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Original Article

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Clinical, Endoscopic, and Histopathological Characteristics of Gastrointestinal Polyps

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ABSTRACT

BACKGROUND & OBJECTIVE: Gastrointestinal polyps are common findings in endoscopy, leading to substantial morbidity and mortality. Unlike the West, screening programs for the early detection of polyps are not adopted in Pakistan. This study aims to define the characteristics of the polyps in our population that will encourage clinicians to follow screening and surveillance programs for the detection of polyps.

METHODOLOGY: A prospective observational study. Patients who had polyps during endoscopy were enrolled. Clinical symptoms, endoscopic appearance and histopathology were noted. Patients refusing biopsy, polypectomy, or synchronous/ metachronous lesions were excluded.

RESULTS: A total of 149 patients were enrolled, out of which 84 (56.4%) were males, and most of the gastrointestinal polyps were located in the colon 75(50.3%) and rectum 51(34.2%), respectively. 12(8.1%) patients had a family history of polyps/ GI malignancy, and 45(30.2%) had two or more polyps. 46(30.8%) patients had adenomatous polyps, all located in the colorectal region, and of these, 3 had high-grade dysplasia. Patients with adenomatous polyps had significantly higher age at presentation (mean±SD 1.02±15.66, p-value=0.007), a higher proportion of presence of alarm features including anemia 10(21.7%) with p-value=0.047, weight loss 22(47.8%) with p-value=0.003 and history of colorectal polyps/malignancy 8(17.4%) with p-value=0.009 compared to those patients who had non-adenomatous polyps.

CONCLUSION: Upper GI tract polyps are mostly benign. Patients with adenomatous polyps are older, anemic at presentation, with a positive family history of colorectal polyps, and mostly found in the colorectum. Large multicenter studies are needed to predict the burden of polyps in our country in order to formulate national guidelines for screening and surveillance of colonoscopy in our country.

KEYWORDS: Anemia, Colorectal carcinoma, Colonoscopy, Adenoma.

INTRODUCTION

A polyp is said to be a proliferative lesion of the mucosal wall of the gastrointestinal tract. Gastrointestinal polyps are one of the common findings in endoscopy [1]. Males are more likely to develop polyps than females [2]. Polyps can arise from any part of the gastrointestinal tract but are commonly seen in the colon, rectosigmoid (78%), stomach (14%), and small intestine [3-4]. A recent review on gastrointestinal polyps reported around 6 and 4.6% of polyps in the stomach and duodenum, respectively [5].

Gastrointestinal polyps can be silent but usually present with dyspepsia, melena and hematochezia, loose stools, anemia, and positive fecal occult blood test [6]. It can be sporadic and can be part of hereditary syndromes like familial adenomatosis polyposis syndrome [7]. Polyps are also associated with inflammatory bowel disease, mostly

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inflammatory pseudo polyps (70% of ulcerative colitis and 8% of Crohn's disease patients) [8].

On endoscopy, most acquired polyps are seen in the colon, gastric fundus, body, and duodenum. Polyps are considered to be diminutive if <5mm, small <10 mm, and large >10 mm. As the size increases, it will have more risk of dysplasia and malignancy [7,8]. Polyps are classified through Paris classification into pedunculated, having stalk, flat but elevated from the mucosa, and flat lining the mucosa [9]. It can be single or multiple; it can be hundreds in quantity, as in patients with familial polyposis.

Considering the histopathological classification of polyps, they are classified into hyperplastic, which are the commonest ones in the colon; hamartomatous, inflammatory, juvenile, adenomatous with or without dysplasia and malignant polyps [10]. Juvenile polyps are primarily seen in the pediatric population [11-13]. Adenomatous polyps can have tubular, tubulovillous, or villous structures. The risk of cancer development is highest in villous adenomas [14-16].

Many patients are undergoing gastroscopy, enteroscopy, and colonoscopy for various indications; sometimes, polyps are just incidental findings, while on the other hand, polyps are the sole etiology of clinical attention. With precise clinical, endoscopic, and histopathological correlation, one can differentiate between benign and malignant diseases. With proper screening and surveillance, early diagnosis could be made, and early definitive curative treatment can be offered [17,18]. This study aims to determine the clinical, endoscopic, and histopathological features of different gastrointestinal polyps.

This study will help us understand the nature of polyps present in our population. It will also determine the frequency of adenomatous polyps, which are a precursor of malignancy. So, this study will help gastroenterologists in the future to optimize the screening and surveillance programs for polyps to offer early curative treatment options to patients.

METHODOLOGY

This prospective observational study was conducted at the National Institute of Liver and GI Diseases (NILGID) in the endoscopy unit of Dow University Hospital Karachi. The study duration was 12 months, from October 2020 to September 2021, after IRB approval (no. 1765). The sample was collected through a convenient sampling method. By using NCSS-PASS version 11 software, test for one sample proportions with 95% confidence interval, 80% power of the test, 5% margin of error, polyps found in the most common site, i.e., colorectal region (78.43%) calculated sample size was 148 as the available, total estimated population size of 200 polyp patients within one year and due to COVID-19 pandemic using finite population correction (FPC) factor [19].

The calculated sample size was 200 in one year study period, but due to the COVID-19 pandemic, the sample size was adjusted to 148. All patients who had endoscopic findings of polyps were included, irrespective of the location of the polyp

Diagnosed cases of gastrointestinal tract malignancy or who refused biopsy/ polypectomy were excluded from the study. All the patients who underwent the endoscopic procedures (gastroscopy, enteroscopy, and colonoscopy) at NILGID and were found to have a polyp were enrolled in the study after taking informed consent. The patient's detailed clinical history was taken and recorded in the given proforma. Endoscopic features (size, site, number) of polyps were also noted, and then the histopathology of these polyps was also documented.

After data collection, it was analyzed using statistical analyzing software SPSS version 22. Quantitative variables like age, number, and size of polyps were taken as Mean±SD. Qualitative variables, including gender, symptomatology, endoscopic site of a polyp and histopathological diagnoses, were expressed as frequency and percentages. After that, associations of clinical, endoscopic and microscopic characteristics of polyps were assessed using mean comparison analysis (t-test) and Chi-Square/ Fisher's exact test. $p<0.05$ was kept significant. The research protocol was in accordance with the ethical guidelines of Dow University of Health Sciences.

RESULTS

A total of 149 patients were recruited for analysis, of which 46 (30.8%) had adenomatous polyps, 103 (69.12%) had non-adenomatous polyps while 104 (69.8%) had a single polyp, and the rest had 2 or more than 2 polyps. Table-I describes the factors associated with the type of polyps (adenomatous vs non-adenomatous). These factors include demographic features, presenting complaints, and characteristics of polyps. The most common presenting symptoms for performing endoscopy were abdominal pain in 67(45.0%) participants, followed by bleeding per rectum in 57 (38.3%).

The mean age of patients was 44.83±18.77 years, significantly higher in adenomatous polyps than with non-adenomatous polyps (51.02±15.66 vs 42.07±19.44 years, p-value=0.007). Significantly higher proportions of adenomatous polyps were located in colon 36 (78.3%) and rectum 10 (21.7%) with p-value<0.001.

Figure-I describes the endoscopic appearance of polyps in various sites. Around 265 polyps were identified endoscopically in 149 patients. Endoscopic appearances of 139 polyps were sessile, 68 were pedunculated, 32 were flat, and 26 were flatly elevated. Polyp size was measured using biopsy forceps.

Figure-II describes the histopathology results of all polyps in all endoscopic locations. The most common histopathological findings were adenomatous polyps, followed by hyperplastic and inflammatory polyps. Only 3 of the 46 adenomas had high-grade dysplasia (not shown in the figure).

Table-I: Associated factor with the type of polyp (N=149).

Characteristics		Adenomatous n=46(%)	Non-adenomatous n=103(%)	Total n=149(%)	p-value
Age (years)	Mean ± SD	51.02 ± 15.66	42.07 ± 19.44	44.83± 18.77	0.007*
Gender	Male	28 (60.9)	56 (54.4)	84(56.4)	0.461
	Female	18 (39.1)	47 (45.6)	65(43.6)	
Presenting complaint	Bleeding per rectum	15 (32.6)	42 (40.8)	57(38.3)	0.343
	Melena	5 (10.9)	14 (13.6)	19(12.8)	0.645
	Anemia	10 (21.7)	10 (9.7)	20(13.4)	0.047
	Weight loss	22 (47.8)	24 (23.3)	46(30.9)	0.003
	Chronic diarrhea	8 (17.4)	15 (14.6)	23(15.4)	0.659
	Abdominal pain	18 (39.1)	49 (47.6)	67(45.0)	0.339
	Constipation	12 (26.1)	25 (24.3)	37(24.8)	0.813
Family history of Adenoma/ Malignancy	Yes	8 (17.4)	4 (3.9)	12(8.1)	0.009
	No	38 (82.6)	99 (96.1)	137(91.9)	
Number of polyps	Single polyp	29 (63.0)	75 (72.8)	104(69.8)	0.230
	Two or more polyp	17 (36.9)	28 (27.2)	45(30.2)	
Polyp size	<5mm	19 (41.3)	44 (42.75)	63(42.3)	0.967
	5-10mm	18 (39.1)	38 (36.9)	56(37.6)	
	11- ≥20mm	9 (19.5)	21 (20.3)	30(20.1)	
Site of polyp	Stomach /Esophagus/ Duodenum	0 (0.0)	23 (22.3)	23(15.4)	≤0.001
	Colon	36 (78.3)	39 (38.7)	75(50.3)	
	Rectum	10 (21.7)	41 (39.8)	51(34.2)	

*p-value calculated using independent t-test
p-value calculated using Chi-Square/Fisher's exact test.

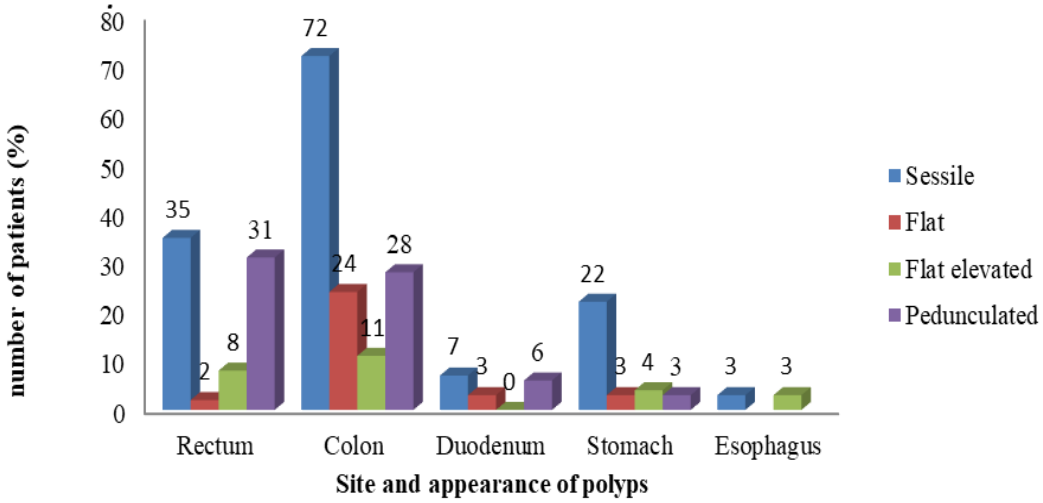

Figure-I: Endoscopic location and appearance of polyps.

In the esophagus, out of 6 polyps, 3 were sessile, and 3 were flat elevated (Figure-I); however, histopathology showed that none is adenomatous/ premalignant in nature (Figure-II). In the stomach, the majority of polyps were sessile (Figure 1), while histopathology showed that most of them were hamartomatous and inflammatory in nature, and none were adenomatous (Figure-II). Similar findings were observed for duodenal polyps (Figure-I and II).

Figure-III describes the endoscopic appearance (size, type) of all the adenomatous polyps. All 46 were in the colorectal region. Ten patients had adenomas in the rectum, 09 in the sigmoid, 08 in descending colon, 7 in the transverse colon,

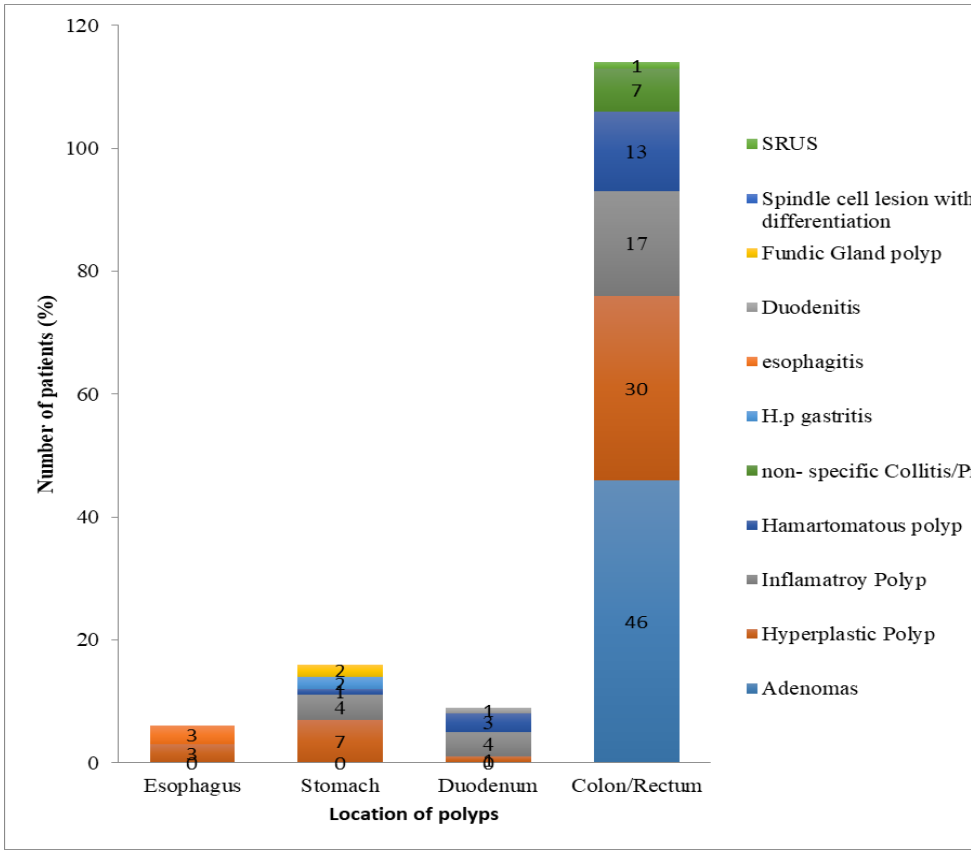

Figure-II: Histopathology of polyps according to location.

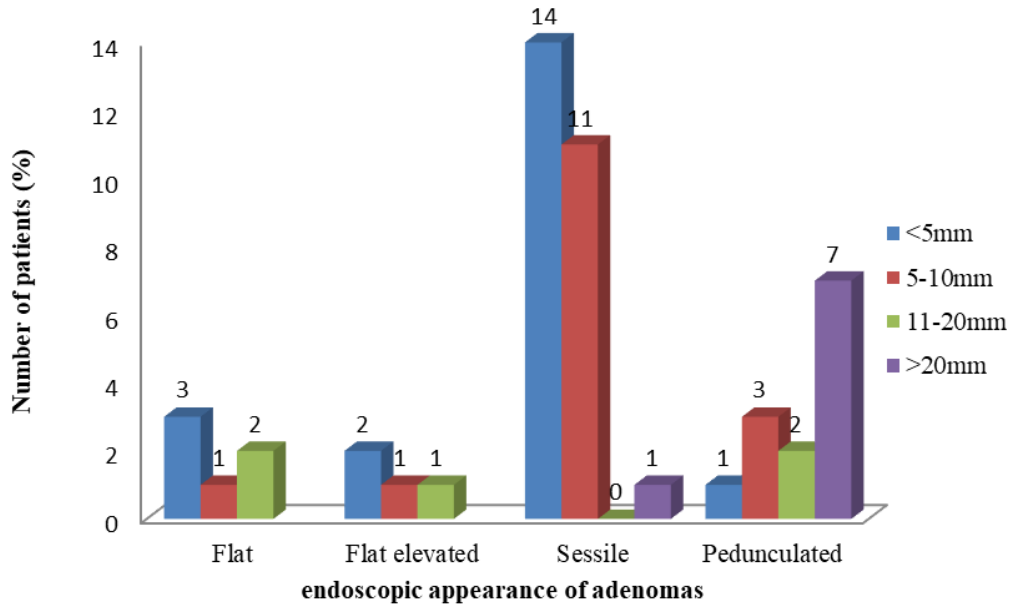

Figure-III: Endoscopic appearance of colonic adenomas.

08 in the ascending colon, and 04 patients had adenomas in the cecum. Adenomatous polyp sizes ranged from <5 mm to >20 mm, with all the endoscopic appearances observed.

DISCUSSION

There are many studies done worldwide defining the frequency of polyps in specific populations and the risk of malignancy in someone harboring any of these polyps. But very few studies have been done in Pakistan [19]. Our study found the predominant type is adenomas which are around 30.87%, however, previous studies showed that juvenile polyps are a predominant variety. The increase seen in the adenoma variety of polyps in our population can be attributed to multiple factors, but 2 most important is access to health care services results in increased detection/diagnosis of diseases at early stages. Adoption of Western lifestyle and diet results in diseases that are more common in the West.

The percentage of adenoma variety of polyps in our study is still less than what is reported in the Western world [20]. This may be because we did not screen the general population but included only those patients who underwent colonoscopy for various reasons, so the actual number of adenomas in our society may be much higher.

Gastric polyps are found incidentally in approximately 6% of upper GI endoscopies performed for various reasons [21] in areas where H. Pylori infection is prevalent. The common histological type is hyperplastic polyps [22], where, as in areas where H. pylori infection is lower, the most common polyp is proton pump inhibitor-induced fundic gland polyps [23]. In our study, 6 were hyperplastic polyps and 5 were inflammatory polyps, and only 2 were fundic gland polyps which are consistent with the fact that we are living in an area where H. Pylori prevalence is high [24].

Duodenal polyps can occur in 2 different settings: familial adenomatous polyposis syndrome and sporadic polyps [25]. Sporadic duodenal polyps are usually found incidentally during an upper endoscopy. Incidental duodenal polyps are found in 1-4% of patients who have an endoscopy [25]. Most duodenal polyps are asymptomatic but have malignant potential, so they should be treated/removed once identified. In our study, only 6 (4%) patients out of 149 had duodenal polyps, and most of these polyps were inflammatory polyps, and none of these were adenomas.

Our study demonstrated that there was a statistically significant difference in the presence of alarm features, including anemia and weight loss, old age, positive family history of polyps/malignancy and endoscopic location in the adenomatous v/s non-adenomatous group of polyps. So, in countries like Pakistan, where healthcare facilities are limited, strong emphasis should be given to such groups of patients for screening and surveillance colonoscopy to detect these lesions at an early stage before the development of colorectal carcinoma.

CONCLUSION

Upper GI tract polyps are mostly benign. Patients with adenomatous polyps are older, anemic at presentation, with a positive family history of colorectal polyps, and mostly found in colorectum.

LIMITATIONS: This study was limited by being a single-center study with a lack of multivariate analysis, so there is a possible lack of generalizability to other centers. We also relied only on white light endoscopy to describe the morphology of the polyp. We did not use chromo endoscopy or narrow band imaging to describe the pit pattern, which may better predict the histology and risk of cancer in a given polyp. Another limiting factor of this study is that it is a cross-sectional study, so we cannot define the recurrence of polyps, and neither the genetic evaluation of the polyps was done.

RECOMMENDATIONS: Similar large-scale population-based and multicenter studies are needed to screen the general population, which can truly reflect the country's data. This will enable stakeholders to formulate national guidelines for screening and surveillance of the high-risk population.

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Sabhita Shabir Shaikh: Substantial contributions to the conception or design of the work, acquisition, analysis, or interpretation of data for the work.
Hafeezullah Shaikh: Drafting the work.
Syed Ahsan Ali: Interpretation of data for the work.
Rahila Khalid: Drafting the work or reviewing it critically for important intellectual content
Alveena Shabbir: Drafting the work or reviewing it critically for important intellectual content
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