [2].

Colonic polyps usually present with rectal bleeding, but may also present with a prolapsing rectal mass, abdominal pain, mucopurulent discharge, diarrhea, and vomiting [3]. Gastrointestinal polyps are important cause of rectal bleeding in pediatric age group. Juvenile polyps are the most common type of gastrointestinal polyps in children accounting for 90% of polyp [4]. Some colonic polyps such as adenomatous and serrated polyps carry malignant potential, while others do not [5].

The aim of this study the nature of colonic polyps in Egyptian children and to review the effectiveness of total colonoscopy in the management of gastrointestinal polyps in Egyptian children (single-center experience)

Patients and methods

Study population

This study was performed in Pediatric Gastrointestinal Endoscopy Unit of Pediatric Hepatology, Gastroenterology and Nutrition

department, National Liver Institute, Menoufiya University, Egypt. One hundred and fifty children with confirmed colonic polyps with colonoscopy, and presented with bleeding per rectum were included in the study (between year 2000 and year 2013). Other causes of bleeding per rectum were excluded, for example; infection, inflammatory bowel diseases, allergic and eosinophilic colitis, Vasculitis and vascular malformation. All patients were physically examined to detect the coexistence of any associated congenital defects with special interest on abdominal and local per rectum examination to exclude local anal causes as anal fissure, rectal prolapse, solitary rectal ulcer and internal hemorrhoids. A family history of juvenile polyposis, familial adenomatous polyposis and colon carcinoma also recorded. The age and sex of the patients, nature and duration of the initial symptoms, multiple stool analysis, stool culture, complete blood count and coagulation status were studied.

Colonoscopy and polypectomy

Bowel preparation for colonoscopy and colonoscopic polypectomy included a clear liquid diet for 24–48 hours, oral intake of castor oil

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once and cleansing of the colon in all patients by saline enemas of the gut on the morning of the procedure.

Colonoscopic examination was performed under general anesthesia in left lateral position with a colonoscopy (Olympus GIF-Q 165, USA). Without prophylactic antibiotics, the colonoscopy was performed up to the caecum or terminal ileum. Findings of the polyps such as location, size and number seen during colonoscopy, the number of polyps removed and their histopathology findings were also recorded. When a polyp was seen during the colonoscopic examination, it was left until completing the colonoscopy then it was snared and severed by alternating between cutting and coagulating (Colonoscopic polypectomies). Polyps removed by biopsy forceps and immediately sent for histopathological examination.

Complications related to the procedure or anesthesia observed and recorded. After the procedure, patients was observed in the hospital for up to 24 hours to assess possible complications, follow up of our patients done for up to 5 years to assess the recurrence or other complications. All the procedures were performed by the author.

Results

All 150 patients with colorectal polyps included in this study presented with recurrent fresh rectal bleeding, which is recurrent in most cases, 94 were male (62.66%). Age of the patients ranged from 2 to 12 years with a mean age of 7.11 ± 4.913 years.

The interval between onset of symptoms and presentation to the outpatient clinic ranged from three weeks to 24 months after the first

episode of bleeding. During this long interval, their pediatricians attributed the bleeding to other causes.

Polyps were juvenile in 144 children (96%), adenomatous in each of 5 patients (3.33%), and Non-Hodgkin lymphoma was the cause in 1 patient (0.66%). Polyps were solitary in 92 patients (61.33%) while 58 (38.66%) patients showed more than two polyps, (Table 1, 2 and 3) and positive family history of polyps in seven patients who had juvenile polyps. The common histopathological findings of the excised polyps were dilated glands, with intra-luminal secretion and inflammatory cells, compatible with juvenile polyp

Polyps confined to the rectum as the sole site of polyp in 55 (36.6%) children (42 were single and 13 were multiple rectal polyps), in addition to 36 in whom the polyps located in the rectum simultaneously with other colonic parts mainly sigmoid (n=17; 11.3%), descending (n=11; 7.33%), ascending (n=3; 2%) and transverse colon (n=5; 3.33%). After initial evaluation and stabilization, colonoscopic snare polypectomy with diathermy attempted successfully in 149 patients. No major complications (e.g. mucosal tear, hemorrhage or perforation) were encountered. Twenty-five children complained of mild abdominal discomfort after colonoscopy (relieved by oral paracetamol). The only patient 11 years old female who diagnosed as Non-Hodgkin lymphoma, patient presented with abdominal pain, pallor, vomiting and bleeding per rectum in such patient, we could not pass the colonoscopy beyond the lesion as it filled more than 90 % of the colonic circumference; we got biopsy without polypectomy, then referred the patient for further management.

Table 1. Distribution of patients with Solitary polyp (N= 92)

| Site | No. of patients Total = 92 | Age (years) ± SD | Sex | | | | No. of polyp | Size of polyp (cm) | Pathologic finding |
|------------------|-------------------------------|---------------------|-----|------|----|-------|--------------|--------------------|----------------------|
| | | | M | | F | | | | |
| | | | N | % | N | % | | | |
| Rectum | 33 | 4.7±2.2 | 21 | 22.8 | 12 | 13.04 | 1 | 1 - 2 | Juvenile |
| | 9 | 5.3±1.6 | 6 | 6.5 | 3 | 3.2 | 1 | 3- 4 | Juvenile |
| Sigmoid colon | 19 | 7.6 ±3.1 | 11 | 11.6 | 8 | 8.69 | 1 | 0.5 – 2 | Juvenile |
| Descending colon | 22 | 9.3±3.2 | 14 | 15.2 | 8 | 8.69 | 1 | 1-2 | Juvenile |
| | 5 | 8.6± 1.9 | 3 | 3.2 | 2 | 2.17 | 1 | 2.5- 3.5 | Adenomatous |
| Transverse colon | 3 | 7.9±1.2 | 3 | 3.2 | 0 | 0 | 1 | 2 | Juvenile |
| | 1 | 7.2 | 1 | 1.08 | 0 | 0 | 1 | 7 | Non Hodgkin lymphoma |

Table 2. Distribution of patients with multiple polyps in one colonic part (N =22)

| Site of the polyp | No. of patients Total = 22 | Mean Age (year) ± SD | Sex | | | | No. of polyp | Size of polyp (cm) | Pathologic findings |
|-------------------|-------------------------------|-------------------------|-----|-------|---|-------|--------------|--------------------|---------------------|
| | | | M | | F | | | | |
| | | | N | % | N | % | | | |
| Rectum | 9 | 5.3± 3,1 | 6 | 27.27 | 3 | 13.63 | 2 | 1 - 2 | Juvenile |
| | 4 | 7.1± 2.1 | 3 | 13.63 | 1 | 4.54 | 3 | 0.5 – 2 | Juvenile |
| Descending colon | 7 | 9.4± 2.6 | 5 | 22.72 | 2 | 9.09 | 3 | 0.5 – 2 | Juvenile |
| Transverse colon | 2 | 10.1± 1.1 | 1 | 4.54 | 1 | 4,54 | 2 | 3- 3.5 | Juvenile |

Table 3. Distribution of patients with polyps at different colonic parts (N =36)

| Site of the polyp | No. of patients Total = 36 | Mean Age (years) ± SD | Gender | | | | No. of polyp | Size of polyp (cm) | Pathologic finding |
|----------------------------------|-------------------------------|--------------------------|--------|-------|---|-------|--|--------------------|--------------------|
| | | | M | | F | | | | |
| | | | N | % | N | % | | | |
| Rectum and Transverse colon (TC) | 5 | 6.6±1.9 | 3 | 8.33 | 2 | 5.55 | 3 polyps in rectum and 2 polyps in TC | 1- 2 | Juvenile |
| Rectum + Descending colon | 11 | 4.9±4.7 | 6 | 16.66 | 5 | 13.88 | 2 polyps in each colonic part | 0.5-2 | Juvenile |
| Rectum + Sigmoid | 17 | 4.2±4.1 | 9 | 25 | 8 | 22.22 | 1 polyp in sigmoid 2-4 polyps in rectum | 1-2 | Juvenile |
| Rectum + Ascending colon | 3 | 8.2±1.1 | 2 | 5.55 | 1 | 2.77 | two polyp in each colonic part | 0.5 – 2 | Juvenile |

The patients were followed up for 5 years. Recurrence of polyps occurred in 7 (4.66%) patient, 5 of them has adenomatous polyp.

Discussion

Gastrointestinal polyps are an important cause of rectal bleeding in the pediatric age group. Juvenile polyps are the most common type of gastrointestinal polyps in children in most of studies [4,6]. Juvenile polyps constituted 96% of all polyps seen in this study.

In the current study, all patients presented with fresh bleeding per rectum, and 72 patients presented with mild abdominal pain in addition to bleeding. No mucus was seen in the stool, and no severe abdominal cramps were reported by the patients. Inflammatory markers and histopathology exclude the inflammatory bowel diseases in patients who showed abdominal pain.

The most common symptom of juvenile polyp is intermittent mild hematochezia without accompanying abdominal pain, which appeared in 90% of the cases [7]. In our study, 72 patients presented with mild abdominal pain in addition to bleeding, the pain may be attributed to other causes as accompanied functional abdominal pain or undetected parasitic infestation as most of our patients are from rural areas. Post colonoscopic mild abdominal pain was attributed to gas accumulation or to parietal damage after current application.

Size of the polyps was ≤ 2 Cm in diameter in 133 patients (88.66%). polyps had size >2 Cm in 17 patients (11.33%), coinciding with the observations by others [8].

In our study, only one patient had a lesion around 7cm and was diagnosed as Non Hodgkin lymphoma cm. This patient presented with significant abdominal pain, constipation, depressed appetite, loss of weight and intermittent fever. The different clinical presentation of that patient increased the suspicion of malignant possibility which confirmed by histopathology.

Eleven of the patients in this study had sigmoidoscopy before colonoscopy for rectal bleeding and, even though some of the polyps subsequently found were within the reach of sigmoidoscopy, they had all been missed in addition to 3 patients who had polyps in the transverse colon.

Multiple polyps observed in 58 of patients and the number of polyps ranged from two to five. Most of multiple polyps located in rectum either alone or with other colonic parts as transverse and/or ascending colon, so that total colonoscopy must be performed at initial presentation without consuming the time for sigmoidoscopy.

Most of the patients in the current study had polyps located in the left colon (96%). These findings run in harmony with others [6] who reported 84.9% of polyps in recto-sigmoid colon.

Our study showed that the polyps were Juvenile in most of our cases, adenomatous in few cases and non-Hodgkin in only one case. This is in accordance with other studies [2,6].

General pediatricians should be aware that colorectal polyps are a relatively common and treatable cause of fresh bleeding per rectum, therefore referral to a pediatric gastroenterologist should not be delayed.

In this study, all colonoscopic polypectomies performed under general anesthesia to relax the smooth muscles of the colon and to restrict the movement of the children during the procedures. This may have reduced the risk of major complications such as bleeding and perforation, this finding is in agreement with that of Lin *et al.* [9] who

recommended the use of general anesthesia for all pediatric patients undergoing colonoscopic polypectomy.

In our study, neither perforation nor bleeding were recorded, while the study of Anand *et al.* [10] reported perforation in one patient and bleeding in two patients during their study. They used general anesthesia only in 8 children aged <3 years, the remaining 66 patients received only sedation in the form of pethidine, prochlorperazine, and chlorpromazine.

No serious complications related to general anesthesia or the procedure itself, were noticed during the study. These results are in agreement with that of Huang *et al.* [11], so we recommend therapeutic colonoscopy as safe and effective in management of colonic polyps.

The thin childhood colon is probably more susceptible to damage by heat, in spite of that; none of our patients had perforation of the colon. Williams *et al.* [12] noted a perforation rate of 5% in a collected series of 81 polypectomies.

Follow up of our patients for 5 years showed recurrence of polyps in seven patient, five of them has adenomatous polyp. Therefore, the risk of recurrence in our study was 100% of patients with adenomatous polyps, but this finding need to be validated on large number of patients with adenomatous polyp.

In conclusion, the juvenile polyps were found to constitute the most common type of polyps in children. Total colonoscopy is important for the evaluation of rectal bleeding in children in order not to miss polyps in the right colon. General anesthesia during colonoscopic polypectomy may reduce the risk of complication especially perforation and bleeding. Finally colonoscopic polypectomy is a simple, safe and useful therapeutic method in children with colonic polyps.

Acknowledgments

Compliance with ethical standards

During the interview, the respondent of the children simply informed about the aims of this study and the fact that it is done to improve the health status of all population. Written consent was taken from the respondent who accompanied the child during attending the mentioned hospitals before participating in the research.

Conflict of interest

None to declare

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References

- Lelli Jr JL (2006) Polypoid Diseases of the Gastrointestinal Tract A2 - Grosfeld, Jay L. In: O'Neill JA, Coran AG, Fonkalsrud EW, Caldamone AA, eds. Pediatric Surgery. 6th ed. Philadelphia: Mosby 1414-1426.
- Haghi Ashtiani MT, Monajemzadeh M, Motamed F, Moradi Tabriz H, Mahjoub F, et al. (2009) Colorectal Polyps: A Clinical, Endoscopic and Pathologic Study in Iranian Children. *Med Princ Pract* 18: 53-56. [[Crossref](#)]
- Kakembo N, Kisa P, Fitzgerald T, Ozgediz D, Sekabira J (2016) Colonic polyposis in a 15 year-old boy: Challenges and lessons from a rural resource-poor area. *Ann Med Surg (Lond)* 7: 75-78. [[Crossref](#)]
- Winter HS (1996) Intestinal polyps. In: Walker WA, Durie PR, Hamilton JR, Walker-Smith JA, Watkins JB, eds. Pediatric gastrointestinal disease: Pathophysiology, Diagnosis, Management. 2 ed. St. Louis: CV Mosby 891-906.

5. Bonnington SN, Rutter MD (2016) Surveillance of colonic polyps: Are we getting it right? *World J Gastroenterol* 22: 1925-1934. [[Crossref](#)]
6. Lee BG, Shin SH, Lee YA, Wi JH, Lee YJ, et al. (2012) Juvenile Polyp and Colonoscopic Polypectomy in Childhood. *Pediatr Gastroenterol Hepatol Nutr* 15: 250-255. [[Crossref](#)]
7. Seo JK (1993) Therapeutic Colonoscopy in Children: Endoscopic Snare Polypectomy and Juvenile Polyps. *Seoul J Med* 34: 285-294.
8. Kim SJ, Kim SM, Kim YJ, Jeong DC, Lee WB, et al. (2004) Colonic Polyps; Experience of 34 Cases in Two Hospitals. *Korean J Pediatr* 47: 756-761.
9. Lin CH, Wu RS, Lin WC, Wu SF, Chen AC (2009) Colonoscopic polypectomy of colorectal polyps in children under general anesthesia. *Kaohsiung J Med Sci* 25: 70-76. [[Crossref](#)]
10. Jalihal A, Misra SP, Arvind AS, Kamath PS (1992) Colonoscopic polypectomy in children. *J Pediatr Surg* 27: 1220-1222. [[Crossref](#)]
11. Huang RJ, Perumpail RB, Thosani N, Cheung R, Friedland S (2016) Colonoscopy with polypectomy is associated with a low rate of complications in patients with cirrhosis. *Endosc Int Open* 4: E947-E952. [[Crossref](#)]
12. Williams CB, Laage NJ, Campbell CA, Douglas JR, Walker-Smith JA, et al. (1982) Total colonoscopy in children. *Arch Dis Child* 57: 49-53. [[Crossref](#)]