

Prevalence of Types and Patterns of Colorectal Polyps Detected During Colonoscopy

Mohammed A. Mohammed^a, Hosam A. Bayoumi^a, Nashwa M. Emara^b,
Mahmoud A Eldamen^a, Ahmed M. Amin^a

^aDepartment of Hepatology and Gastroenterology, Faculty of Medicine Benha University, Egypt. ^b Pathology department, Faculty of Medicine Benha University, Egypt.

Corresponding to: Mahmoud A Eldamen. Department of Hepatology and Gastroenterology, Faculty of Medicine Benha University, Egypt.

Email:
mahmoud.aldamen21@fmed.bu.edu.eg

Received: 30 October 2022

Accepted: 17 February 2023

Abstract:

Background: Colorectal polyps are abnormal growths of tissue projecting from the mucosa of the large bowel. They may be classified according to their morphology (sessile or pedunculated), histology (hyperplastic, adenoma, etc.), and behavior (benign or malignant). Aim: to identify the prevalence, types and patterns of colorectal polyps in a cohort of patients presenting to endoscopy unit at Benha University Hospital during the period of study. **Methods:** A cross-sectional study was conducted on 400 patients referred to the endoscopy unit of the Hepatology, Gastroenterology and Infectious Diseases Department in Benha University Hospital for colonoscopy, during the period from April 2021 to June 2022. The patients were subjected to informed consent, Full medical history, Clinical examination, Laboratory investigations (CBC, INR). **Results:** The most common site of polyps was sigmoid colon (30.8%), followed by rectal region (15.4%), the studied polyps were neoplastic in 29 patients (55.8%) and non-neoplastic in 23 patients (44.2%). neoplastic group had statistically higher age, higher frequency of smokers and family history of colonic polyp, lower hemoglobin compared to non-neoplastic group. neoplastic group, the most common site was sigmoid colon and distributed all over colon (20.7% for both) followed by cecum (17.2%), While in non-neoplastic group the most common site was sigmoid (43.5%) followed by rectum (26.1%). **Conclusion:** Polyps were identified in (13%) of patients, the studied polyps were neoplastic in (55.8%) of patients and non-neoplastic in (44.2%) of patients.

Keywords: Colorectal polyps, pattern, colonoscopy

Introduction

Colorectal polyps are abnormal growths of tissue projecting from the mucosa of the large bowel. They can be found through screening or diagnostic procedure conducted for other reasons such as

gastrointestinal bleeding (1). They may be classified according to their morphology “sessile or pedunculated”, histology “hyperplastic, adenoma, etc.”, and behavior “benign or malignant” (2).

The biggest concern is their ability to progress into carcinoma, through the adenoma-carcinoma sequence (3).

Early detection of colonic polyps can alleviate Colo Rectal Carcinoma (CRC) morbidity trend through early detection of malignancies and the elimination of polyps (4).

Adenomatous polyps are histologically categorized into three subtypes: tubular adenoma, tubulovillous adenoma, and villous adenoma. Following detection through colonoscopy, complete removal of neoplastic polyps is essentially important since it would prevent the development of cancer of CRC (5).

Neoplastic polyps are accountable for roughly 5-10% of population over age of 40 and these are important predisposing factor for majority of large bowel carcinoma cases (6).

Aim

To identify the prevalence, types and patterns of colorectal polyps in a cohort of patients presenting to endoscopy unit at Benha University Hospital during the period of study.

Patients and methods

This cross-sectional study was conducted on all patients referred for first time to the endoscopy unit of the Hepatology, Gastroenterology, and Infectious Diseases Department in Benha University Hospital for colonoscopy, during the period from April 2021 to June 2022 after approval of the committee of ethics of scientific research in Benha Faculty of Medicine in Benha University. The study included a total of 400 colonoscopies, all patients included in the study were subjected to informed consent from each patient after explaining the whole study procedures, Full medical history (Basic demographic

Data , Symptoms suggesting colonic polyps , Family history of colonic polyps) ,Clinical examination , Laboratory investigations (CBC & INR).

All patients were subjected to the following:

1. Full medical history:

Basic demographic Data (age, sex, occupation, residence, associated disease) and the indication for colonoscopy.

a. Symptoms suggesting colonic polyps as (bleeding per rectum, IDA, chronic abdominal pain)

b. Family history of colonic polyps.

c. Previous history of colonic polyps.

2. Clinical examination: general and abdominal examination.

3. Laboratory investigations include:

- Complete blood count; hemoglobin level and blood indices (MCV, MCH, MCHC and RDW). Then blood films were prepared for differential count.

- Coagulation profile: Prothrombin time (sec), international normalized ratio (INR) as described by Riley et al, (18).

Endoscopy Procedure:

Colonoscopy was carried out after bowel preparation with osmotic laxative under midazolam sedation. The procedures was carried out in the left lateral position, The endoscopy was performed by a trained endoscopist in the endoscopy unit, The endoscopic finding included site, size and number of the polyps and multiple biopsies were taken for histopathological assessment (17). Polyp locations were classified into 6 categories—cecum, ascending colon, transverse colon, descending colon, sigmoid colon, and rectum, polyp sizes were classified as follows: minute (< 5 mm in diameter),

small (≥ 5 mm to < 10 mm), and moderate to large (≥ 10 mm).

Gross morphologies were described according to the Paris classification (7) : Type 0-I indicates elevated or polypoid forms , 0-Ip Polypoid/pedunculated , 0-Is Polypoid/sessile, broad-based , Type 0-II indicates flat or superficial forms, namely , 0-IIa Flat and elevated , 0-IIb Completely flat , 0-IIc Superficially depressed , These types often consist of mixed forms e.g., type IIa+c = flat and elevated with a central depression , Type 0-III indicates excavated /ulcerated forms, without any further subgrouping.

All lesions were then classified according to Kudo classification of pit patterns with photographic correlation of lesions. All lesions were then classified into 3 types based on Narrow-Band Imaging International Colorectal Endoscopic (NICE) classification, which consists of 3 types .

It was first highlighted by researchers that the feasibility of applying the “pit patterns” to distinguish neoplastic and non-neoplastic polyps *via* magnifying

endoscopy. It was classified colorectal polyps according to their appearance, structure and staining patterns. Type I pits appear as roundish pits; Type II pits appear as stellar or papillary pits; Type III-s pits are small roundish, tubular pits (smaller than Type I) and Type III-L are roundish and tubular pits (larger than Type I); Type IV pits appear as branch-like or gyrus-like pits and Type V pits appear as non-structured pits. Type I and II are considered benign changes (e.g., normal, hyperplastic, inflammatory polyps), whereas pit pattern classes III-V are considered to show neoplastic and malignant changes (19)

The Narrow-band imaging International Colorectal Endoscopic (NICE) classification, devised by the Colon Tumor NBI Interest Group, uses the color, vessels, and surface patterns of polyps to classify endoscopic findings without optical magnification (20). This is the first NBI classification that can be used without optical magnification and is simplified for the ease of use.



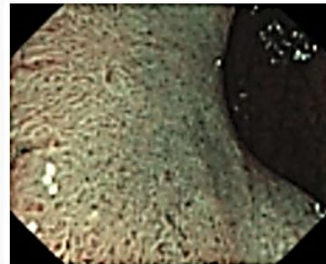
	Type 1	Type 2	Type 3
Color	Same or lighter than background	Brown relative to background (verify color arises from vessels)	Brown to dark brown relative to background; sometimes patchy whiter areas
Vessels	None, or isolated lacy vessels may be present coursing across the lesion	Brown vessels surrounding white structures*	Has area(s) of disrupted or missing vessels
Surface patterns	Dark or white spots of uniform size, or homogeneous absence of pattern	Oval, tubular or branched white structures* surrounded by brown vessels	Amorphous or absent surface pattern
Most likely pathology	Hyperplastic	Adenoma**	Deep submucosal invasive cancer
Sample Image			

Figure 1: NICE Classification

Histological Assessment:

All samples were collected and stored in formalin container and stained with hematoxylin and eosin, viewed under light microscopy by a pathologist. Histology was classified as neoplastic

polyp including tubular adenoma, tubulovillous adenoma, villous adenoma, serrated adenoma, adenocarcinoma, or non-neoplastic polyp includes hyperplastic polyp and inflammatory.

Pictures of colonoscopic findings of the studied sample:

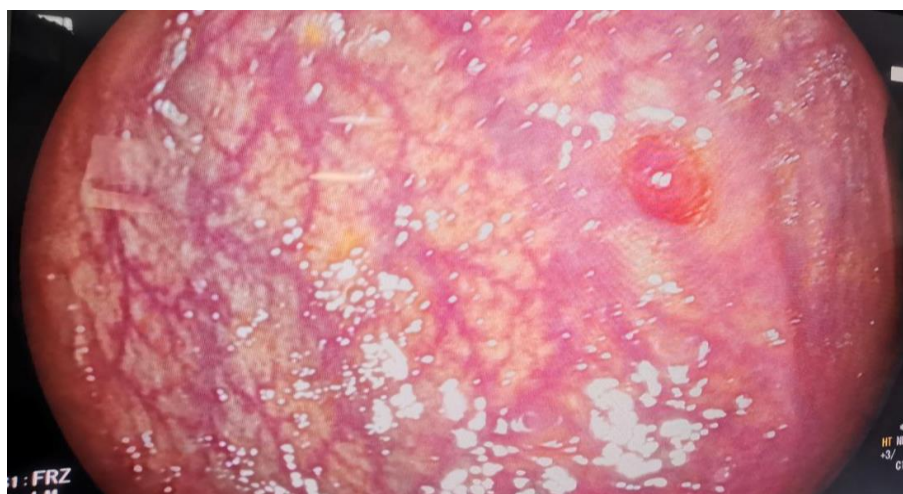


Figure 2: Endoscopic view of minute rectal polyp, Paris IIa.

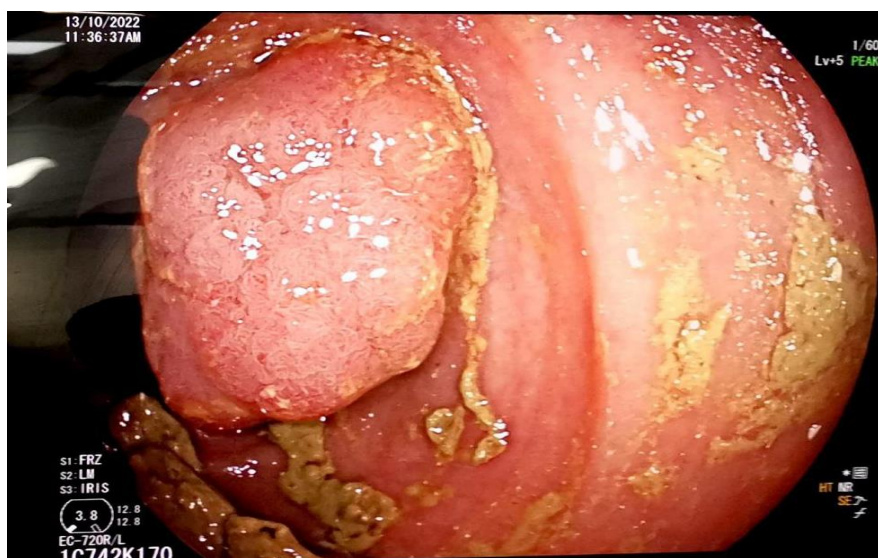


Figure 3: Endoscopic view of large sigmoid colon polyp, Paris Ie in badly prepared patient.

Pictures of histopathological assessment of polyp's biopsies:



Figure 4: (Serrated adenoma) Figure showing disordered proliferation of crypts with inverted T or L shaped crypt bases (boot shaped). The lining epithelium shows low grade dysplasia (H&Ex100).

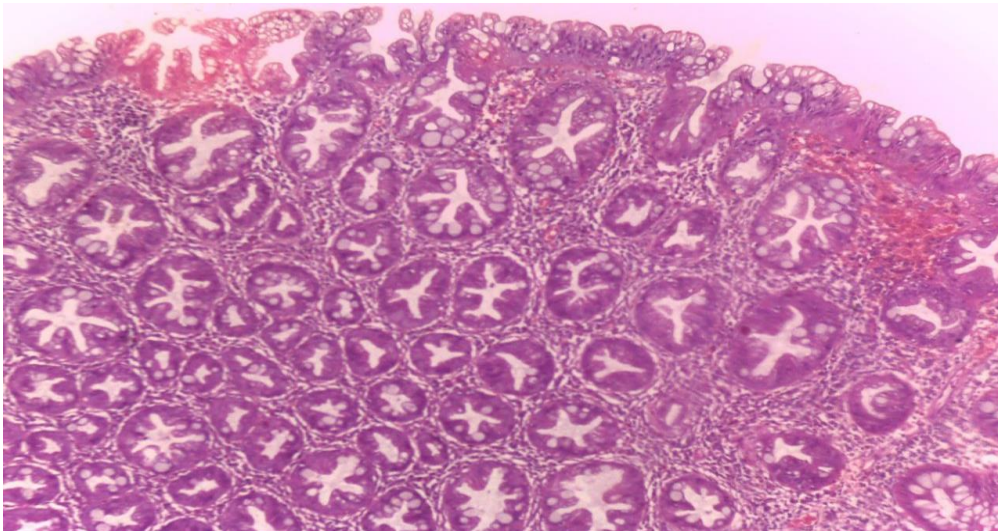


Figure 5: Hyperplastic polyp - (Figure showing proliferated colonic glands with surface epithelium showing serrated architecture (sawtooth appearance), no evidence of dysplasia (H&Ex100).

Statistical Analysis:

The collected data was revised, coded, tabulated using Statistical package for Social Science (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.). Data were presented and suitable analysis

was done according to the type of data obtained for each parameter: Descriptive statistics: Mean, Standard deviation (\pm SD), range for numerical data & Frequency and percentage of non-numerical data. Analytical statistics: Student T Test was used to assess the statistical significance of the difference

between two study group means, For the comparison of more than two groups' means, one way analysis of variance (ANOVA) was used , Chi-Square test was used to examine the relationship between two qualitative variables. Fisher's exact test was used to examine the relationship between two qualitative variables when the expected count is less than 5 in more than 20% of cells. All reported p values were two-tailed and $p < 0.05$ was considered to be significant.

Results:

A total of 400 colonoscopies were done. Polyps were identified in 52 patients (13%), the majority had a single polyp, and most polyps were small in size.

The studied patients included 33 males (63.5%) and 19 females (36.5%), their mean age was 54.73 ± 13.5 years, most cases (30.8%) were employee 23.1% were housewife, 21.2% were workers, 17.3% were retired and 7.7% were farmers. most

patients (61.5%) were from rural areas (table 1).

As regard History & clinical examination, most patients (65.4%) had bleeding per rectum, 44.2% of patients had abdominal pain, 42.3% had constipation, 30.8% had abdominal distension, 15.4% had fecal straining, 9.6% had fatigue and only one patient had weight loss (table 2).

The most common site of polyps was sigmoid colon (30.8%), followed by rectal region (15.4%), ascending and descending colon (11.5% for each), cecum (9.6%), transverse colon (7.7%), in addition 7 patients (13.5%) had multiple polyps in many sites. Most polys (65.4%) were small in size. Most patients (53.8%) had single polyp, 25% had 2 polyps, 3.8% had 3 polyps, and 9 patients (17.3%) had multiple polyps (figure 6).

As regarding Paris classification, 34.6% was Ip Polypoid/pedunculated, 38.5% was Is Polypoid/sessile, 17.3% was Ila Flat and elevated and 5 patients (9.6%) had multiple expression of Ip, Is, Ila (table 3).

Table 1: Sociodemographic data of the studied patients.

		N=52	%
Sex	Male	33	63.5%
	Female	19	36.5%
Age (years)	Mean \pm SD	54.73 ± 13.50	
	Range	23-85	
Occupation	Retired	9	17.3%
	Farmer	4	7.7%
	Worker	11	21.2%
	Housewife	12	23.1%
	Employee	16	30.8%
Residence	Rural	32	61.5%
	Urban	20	38.5%

Table 2: Symptoms in patients of the studied group.

	N=52	%
Bleeding per rectum	34	65.4%
Abdominal pain	23	44.2%
Weight loss	1	1.9%
Fatigue	5	9.6%
Constipation	22	42.3%
Abdominal distension	16	30.8%
Fecal straining	8	15.4%

Table 3: Paris classification of the examined polyps

	N=52	%
Paris classification Ip Polypoid/pedunculated	18	34.6%
Is Polypoid/sessile	20	38.5%
Ila Flat and elevated	9	17.3%
Multiple expression of Ip, Is, Ila	5	9.6%

pedunculated (Ip), sessile (Is).

Most of patients 46.2% had NICE grade I, 50% had NICE grade II and 3.8% had NICE grade III. Regarding Kudo classification, 17.3% of patients were I, 34.6% were II, 7.7% were III S, 32.7% were III L, and 7.7% were IV (figure 7).

The most common criteria in histopathological examination were Hyperplastic polyp and Tubular adenoma (28.8% for each), followed by Inflammatory polyp in 11.5%, Tubulovillous adenoma in 9.6%, Villous adenoma in 5.8%, Sessile serrated adenoma in 5.8%. In addition, 3 patients

(5.8%) of patients had multiple polyps with mixed criteria (table 4).

The studied polyps were neoplastic in 29 patients (55.8%) and non-neoplastic in 23 patients (44.2%). neoplastic group had statistically higher age, higher frequency of smokers and family history of colonic polyp, lower hemoglobin compared to non-neoplastic group. neoplastic group, the most common site was sigmoid colon and distributed all over colon (20.7% for both) followed by cecum (17.2%), While in non-neoplastic group the most common site was sigmoid (43.5%) followed by rectum (26.1%) (table 5).

Table 4: Histopathological examination of polyps of the studied groups.

	N=52	%
Histopathological examination Hyperplastic polyp	15	28.8%
Inflammatory polyp	6	11.5%
Tubular adenoma	15	28.8%
Villous adenoma	3	5.8%
Tubulovillous adenoma	5	9.6%
Sessile serrated adenoma	3	5.8%
Hamartomatous polyp	2	3.8%
Mixed	3	5.8%

Table 5: Gross anatomy as regarding to histological examination.

		Histopathological examination				Test	P value
		Neoplastic		Non-neoplastic			
		N=29	%	N=23	%		
Site of the polyp	Cecum	5	17.2%	0	0.0%	X ² =12.4	0.045*
	Ascending colon	4	13.8%	2	8.7%		
	Transverse colon	2	6.9%	2	8.7%		
	Descending	4	13.8%	2	8.7%		
	Sigmoid colon	6	20.7%	10	43.5%		
	Rectal	2	6.9%	6	26.1%		
	All over colon	6	20.7%	1	4.3%		
Size	Minute	2	6.9%	5	21.7%	X ² =7.8	0.09
	Small	18	62.1%	16	69.6%		
	Moderate	2	6.9%	2	8.7%		
	Large	1	3.4%	0	0.0%		
	Variable	6	20.7%	0	0.0%		
Number	Single	16	55.2%	12	52.2%	X ² =3.4	0.33
	2 polyps	5	17.2%	8	34.8%		
	3 polyps	1	3.4%	1	4.3%		
	Multiple>10	7	24.1%	2	8.7%		
Associated criteria	Edema	2	6.9%	1	4.3%	X ² =4.6	0.11
	Nodularity	0	0.0%	2	8.7%		
	Irregular vascular pattern	0	0.0%	2	8.7%		
	Diverticula or Fistula	4	13.8%	0	0.0%		

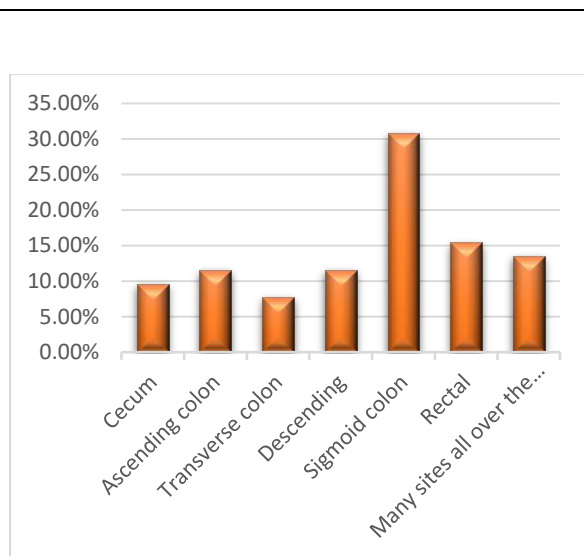


Figure 6: Site of polyps in the studied group.

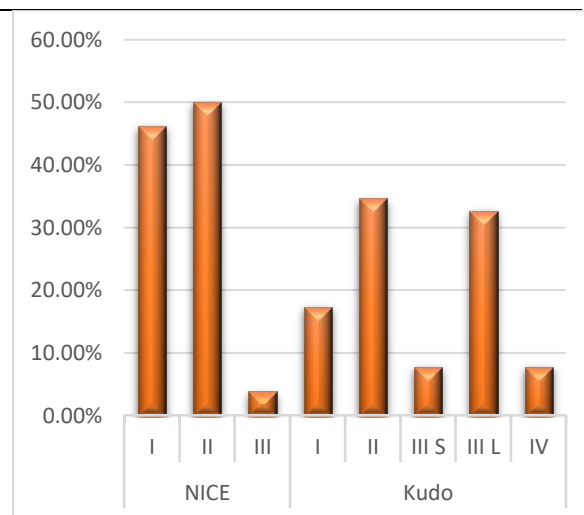


Figure 7: NICE and KUDO classification in the studied patients.

Discussion

'Polyp' is a term derived from the Greek word polypous, which means 'morbid lump.' Generally, this term describes any mass protruding into the lumen of a hollow vessel, anywhere in the gastro-intestinal, genito-urinary or respiratory tracts. Usually, polyps arise from the mucosal layer of these organs, although some submucosal pathologies may cause mucosal protrusion into the lumen and resemble mucosal polyps. Not all polyps necessarily exhibit neoplastic behavior. (8) Colorectal polyps are very common among middle-aged individuals, with a prevalence being as high as up to 30%. The epithelial type (either adenomatous or hyperplastic) represents the most common form of colorectal polyps, followed by non-epithelial (inflammatory and juvenile) polyps (9).

Adenomatous polyps are histologically categorized into three subtypes: tubular adenoma, tubulovillous adenoma, and villous adenoma. Following detection through colonoscopy, complete removal of neoplastic polyps. (10)

The neoplastic polyps are of primary importance because they harbor a malignant potential, which represents a stage in the development of colorectal cancer. For this reason, it is essential to identify these polyps at a sufficiently early stage, when a simple office procedure to remove them can stop the development of colorectal cancer and prevent disease and death (11).

Colonoscopy is a non-invasive method of diagnostics and treatment of colon cancer and polyps. Total colonoscopy is a complete evaluation of the colon and rectum mucosa, up to the cecum floor. The deep examination can be useful for

detecting the colorectal polyps, subsequent follow-up and early detection of cancer. Studies have confirmed that colonoscopy examination reduces the risk of colorectal cancer up to 60-70% (12).

In the study by ⁽¹³⁾ 1852 patients underwent colonoscopy, 503 of them had colorectal polyps. The mean age was 75.4 ± 4.2 years (range, 65–88 years). A total of 253 males represented 50.3% of the sample and 250 females represented 49.7%. Overall, 62.8% of patients were from urban areas, whereas 37.2% were from rural areas.

In the current study, most patients (65.4%) had bleeding per rectum, 44.2% of patients had abdominal pain, 42.3% had constipation, 30.8% had abdominal distension, 15.4% had fecal straining, 9.6% had fatigue and only one patient had weight loss.

In the study by (13) Clinical presentations of patients requiring colonoscopy examination were constipation (21.2%), diarrhea (18.7%), abdominal pain/distention (15.7%), rectal bleeding or hematochezia (10.7%), loss of weight (9.3%), anemia (7.2%), positive fecal occult blood (6%), and regular health examination (11.3%).

In the current study, most polyps (65.4%) were small in size. Most patients (53.8%) had single polyp, 25% had 2 polyps, 3.8% had 3 polyps, and 9 patients (17.3%) had multiple polyps. Regarding associated criteria, 3 patients had edema, 2 patients had nodularity, 2 patients had irregular vascular pattern, and 4 patients had diverticula or Fistula.

Our results agreed with Cekodhima et al., (9) who yielded a total of 346 polyps (the unit of analyses). The majority of polyps (42.5%) were small (<1 cm); 38.7% were

of medium size (1-2 cm) and the rest (18.8%) large (>2 cm).

Regarding Paris classification, 34.6% was Ip Polypoid/pedunculated, 38.5% was Is Polypoid/sessile, 17.3% was IIa Flat and elevated and 5 patients (9.6%) had multiple expression of Ip, Is, IIa.

In agreement to our results (13) 74.8% of polyps were 0–I, and sessile type (0–Is) was the most detected type. No significant difference was detected between 0–IIa and 0–IIb for the three different histological features of polyps.

In the current study, the most common criteria in histopathological examination were Hyperplastic polyp and Tubular adenoma (28.8% for each), followed by Inflammatory polyp in 11.5%, Tubulovillous adenoma in 9.6%, Villous adenoma in 5.8%, Sessile serrated adenoma in 5.8%. In addition, 3 patients (5.8%) of patients had multiple polyps with mixed criteria. So, the total number of adenomatoid polyps was 29 (55.8%).

Our results were in agreement with previous studies as; Vişovan et al. (14) who described a predominance of adenomatous polyps over hyperplastic polyps (66 vs. 32%) and Vilela Filho et al. (15) described a predominance of adenomatous polyps over hyperplastic polyps (58.9 vs. 34.7%).

Most adenomatous polyps convert into colon carcinoma over a 10-year period. The National Polyp Study showed a 76% reduction in CRC incidence and a 53% reduction in mortality in patients that underwent colonoscopic polypectomy (16).

In the current study, 46.2% of patients had NICE grade I, 50% had NICE grade II and 3.8% had NICE grade III. Regarding Kudo classification, 17.3% of patients were I,

34.6% were II, 7.7% were III S, 32.7% were III L, and 7.7% were IV.

In the present study, the studied polyps were neoplastic in 29 patients (55.8%) and non-neoplastic in 23 patients (44.2%). Neoplastic group included tubular adenoma (15 patients), villous adenoma (3 patients), tubulovillous adenoma (5 patients), sessile serrated adenoma (3 patients) and another 3 patients with multiple expression of adenomas. Non-neoplastic group included hyperplastic polyp (15 patients), inflammatory polyp (6 patients), hamartomatous polyp (2 patients).

Our results were in agreement with Cekodhima et al., (9) who reported that hyperplastic and tubular types accounted for the majority (71.4% and 74.4%) of non-adenomatous and adenomatous polyps respectively.

Conclusion

Polyps were identified in (13%) of patients, the studied polyps were neoplastic in (55.8%) of patients and non-neoplastic in (44.2%) of patients.

Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author contribution

Authors contributed equally in the study.

Conflicts of interest

No conflicts of interest

References

1. D. K. Rex, G. A. Lehman, R. H. Hawes, T. M. Ulbright and J. J. Smith “ Screening colonoscopy in asymptomatic average risk group “ *Gastroenterology*, (1991); vol.100 ,no.1,pp.64–67.

2. J. Tony, K. Harish, T. M. Ramachandran, K. Sunilkumar and V. Thomas “Profile of colonic polyps in a southern Indian population,” *Indian J Gastroenterol*, (2007); vol. 26, no. 3, pp.127–129.
3. M. J. Hill, B. C. Morson, and H. J. R. Bussey “Aetiology of adenoma—carcinoma sequence in large bowel ” *The Lancet*, (1978); vol. 1,no.8058,pp.245–247 .
4. N. Wisedopas, D. Thirabanjasak and M. Taweewisit “A retrospective study of colonic polyps in King Chulalongkorn Memorial Hospital ” *J Med Assoc Thai* , (2005); vol. 88 ,supplement4,pp.S36–S41.
5. R.R.Rickert, O.Auerbach, L.Garfinkel,E.C.Hammond and J.M.Frasca. “Adenomatous lesions of the large bowel: an autopsy survey” *Cancer*, (1992), vol.43, no.5 ,pp.1847–1857.
6. N. Kumar, B. S. Anand, V. Malhotra, “Colonoscopic polypectomy. North Indian experience” *J Assoc Physicians India*, (1990); vol. 38, no. 4, pp. 272–274.
7. Angarita, F.A., Feinberg, A.E., Feinberg, S.M., Riddell, R.H. and McCart, J.A., “Management of complex polyps of the colon and rectum”, *Int J Colorectal Dis*, Springer, (2018); Vol. 33 No. 2, pp. 115–129.
8. Shussman, N., Wexner, S.D. Colorectal polyps and polyposis syndromes. *Gastroenterology*. (2014); Rep. 21.
9. Cekodhima, G., Cekodhima, A., Beqiri, A., Alimehmeti, M. and Sulo, G, “Demographic and histopathological characteristics of colorectal polyps: a descriptive study based on samples obtained from symptomatic patients”, *Zdr Varst*, (2016); Vol. 55 No. 2, pp. 118–123.
10. Gibson, J.A. and Odze, R.D. “Pathology of premalignant colorectal neoplasia”, *Digestive Endoscopy*, Wiley Online Library, (2016), Vol. 28 No. 3, pp. 312–323.
11. Sawicki, T., Ruzkowska, M., Danielewicz, A., Niedźwiedzka, E., Arłukowicz, T. and Przybyłowicz, K.E. “A review of colorectal cancer in terms of epidemiology, risk factors, development, symptoms and diagnosis”, *Cancers*, Multidisciplinary Digital Publishing Institute, (2021), Vol. 13 No. 9, p. 2025.
12. Safayeva, A.K. and Bayramov, N.Y. “The importance of colonoscopy in the treatment of colorectal polyps and colorectal cancer screening”, *Ann Ital Chir*, (2019), Vol. 90 No. 4, pp. 311–317.
13. Saad, M.A.M., Zaki, I.I. and Ellakany, A.I. “Different aspects of colorectal polyps in a cohort of elderly Egyptian patients: monocentric experience”, *Menoufia Med J*, (2021), Vol. 34 No. 2, p. 570.
14. Vişovan, I.I., Tanţău, M., Pascu, O., Ciobanu, L. and Tanţău, A. “The role of narrow band imaging in colorectal polyp detection”. *Association of Basic Medical Sciences of Federation of Bosnia and Herzegovina, Bosn J Basic Med*, (2017), Vol. 17 No. 2, p. 152.
15. Vilela Filho, T.F., Marques Fávoro, G., Soares Coca, D., Bonini Daniel, L., Ferreira Guenaga, K., Sato Uemura, R., Furuya Junior, C.K., et al. “Epidemiological aspects of endoscopic resections of colorectal polyps in patients at an endoscopy training center in the Santos region, Brasil”. *Rev Gastroenterol Peru*, (2017), Vol. 37 No. 1, pp. 47–52.
16. Zauber, A.G. “The impact of screening on colorectal cancer mortality and incidence: has it really made a difference?”, *Dig Dis Sci*, Springer, (2015), Vol. 60 No. 3, pp. 681–691.
17. Alghamry, A., Ponnuswamy, S., Agarwal, A., Moattar, H., Yerkovich, S. T., Rahman, T., et al. (2015). Reduced time to endoscopy performed under propofol sedation after split-dose bowel preparation does not increase residual gastric volume (RGV) or risk of aspiration. *Journal of Gastroenterology and Hepatology*, 30, 27-27.
18. Riley, R.S., Rowe, D., and Fisher, L.M. (2000): Clinical utilization of the international normalized ratio (INR), *Journal of Clinical Laboratory Analysis*, Wiley Online Library, Vol. 14 No. 3, pp. 101–114.
19. Kudo S, Tamura S, Nakajima T, Yamano H, Kusaka H, Watanabe H. Diagnosis of colorectal tumorous lesions by magnifying endoscopy. *Gastrointest Endosc*. 1996; 44:8–14. [PubMed] [Google Scholar]
20. Hamada Y, Tanaka K, Katsurahara M, Horiki N, Yamada R, Yamada T, et al. Utility of the narrow-band imaging international colorectal endoscopic classification for optical diagnosis of colorectal polyp histology in clinical practice: a retrospective study. *BMC gastroenterology*. 2021 Dec;21(1):1-9.

To cite this article: Mohammed A.Mohammed , Hosam A. Bayoumi, Nashwa M. Emara, Mahmoud A Eldamen, Ahmed M. Amin. Prevalence of Types and Patterns of Colorectal Polyps Detected During Colonoscopy. *BMFJ* 2023;40(3):651-661.