RETROSPECTIVE STUDY OF EGYPTIAN CHILDREN REFERRED TO THE ENDOSCOPY UNIT AT AL-HUSSEIN UNIVERSITY HOSPITAL FOR COLONOSCOPY

By

Mohamed Ahmed Abdel Azeem, Hany Ali Hussein Samy MD, Ahmed Abd Allah Mohamed MD

Department of Pediatrics, Faculty of Medicine, Al-Azhar University, Cairo

ABSTRACT

Background: *Colonoscopy is the "gold standard" procedure in diagnosis and management of lower gastrointestinal problems. All reports have shown that this procedure is safe and useful diagnostic tool in children of all age groups.*

Objectives: *We aimed of this retrospective study is to find out the prevalence of different colonic diseases in children. Also, this work will highlight the usefulness of colonoscopy in the recognition of diseases of the colon in children in our community and identify some of the problems associated with the performance of this procedure in our department.*

Patients and Methods: *A retrospective study conducted during the period from January 2016 to December 2017 to analyze the colonoscopic findings of patients presented with lower gastrointestinal manifestations to the Gastrointestinal Endoscopy Unit of Al-Hussein University Hospital. It included 40 cases, 20 were males (50%) and 50 females (50%). Their ages ranges from 1 year to 15 years with a mean age of 5.65±2.8 SD years.*

Results: *Bleeding per rectum was the commonest presentation representing (80%) of cases, followed by abdominal pain 10%, weight loss was 5.0 %, chronic diarrhea was 2.5%. Biopsy was taken in 34 cases (85%) and histopathological findings were juvenile rectal polyp in 17 cases (42%), nonspecific colitis in 15 cases (37.5%), ulcerative colitis in 7 cases (4.7%), diffuse colitis in 1 case (2.5%), esinophilic colitis in 2 cases (5%), normal in 5 cases (12.5%).*

Conclusion: *Colonic diseases are not uncommon in our part of the world. Colonoscopy is a rewarding procedure in those patients referred with lower gastrointestinal manifestations*

Keywords: *Colonoscopy, Pediatrics, Abdominal Pain, Bleeding per Rectum, Diarrhea, Failure to Thrive, Constipation, Polyps, Mass, Colitis.*

INTRODUCTION

Colonoscopy is routinely performed in infants and children for the evaluation and treatment of diarrhea, weight loss, abdominal pain, unexplained iron deficiency anemia, abdominal pain, or rectal bleeding. Colonoscopy has utility as a diagnostic and therapeutic tool for pediatric patients **(Friedet et al., 2013)**.

Despite the generally increased use of colonoscopy in pediatric patients, careful selection of the indications for colonoscopy in these patients can still achieve higher diagnostic yields and prevent complications. The most common indications are unexplained iron deficiency anemia (IDA), lower gastrointestinal bleeding (LGIB), and diarrhea **(Gilger et al., 2005)**. However, the diagnostic yield varies depending on the indication, with unexplained diarrhea and blood in the stools having the highest diagnostic yield **(El Mouzan et al., 2005)**.

Recently, the American Society for Gastrointestinal Endoscopy (ASGE) and the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition published modifications of their guidelines for pediatric patients, in which clear indications for colonoscopy in children were recommended. As the diagnosis of bowel diseases, including inflammatory bowel disease (IBD) and polyposis syndrome, is important in children as well as adults, it has become increasingly necessary to perform total colonoscopy in pediatric patients **(Ishige et al., 2010)**.

Therapeutic colonoscopy is most frequently applied in children for polypectomy and for bleeding with successful resection rates exceeding 96% for polypectomy **(Mudawi et al., 2009)**.

There are limited pediatric data regarding the complication rates of pediatric colonoscopy. A complication rate was reported of 1.1%, which was higher than that of adult colonoscopy (0.4%), in a multi-center retrospective study. Furthermore, pediatric colonoscopy is associated with a greater risk of serious complications compared with that in adults, due to the high level of technical difficulty, low compliance with bowel cleansing, and uncooperativeness during the procedure. The success of total colonoscopy relies on suitable bowel-cleansing preparation, appropriate sedation for painless and safe colonoscopy, and the

choice of an appropriate endoscope **(Wang et al., 2013)**.

AIM OF THE WORK

The aim of our retrospective study is to find out the prevalence of different colonic diseases in children. Also, this work will highlight the usefulness of colonoscopy in the recognition of diseases of the colon in children in our community and identify some of the problems associated with the performance of this procedure in our department.

PATIENT AND METHODS

This Retrospective study was carried out on data of all patients below 18 years of age presenting to the pediatric gastrointestinal endoscopy unit in El- Hussein University Hospital who underwent colonoscopy over two year period – from January, 2016 to December, 2017.

The children were referred for colonoscopy after evaluation by gastroenterologist. Standard bowel preparation is most commonly used. The procedure is done under general anesthesia.

Inclusion Criteria:

1- All Children from day 1 till the age of 18 years old.

2- Both genders.

Plan of the Study:

Data retrieved from the records included:

A- Detailed history taking with special regards to age, sex, and family history.

B- Physical and systemic examination

C- Laboratory evaluation with as regards:

1- CBC, CRP, ESR.

2- Liver functions tests (ALT and AST).

3- Kidney function tests (S.urea and S.creatinine).

4- Total protein, albumin and prothrombin.

5- Stool analysis and occult blood in stool.

D- The indication, number and level of colonoscopy examinations.

Colonoscopy diagnosis and histopathological findings will be recorded.

Ethical Considerations:

1. Approval of ethical committee, faculty of medicine, Al-Azhar University
2. Written consents from the parent of the patients.

3. The patients have the right to withdraw from the study at any time.
4. All the obtained data are confidential
5. The authors declard that there is no potential conflict with respect to the research, authorship and\ or puplication of this article
6. No conflict of interst regarding the study

Statistical Analysis:

Data collected throughout history, basic clinical examination, laboratory investigations and outcome measures coded, entered and analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences (SPSS version 20.0) (Statistical Package for the Social Sciences) software for analysis. According to the type of data qualitative represent as number and percentage, quantitative continues group represent by mean ± SD, the following tests were used to test differences for significance;. Difference and association of qualitative variable by Chi square test (X2). Differences between quantitative multiple by ANOVA or Kruskal Wallis, c. P value was set at <0.05 for significant results & <0.001 for high significant result.

Data were collected and submitted to statistical analysis. The following statistical tests and parameters were used.

1- Mean

$$\bar{x} = \sum x \; / \; \mathbf{n}$$

$\sum x$ is the sum of the values.

n is the number of subjects

2- Standard deviation (SD):

$$SD = \sqrt{\frac{\sum \left(x - \bar{x}\right)^2}{n - 1}}$$

$\sum \left(x - \bar{x}\right)^2$ is the sum of the square of the differences of each observation from the mean

RESULTS

Table (1): Basic Demographic and clinical data distribution

Age (years)	**Mean± SD**	**5.65±2.8**	
	Median (Range)	**4.0 (1-15)**	
Weight kg	**Mean± SD**	**28.21±10.21**	
	Median (Range)	**26.0 (10-46)**	
Height cm	**Mean± SD**	**100.06±32.1**	
	Median (Range)	**96 (65.0-165)**	
BMI	**Mean± SD**	**24.74±6.63**	
	Median (Range)	**24.38 (15.2-31.6)**	
Duration of symptoms (month)	**Mean± SD**	**3.73±1.38**	
	Median (Range)	**3.5 (1-7)**	
Sex	**Male**	**20**	**50.0%**
	Female	**20**	**50.0%**
	Total	**40**	**100.0%**

This table shows that age was distributed as 5.65±2.8 male and female were distributed equally.

Table (2): Clinical presentation distribution among studied group

		N	%
Main Complaint	**Abdominal pain**	**1**	**2.5**
	Bleeding per rectum	**35**	**87.5**
	Chronic constipation	**4**	**10.0**
	Total	**40**	**100.0**

This table shows that the main complaint was hematochezia with 87.5%, among studied group.

Table (3): Associated symptoms with complaint

		N	%
Associated Symptoms	**Bleeding per rectum without associated symptoms**	**22**	**55.0**
	Chronic constipation+ Abdominal pain	**2**	**5.0**
	Bleeding per rectum +Abdominal pain	**6**	**15.0**
	Bleeding per rectum +Constipation	**6**	**15.0**
	Chronic constipation without associated symptoms	**2**	**5.0**
	Abdominal pain+ Melena	**1**	**2.5**
	Bleeding per rectum +Weight loss+ Abdominal pain	**1**	**2.5**
	Total	**40**	**100.0**

This table shows that main were Bleeding per rectum without associated symptoms 55% followed by Bleeding per

rectum +Abdominal pain and Bleeding per rectum +Constipation with 15%.

Table (4): History distribution among studied groups

		N	%
Previous hospital admission	**No**	**38**	**95.0**
	Yes	**2**	**5.0**
Surgery	**No**	**35**	**87.5**
	Yes	**5**	**12.5**
Family history of similar condition	**No**	**36**	**90.0**
	Yes	**4**	**10.0**
PALLOR	**No**	**28**	**70.0**
	Yes	**12**	**30.0**
	Total	**40**	**100.0**

This table shows that previous hospital admission was 5%, surgery 12.5%, Family history of similar condition 10% and pallor 30%.

Table (5): Indication and level of colonoscopy distribution

		N	%
Indication	**Abdominal pain**	**4**	**10.0**
	Hematocezia	**32**	**80.0**
	Melena	**1**	**2.5**
	Chronic diarrhea	**1**	**2.5**
	Weight loss	**2**	**5.0**
Level	**Ascending colon**	**9**	**22.5**
	Caecum	**27**	**67.5**
	Rectum	**2**	**5.0**
	Transeverse colon	**2**	**5.0**
	Total	**40**	**100.0**

This table shows that hematocezia was the main indication with 80% and main level was Caecum with 67%.

Table (6): Distribution of colonoscopy diagnosis

		N	%
Colonoscopy diagnosis	**Normal**	6	**15.0**
	Crohn's disease	2	**5.0**
	Pancolitis	4	**10.0**
	Polyp	25	**62.5**
	Solitary Rectal Ulcer	1	**2.5**
	Typhilitis	2	**5.0**
	Total	40	**100.0**

This table shows that the highest distribution was Polyp 62.5% followed by pancolitis with 4% but normal cases was 15%.

Table (7): Distribution of histopathology finding

		N	%
Finding	**Normal**	**5**	**12.5**
	Diffuse colitic	**1**	**2.5**
	Eosinophilic colitis	**2**	**5.0**
	Nonspecific colitis	**15**	**37.5**
	Juvenile Polyp	**17**	**42.5**
	Total	**40**	**100.0**

This table shows that the majority of histopathological finding in cases were juvenile polyp with 42% followed by nonspecific colitis with 37%.

Table (8): Association between histopathology finding and complaint

			Finding			Total	Fisher	P
			Normal	Colitis	Polyp			
Complaint	Abdominal pain	N	**0**	**1**	**0**	**1**	**11.02**	**0.02***
		%	**0.0%**	**5.5%**	**0.0%**	**2.5%**		
	Bleeding per rectum	N	**2**	**16**	**17**	**35**		
		%	**40.0%**	**89.0%**	**100.0%**	**87.5%**		
	Chronic constipation	N	**3**	**1**	**0**	**4**		
		%	**60.0%**	**5.5%**	**0.0%**	**10.0%**		
Total		N	**5**	**18**	**17**	**40**		
		%	**100.0%**	**100.0%**	**100.0%**	**100.0%**		

This table shows that there was significant association between Chronic constipation and normal finding and sig association between Bleeding per rectum and Colitis & Polyp.

DISCUSSION

This retrospective study was designed to analyze the colonoscopic findings and to identify the yield of the major indications for colonoscopy and the pattern of colorectal diseases in children. A total of 40 cases presented to the Gastrointestinal Endoscopy Unit of Al-Hussein university hospital during the period from January 2016 to December 2017 were retrospectively studied according to their presentations. They were 20 males and 20 females. Their ages ranges from 1 year to 15

years with a mean age of 5.65±2.8 SD years.

This age and sex distribution are to some extent similar to a study done by **Ridder et al. (2007)** where 137 cases underwent colonoscopy over 8 years period of whom 74 were females (54%) and 63 were males (46%).

The current study shows that mean duration of symptoms per month for children underwent colonoscopy was3.73±1.38 SD years with arrange duration 1-7 months.

Our study showed that there were three major complaints for patients underwent colonoscopy are abdominal pain, bleeding per rectum and chronic constipation. The main complaint was bleeding per rectum with 87.5%.This finding similar to that in previous studies done by **Al Rashed (1999)**; **Yuk et al. (2010)** and **Julian et al. (2010)**.

Our study demonstrated that the most frequent indication was lower gastrointestinal bleeding 80 % and main level was Caecum followed by abdominal pain 10%, weight loss was 5.0 %, chronic diarrhea was 2.5%. This is similar to the study done by **Mohammed et al. (2007)** where bleeding per rectum was the primary indication for colonoscopy in (79.3%) of cases and different from that found by **Julian et al. (2010)** where chronic diarrhea was the primary indication for colonoscopy and different from study done by **Poerregaard et al. (1998)** where the main indication was evaluation for, or control of already known, chronic inflammatory bowel disease (88.3%).

In the present study the main associated symptoms with the complaint were Main were bleeding per rectum without associated symptoms 55% followed by Bleeding per rectum +abdominal pain and Bleeding per rectum +Constipation with 15%. This is similar to that found by **Ridder et al. (2007)** who identified a cause for rectal bleeding in 72% of the cases undergoing colonoscopy.

Our study demonstrated that history distribution among studied groups was previous hospital admission was 5%, surgery 12.5%, Family history 10% and pallor 30%.

In our study the colonoscopic findings among the studied group were polyps in 25 cases (62.5%), picture of pancolitis in 4 cases (10%), picture suggestivecrohns disease in 2 cases (5%) and typhilitis in 2 cases (5%), solitary

rectal ulcer in 1 case 2.5%, normal finding in 6 cases 15%.

Our study as compared to a study done by **Yuk et al. (2010)** the colonoscopic findings were polyps in 23 cases (29%), crohn's disease in 12 cases (15%) and ulcerative colitis in 1 case (1.2%) while in a study done by El **Mouzan et al. (2005)** the main endoscopic findings was colitis in (66%) of cases and polyps in (20%) of cases.

In a study done by **Kalaoui et al. (1998)**, the colonoscopic findings were polyps in 42 cases (26%), inflammatory bowel disease was present in 34 cases (21%), Crohn's disease in 17 cases (10.6%), ulcerative colitis in 11 cases (7%), indeterminate colitis in 6 cases (3.8%) and tuberculosis of the ileo-caecal region was diagnosed in 2 cases (1.3%) while in a study done by **Al Rashed (1999)**, the commonest abnormal finding was ulcerative colitis in 19 patients(30.6%) and polyps in 17 patients (27.4%).

The histopathological findings in the present study were juvenile rectal polyp in 17 cases (42%), nonspecific colitis in 15 cases (37.5%), ulcerative colitis in 7 cases (4.7%), diffuse colitis in 1 case 2.5%, esinophilic colitis in 2 cases 5%, normal in 5 cases 12.5%. compared to the study done by **Thapa et al. (1991)** where the histopathological findings were juvenile polyps in (69.4%), ulcerative colitis in (5.5%), acute colitis in (4.2%), tuberculous colitis in (2.7%), amebic colitis in (1.3%) and allergic colitis in (1.3%) of cases.

Our study showed that There was significant association between Chronic constipation and normal finding and association between Bleeding per rectum and Colitis & Polyp with p- value 0.02*.

In Our study LAB comparison among different finding demonstrated that HB and PLT values lower in polyp group.

LIMITATION OF STUDY

1. Limited number of cases.
2. The time period in which the study was conducted was short and insufficient.
3. There is no great diversity in age and gender

CONCLUSION

Colonoscopy can identify the source of lower gastrointestinal bleeding in most cases however, when colonoscopy fails, other modes of investigations like radionuclide scans and angiography can be used. Capsule

endoscopy is another valuable mode that identified the potential source of bleeding in twice as many patients as did push enteroscopy.

RECOMMENDATION

From our study we recommend that:

- The study should be done on a large scale to provide an accurate prevalence of certain colonic diseases.
- Proper selection of patients candidate for colonoscopy to achieve the highest diagnostic yield and to avoid inappropriate colonoscopies.
- Adequate colon preparation as poor preparation prolongs cecal intubation time and withdrawal time and reduces detection of both small and large polyps.
- Colonoscopy should be performed to every case with recurrent rectal bleeding in children with good safety.
- Although the commonest site of juvenile polyps on the lift side of the colon, right side juvenile polyps may be present therefore, full colonoscopy up to the caecum should performed in all cases.
- Appropriate withdrawal time and careful mucosal inspection is essential to effective reduction of polyp miss rate.
- Biopsies should be taken from those who have colonic pathology, from those at increased risk of colon cancers and large number of biopsies from all colonic parts and all sides of the colon.

REFERENCES

1. **El Mouzan MI, Al-Mofleh IA, Abdullah AM, Al Sanie AM, Al Rashed RS. (2005):** Colonoscopy in children. Saudi J Gastroenterology 2005; 11:35e9).
2. **Friedet M, Welsch S. (2013):** An update on pediatric endoscopy. Eur J Med Res 2013; 18: 24.
3. **Gilger MA, Gold BD. (2005):** Pediatric endoscopy: new information from the PEDS-CORI project. Curr Gastroenterology Rep 2005; 7: 234e9).
4. **Ishige T, Tomomasa T, Takebayashi T, Asakura K, Watanabe M, Suzuki T, Miyazawa R, Arakawa H. (2010):** Inflammatory bowel disease in Children: epidemiological analysis of the nationwide IBD registry In Japan. J Gastroenterology 2010; 45: 911-917.
5. **Mudawi HM, El Tahir MA, Suleiman SH, Eltaybe NH, Gamer NM, Abdullah FA, et al. (2009):** Pediatric gastrointestinal endoscopy: experience in a

Sudanese university hospital. East Mediterr Health J 2009; 15:1027e31.).

6. **Park JH. (2010):** Role of colonoscopy in the diagnosis and treatment of pediatric lower gastrointestinal disorders. Korean J Pediatric 2010; 53:824e9.).

7. **Wang XQ, Zhang Y, Xu CD, Jiang LR, Huang Y, Du HM, Wang XJ. (2013):** Inflammatory bowel disease in Chinese children: a multicenter analysis over a decade from Shanghai. Inflamm Bowel Dis 2013; 19: 423-428.

دراسة إستعادية لاطفال مصر المحولين الي وحدة المناظير بمستشفى الحسين الجامعي لعمل منظار شرجي

محمد احمد عبد العظيم، بكالوريوس الطب والجراحة - جامعة الأزهر

أ. د./هاني علي حسين سامي، أستاذ طب الأطفال - كلية الطب - جامعة الأزهر

د./ أحمد عبدالله محمد، مدرس طب الاطفال - كلية الطب - جامعة الازهر

الهدف : هدفنا من هذه الدراسة الاستعاديه هو معرفة مدى انتشار أمراض القولون المختلفة في الأطفال. أيضًا، سيبرز هذا العمل فائدة المنظار الشرجي في التعرف على أمراض القولون عند الأطفال في مجتمعنا وتحديد بعض المشكلات المرتبطة بأداء هذا الإجراء في قسم الاطفال من خلال وحده المناظير والجهاز الهضمي بمستشفي الحسين الجامعي.

المنهجية: دراسة استعاديه أجريت خلال الفترة من يناير ٢٠١٦ إلى ديسمبر ٢٠١٧ لتحليل النتائج منظار القولون من المرضى الذين يعانون من مظاهر الجهاز الهضمي أقل إلى وحدة التنظير الهضمي في مستشفى الحسين الجامعي. وشملت ٤٠ حالة ، ٢٠ كانت من الذكور (٥٠ ٪) و٥٠ من الإناث (٥٠ ٪). تتراوح أعمارهم ما بين سنة واحدة و ١٥ سنة بمتوسط عمر يبلغ ٥,٦٥ ± ٢,٨ سنة من العمر. كان الفحص الكامل حتى الأعور أو الدقاق الطرفي ممكنًا في ٨٧ حالة (٥٨٪).

النتـــائج: اظهـــرت الدراســـه النتـــائج الاتيـــه: كـــان النزيـــف فـــي المســـتقيم هـــو العـــرض الأكثـــر شـــيوعًا الـــذي يمثـــل (٨٠٪) مـــن الحـــالات ، يليـــه ألـــم الـــبطن بنســـبة ١٠٪ ، وفقـــدان الـــوزن بنســـبة ٥,٠٪ ، والإســـهال المـــزمن كـــان ٢,٥٪. تـــم أخـــذ عينـــه مـــن ٣٤ حالـــة (٨٥٪) وكانـــت النتـــائج المرضـــية هـــي ســـليلة المســـتقيم للأحـــداث فـــي ١٧ حالـــة (٤٢٪) والتهـــاب القولـــون غيـــر المحـــدد فـــي ١٥ حالـــة (٣٧,٥٪) والتهـــاب القولـــون التقرحـــي فـــي ٧ حـــالات (٤,٧٪) والتهـــاب القولـــون المنتشـــر فـــي حالـــة واحـــدة (٢,٥ ٪) ، التهـــاب القولـــون الإيزوفيلـــي فـــي حـــالتين (٥ ٪) ، طبيعـــي فـــي ٥ حالات (١٢,٥).

الاستنتاجات :

١- يمكـــن للمنظارالشـــرجي تحديـــد مصـــدر نزيـــف الجهـــاز الهضمي السفلي في معظم الحالات.

٢- اذا فشـــل المنظـــارفيمكن اســـتخدام طـــرق أخـــرى مـــن الاجـــراءات مثل مسح النويدات المشعة وتصوير الأوعية.

٣- المنظـــار الكبســـولي الشـــرجي هـــو وضـــع آخـــر مهـــم فـــي تحديـــد المصـــدر المحتمـــل للنزيـــف فـــي ضـــعف عـــدد المرضـــى كمـــا فعـــل المنظار المعوي.

التوصيات:

- يجـــب إجـــراء الدراســـة علـــى نطـــاق واســـع لتـــوفير انتشـــار دقيـــق لبعض أمراض القولون.

- الاختيار المناسب للمرضى المرشحين لتنظير القولون لتحقيق أعلى عائد تشخيصي ولتجنب مناظير القولون .

- التحضير الجيد للمريض الذي يحتاج منظار شرجي, حيث ان التحضير السئ يطيل من وقت ادخال المنظار حتي الوصول للاعور ويستهلك وقت اكثر ويقلل من الكشف عن الاورام الحميدة الصغيرة والكبيرة على حد سواء.

- يجب إجراء المنظارالشرجي في كل حالة مع نزيف مستقيمي متكرر عند الأطفال بسلامة جيدة.

- على الرغم من أن أكثر الأورام السرطانية الاحدث شيوعًا على الجانبالايسر من القولون، إلا أن الاورام الحميدة للأحدث في الجانب الأيمن قد تكون موجودة ، لذلك يجب إجراء المنظارالكامل حتى الاعور في جميع الحالات.

- التفتيش الغشاء المخاطي الدقيق أمر ضروري لخفض معدل الاورام الحميدة.

- يجب أخذ العينات من أولئك الذين لديهم أمراض القولون ، او المعرضين لخطر متزايد من سرطانات القولون وعدد كبير من العينات من جميع أجزاء القولون وجميع جوانب القولون.