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Research Article

An Evaluation of Demographic, Clinical, Endoscopic and Pathological Findings in Children Who Underwent Colonoscopic Polypectomy: A Pediatric Gastroenterology Clinic Experience

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Abstract

Objective: Gastrointestinal polyps form as a result of epithelial or submucosal tissues growing and protruding towards the intestinal lumen. These are seen at a rate of 2% in childhood. The aim of this study was to evaluate the demographic and clinical findings of pediatric cases determined to have colon polyps.

Methods: The study included a total of 78 pediatric cases, comprising 37 (47.4%) females and 41 (52.6%) males, who underwent colonoscopic polypectomy in the Paediatric Gastroenterology Clinic between 2010 and 2021.

Results: The mean age of the patients was 8.0 ± 4.3 years (range: 1-17 years). The complaints on presentation were mostly bloody feces, chronic abdominal pain, diarrhea, constipation, and polyp prolapse. The mean duration of complaints was 6.5 ± 2.0 months (range: 1-18 months). A familial history of polyps was present in 9 cases. The presence of a single polyp was determined in 67 and a pedunculated polyp in 63. The most frequent localization of the polyps was the rectum. Polypectomy was performed in all the cases. Surgical repair was performed in 3 cases that developed perforation after the procedure. Histopathologically, juvenile polyps were determined to be seen most often. Of the 9 children diagnosed with familial polyposis coli, 4 were diagnosed with Peutz–Jeghers syndrome, 4 with familial adenomatous polyposis syndrome, and 1 with Cowden syndrome.

Conclusion: As a result of the more frequent use of endoscopic interventions in childhood, the diagnosis and treatment of colon polyps have become easier. In cases with Peutz–Jeghers syndrome, the risk of perforation during polypectomy must be taken into consideration.

Keywords: Child, endoscopy, gastrointestinal system, surgery

INTRODUCTION

Gastrointestinal polyps form as a result of epithelial or submucosal tissues growing and protruding toward the intestinal lumen. As most polyps are asymptomatic, diagnosis may not be made in childhood.[1] Colon polyps were reported in 6% of children who underwent colonoscopy for any reason and in 12% of children who underwent colonoscopy for lower gastrointestinal bleeding.[2] Recurrent painless rectal bleeding, abdominal pain, anemia, diarrhea, intestinal obstruction, invagination, and rectal prolapse may be seen in symptomatic cases.[1,2]

The majority of polyps in childhood are solitary localized in the left colon. They are seen more often in male children and most often between the ages of 2 and 5 years.[3] Generally, polyps have a benign inflammatory or hamartomatous structure and do not show malignant transformation.[4,5] In children, juvenile polyps are seen most often, and these constitute 70%-80% of polyps removed endoscopically.[6,7] The differential diagnosis of juvenile polyps from hereditary polyposis syndromes is very important.[8] As there is an increased risk of intestinal and extra-intestinal malignancy developing in hereditary polyposis syndromes.[9]

The aim of this study was to evaluate the demographic data, clinical, colonoscopy, and pathological findings, and the long-term outcomes of children determined with colon polyps.

METHODS

Approval for this retrospective cohort study was granted by the Non-Interventional Research Ethics Committee of Fırat University (Decision Number: 08/12, Date: June 7, 2022). Written informed consent was obtained from parents of children who participated in this study. Pediatric cases with polyps detected in the colon during colonoscopy from patients who applied to Fırat University Hospital Pediatric Gastroenterology, Hepatology and Nutrition Polyclinic between 2010 and 2021 were included in the study. The case files were examined in detail, and the clinical, laboratory, colonoscopy, and pathology data obtained were recorded on the study forms.

The colon polyps were classified as single polyp, multiple polyps (2-4 polyps), and polyposis syndrome (>5 colon polyps and/or small intestine/upper gastrointestinal involvement). Colon cleansing using enemas and oral laxatives was performed for 2 days before the colonoscopy procedure. During the procedure, midazolam was used for sedation and pethidine hydrochloride for analgesia. An Olympus Lucera CV-260 video endoscope device (Japan) was used for the colonoscopy procedure. The polypectomy was performed using an Olympus cauterization device with a Boston snare. Sedation was terminated using flumazenil after the procedure.

Statistical Analysis

Data obtained in the study was analyzed statistically using Statistical Package for the Social Sciences (SPSS®) version 22.0 (IBM SPSS Corp.; Armonk, NY, USA) software. Depending on the characteristics of the variables, percentages, mean values, and chi-square tests were used in the statistical evaluations. Continuous variables were stated as mean ± SD, minimum and maximum values, and categorical variables as number (n) and percentage (%). A value of $P < .05$ was accepted as statistically significant.

RESULTS

Evaluation was made of 78 children, comprising 41 (52.6%) males and 37 (47.4%) females with a mean age of 7.96 ± 4.26 years (range: 1-17 years). The demographic data of the patients are shown in Table 1.

The complaints on presentation were mostly bloody feces (n=74, 94.9%), followed by abdominal pain (n=54, 69.2%), constipation (n=9, 11.5%), and diarrhea (n=8, 10.3%). There was a history of polyp prolapse in 29 (37.2%) patients. The mean duration of complaints was 6.5 ± 2.0 months (range: 1-18 months). A familial history of polyps was present in 9 (11.5%) cases. The polyp was determined during rectal examination in 4 (5.1%) cases, and in 4 (5.1%) cases mucosal pigmentation was observed (Figures 1, 2). Comorbid iron deficiency was determined in 8 (10.2%) cases. The complaints on presentation and the clinical findings of the patients are shown in Table 1.

Table 1. Demographic Characteristics, Complaints on Presentation, and Clinical Findings of Patients

Demographic Characteristics (n=78)	Rate (n, %)
Mean age (years)	7.96 ± 4.26
Gender	
Male	41 (52.6)
Female	37 (47.4)
Complaint/Finding	**Rate (n, %)**
Bloody feces	74 (94.9)
Abdominal pain	54 (69.2)
Polyp prolapse history	29 (37.2)
Familial history of polyps	9 (11.53)
Constipation	9 (11.5)
Diarrhea	8 (10.3)
Iron deficiency anemia	8 (10.2)
Mucosal pigmentation	4 (5.12)
Polyp determined in rectal examination	4 (5.1)
Mean duration of complaints	6.5 ± 2 months

During the colonoscopy procedure, a single polyp was detected in 67 (85.9%) of the cases, 2-4 polyps were detected in 2 (2.5%), and more than 5 polyps were detected in 9 (11.5%). Those 9 cases were diagnosed with polyposis coli. Of these, the polyps were seen to be pedunculated in 63 (80.7%) cases, and sessile in 15 (19.3%). The localization of the polyps was primarily the rectum (n=47), followed by the whole colon (n=11), sigmoid colon (n=7) rectosigmoid region (n=6), and the descending colon (n=4). The anatomic distribution of the polyps determined in the patients is shown in Table 2. Polypectomy

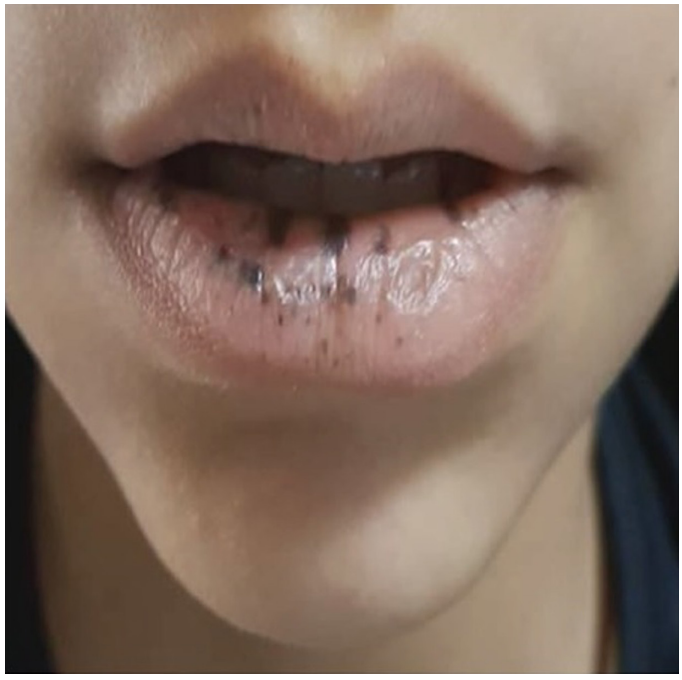

Figure 1. Multiple areas of small, flat, brown-purple pigmentation on the lip mucosa of the patient.

MAIN POINTS

- Colon polyps are one of the important causes of rectal bleeding in childhood.
- Although it is usually a single juvenile polyp, it may be a sign of hereditary polyposis syndrome.
- Thanks to colonoscopic polypectomy, both treatment and pathological diagnosis of these polyps.
- Colonoscopic polypectomy is a procedure that can be easily performed without complications.

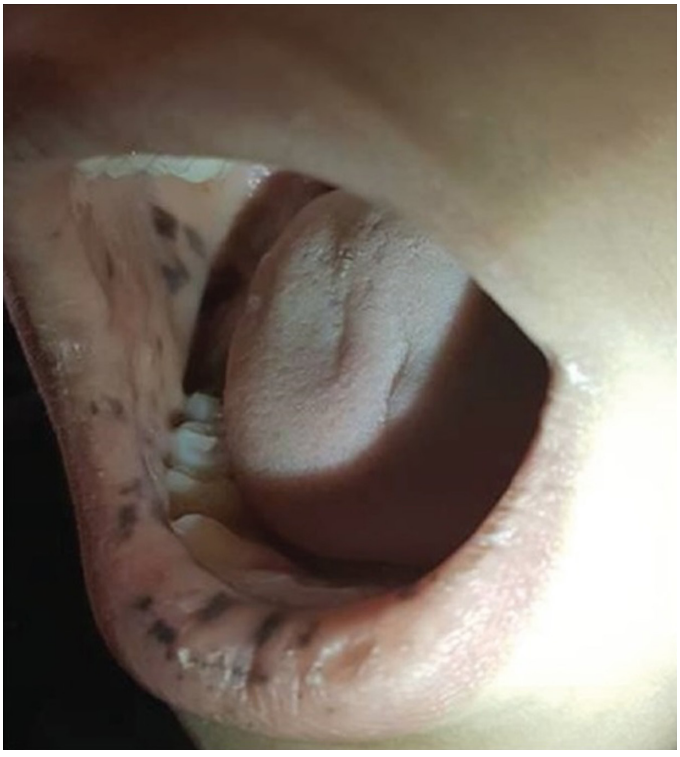

Figure 2. Multiple areas of small, flat, brown-purple pigmentation on the cheek mucosa of the patient.

was performed on all the polyps determined during colonoscopy. In 3 (3.8%) cases, surgical repair was applied to perforation that developed associated with the procedure, all of which were patients being followed up for a diagnosis of Peutz–Jeghers syndrome.

Histopathological examination revealed juvenile polyps in 34 (43.58%) of the cases, inflammatory polyps in 14 (17.94%), and hyperplastic polyps in 12 (15.38%). The pathological classifications of the polyps determined are shown in Table 2. The polyps in Peutz–Jeghers and Cowden syndromes were hamartomatous, while the polyps in familial adenomatous polyposis were adenomatous.

Table 2. Anatomic Distribution of Polyps and Polyp Type

Localization	**Rate (n, %)**
Rectum	47 (60.2)
Whole colon	11 (14.1)
Sigmoid colon	7 (8.9)
Rectosigmoid region	6 (7.7)
Descending colon	4 (5.1)
Hepatic flexura	3 (3.8)
Total	78 (100)
Polyp Type	**Rate (n, %)**
Juvenile polyps	34 (43.6)
Inflammatory polyps	14 (17.9)
Hyperplastic polyps	12 (15.4)
Retention polyps	5 (6.4)
Hamartomatous polyps	4 (5.1)
Tubular adenoma	3 (3.8)
Adenomatous polyps	2 (2.5)
Ulcerated tubulovillous polyps	2 (2.5)
Dysplastic polyps	2 (2.5)
Total	78 (100)

In 9 (11.53%) cases, genetic testing for hereditary polyposis syndromes was performed. In these cases, a diagnosis was made of Peutz–Jeghers syndrome in 4 (5.12%), familial adenomatous polyposis syndrome in 4 (5.12%), and Cowden syndrome in 1 (1.28%). Control colonoscopy was performed every 2 years in 9 cases diagnosed with polyposis coli syndrome. Polypectomy was performed in these cases during colonoscopy. Perforation was observed only in cases with Peutz–Jeghers. No recurrence was observed in the follow-up of 69 non-syndromic cases.

DISCUSSION

The 78 children included in this study comprised 37 (47.4%) females and 41 (52.6%) males. Studies conducted worldwide report that colon polyps are more common in boys.[1,10-15] Gender distribution in present study was consistent with the literature.

The mean age of the cases in the present study was determined to be 7.96 ± 4.26 years (range: 1-17 years). Studies have reported that the average age of children diagnosed with colonic polyp was between 5.5 and 8 years old.[1,10-15] The average age of our cases presented in this study was consistent with the literature.

This was consistent with findings in the literature of the complaint of bloody feces reported at rates of 80%-97% in patients determined with colon polyps.[1,11,12,15] Our data presented in this study were in accordance with the literature. The complaint of abdominal pain was seen to be present in 69.2% of the present study cases. Previous studies have reported rates of abdominal pain at 18%-57.1%.[1,2,10,12,15] There was a complaint of diarrhea in 10.3% of our cases. In other studies, the diarrhea complaint was reported to be in the range of 6-20%.[1,10,12,15]

There was a history of constipation in 11.5% of our cases presented in this study. Constipation has been reported in 5-29.6% of children monitored for colon polyp.[10,15] In our study, polyp prolapse was detected in 37.2% of the cases at the time of admission, and in previous studies, this complaint was reported in the range of 8.6%-20%.[1,11,15]

A polyp was determined in the rectal examination of 5.12% of the present study cases. The reason for this low rate was attributed to the difficulty of performing rectal examination in children. Mucosal pigmentation may be observed in patients with colon polyps.[4] In the present study, mucosal pigmentation was seen in 5.12% of the cases and these were all cases with a diagnosis of Peutz–Jeghers syndrome.

There was a familial history of polyps in 11.5% of the present study cases, and hereditary polyposis syndrome was determined in 6.4% of these cases. In a study conducted in South America, there was reported to be a familial history of polyps in 18% of children diagnosed with colon polyps.[12]

Iron deficiency anemia was determined in 10.2% of the present study cases, and in previous studies, this condition was reported in the range of 8%-23.6% in cases with colon polyps.[1,10,15]

During the colonoscopy procedure, a single polyp was determined in 85.9% of the present study cases, and more than 1 polyp in 14.1%. A diagnosis of hereditary polyposis syndrome was made in 11.5% of cases, and multiple juvenile polyps were determined in 2 cases. In studies, a single polyp in the colon has been reported in a range of

87%-97%.[1,10,14,15] Multiple juvenile polyps were reported in 5%-38.6% of cases.[2,11,13]

In the present study, pedunculated polyps were determined in 83% of the cases that underwent polypectomy. The frequency of pedunculated polyps in children who underwent polypectomy has been reported in a range of 61.8%-83%.[1,10,12]

Localization of the polyps in the present study was determined to be in the rectum in 60.3% of cases and in the sigmoid colon in 7.7%. Previous studies have also reported that colon polyps are most often localized in the rectum and sigmoid colon.[1,3,11,12,15,16]

When the colon polyps were evaluated according to size, dimensions of 2 x 1 cm were determined in 13.3% of the present study cases, 0.5 × 0.5 cm in 13.3%, and 1 × 1 cm in 46.1%. Previous studies have reported the mean size of colon polyps to be 1-2 cm.[10,11]

In the pathological examination of the colon polyps, juvenile polyp were determined in 43.6% of cases, inflammatory polyp in 17.9%, and hyperplastic polyp in 15.4%. It has been reported in literature that juvenile polyps are the most common colon polyps.[2,11-16]

Colonoscopic polypectomy is a simple and safe treatment method applied in the treatment of colon polyps.[17] Of the current cases applied with colonoscopic polypectomy, perforation developed in 3 (3.8%), all of which were seen to be cases followed up for a diagnosis of Peutz–Jeghers syndrome. In Peutz–Jeghers syndrome, the muscularis layer of the colon extends toward large polyps, increasing the risk of perforation with electrocautery. Therefore, there is a high risk of perforation during polypectomy in Peutz–Jeghers syndrome.[18] Perforation is known to be one of the most frequently seen complications following colonoscopic polypectomy.[19]

Conclusion

Early diagnosis of colon polyps can now be made as a result of the more frequent use of endoscopic interventions in childhood. Colonoscopic polypectomy continues to be a simple and safe treatment method for colon polyps. However, in cases with Peutz–Jeghers syndrome, the risk of perforation during polypectomy must be taken into consideration. When performing a polypectomy, the root of the polyp should not be removed deeply. In order to avoid perforation during polypectomy, adrenaline can be injected into the polyp root to highlight it. In this way, bleeding and perforation can be prevented. After the polypectomy procedure, the patient should be monitored in the ward for the risk of perforation.

Ethics Committee Approval: This study was approved by the Non-Interventional Research Ethics Committee of Fırat University (Date: June 07, 2022; Decision Number: 08/12).

Informed Consent: Informed consent was obtained from from parents of children who participated in this study.

Peer review: Externally peer-reviewed.

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Declaration of Interests: The authors declare that they have no competing interests.

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