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Original Research Article

Histomorphological Analysis of Polyps of Gastrointestinal Tract- A Retrospective Study from A Tertiary Care Centre

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Abstract

Introduction: Polyps are more common in colorectal region of total gastrointestinal (GI)tracts. Even though most of the polyps are benign, neoplastic polyps derives significant attention. Understanding the prevalence, distribution and morphological types will improve the screening and treatment strategy. Aim of this study is to analyse the polyp specimens that were presented in our Institute.

Materials and Methods: This is a retrospective study done in our Institute between January 2022 to December 2022. The study included the polyps and polypoidal lesions of gastrointestinal tract either received as biopsy, polypectomy, or resected specimens. Ulcers and frank malignant lesions were excluded from the study.

Results: Total number of GI specimens received in the study period were 2541, among them 131 were polyp specimens and that were taken into analysis. Median age of the study population was 56 (range 16-98 years), commonest decade was 5th decade. Males has more prevalence than females (ratio 1.75:1). Large intestine was the common site for polyps and serrated lesions were more common morphological type. Most of the serrated and adenomatous polyps were associated with dysplasia. Malignant polyps were squamous cell carcinoma, adeno carcinoma and Lymphoma. Intestinal polyposis noted in few cases.

Conclusion: Polyps are increasing in their incidence. Colorectum was the common region involved. Now serrated lesion were more commonly noted and they were almost associated with dysplasia.

Keywords: Gastrointestinal Tract, Intestinal polyposis, Adenomatous polyps, Carcinoma.

Introduction

Colorectal cancer is one of the leading causes of cancer death worldwide. It represents the 4th and 3rd most common cancer among men and women. [1] A polyp is a mass projecting above the mucosa and protrudes in to the lumen of the gut and they become the precursor of malignancy in many occasions. GI polyps are more common in the middle age group. Prevalence of gastric polyp is 6% of all upper GI procedures (2),10% in sigmoidoscopy and more than 25% in colonoscopic procedures, and prevalence of colorectal cancer among these patients is less than 1% [3].

Polyps may be neoplastic or nonneoplastic in morphology. Conventionally adenoma has been recognised as a precursor for carcinoma, but recently it is identified that at least 20% of colorectal carcinoma arise

from serrated polyps [4-5]. Morphological spectrum of serrated polyps ranges from only superficial serrations to those with exaggerated serrated architecture and to frank dysplasia.

Hence approaching the examination of polyps with new criteria will improve the diagnostic and therapeutic strategies. We aimed to present the morphological distribution of GI polyps in this study.

Methods and Materials

This is a retrospective analysis of GI polyps done at Madras Medical college and the data were collected for year of January 2022 to December 2022. The study includes all the polyp and polypoidal lesion of GI tract. The specimen taken for analysis were small biopsy, polypectomy, excision biopsy and the resected specimen of polyp and polypoidal lesions. Ulcerated lesions and frank malignancies were excluded from the study.

All the specimens were collected along with clinical details including age and sex of the patient, clinical presentation and site, size, nature of polyp, type of biopsy of the specimen. These specimens were fixed using 10% neutral buffered formalin and then processed for histopathological studies using Hematoxylin and Eosin stains.

Results

Total number of pathological specimens received in our Institute during the year 2022 were 12297.Among them 2541 were GI specimens. Totally we received 131 polyp specimens and they were taken for analysis. Median age of patients was 56 years, range from 16 to 98 years. 5th decade was commonly involved. Males have more prevalence than females with ratio of 1.75:1. Patient and polyp characteristics were given in the Table 1.

The distribution and the histomorphology of the polyps in the individual sites are given below.

Oesophagus

Only two polyps were detected in the Oesophagus. One was well differentiated squamous cell carcinoma and another one was fibroepithelial polyp. The distribution of polyps of GI tract are given in Table 2.

Stomach

Totally 29 polyps were reported in stomach. Median age was 56 years (range from 18-75years). Males were more commonly except in the body of stomach where females are more affected than males. Abdominal pain and dyspepsia were the common symptoms. Commonest site was antrum. Mostly all are sessile polyps and multiple polyps were seen in 7 cases. Hyperplastic polyps (Figure.3) were the commonest morphological type (48.27%). Fundic polyps (Figure. 2) were not common in our study. Two cases, one in antrum and one in fundus region were associated with high grade dysplasia. Distribution of polyps of stomach is given in the Table. 3.

Small intestine

Total number of polyps identified in small bowel were 15. Duodenum was the commonly involved site and prominent histomorphology was inflammatory polyp (n=7). The distribution of polyps in small intestine is given in Table 4. Four cases were adenomatous polyps (Figure. 1) and one case was serrated lesion and all are associated with dysplasia. On case was neuroendocrine carcinoid polyp. One case with submucous lipoma was identified. Multiple polyposis was seen in 2 cases.

Large intestine

Large intestine polyps are the major component of this study (n=81). Median age was 56 (range from 16- 78 years). Males were more involved with male to female ratio 1.89:1. Distribution of polyps in the right and left colon is given in Table 5. Left colon was more involved than right colon (41 vs 31 cases). Rectum was the commonly involved site (n=26). Anal

polyps were 7 in number. Commonest histo-morphological subtype was serrated lesion (Figure. 5) (n=31), and 93.5% are associated with dysplasia [low grade (n=18), high grade (n=11)]. Next common was adenomatous polyp (n=9), more in the rectum, all were associated with high grade dysplasia. Traditional serrated adenomas (Figure. 6) were seen in 5 patients among them 3 were associated with dysplasia. Malignant polyps were seen in 2 cases, one was adenocarcinoma of rectum and another one was lymphomatous polyp (NHL) of ascending colon. Peutz jeghers polyposis (Figure. 4) were seen in 2 cases one at descending colon and splenic flexure, both were 18 years old male patients. Histomorphology of polyps of large intestine are given in the Table.6.

Table 1: Patient and polyp characteristics

Patient And Polyp Characteristics					
Characters	N	%	Characters	N	%
Age			**Size**		
Median Age	55 Years		<1 Cm	106	80.93
Range	16-98 Yrs		1-2 Cm	16	12.21
Decade	5th		2-3 Cm	4	3.05
Sex			3-4 Cm	3	2.29
Male	84	64.12	4-5 Cm	1	0.76
Female	47	35.88	>5 Cm	1	0.76
Ratio	1.78 :1		**Multiple Polyps**		
Presenting Complaints			Present	39	29.78
Bleeding P/R	29	22.13	Absent	92	70.22
Mucous Discharge	6	4.5	**Associated Dysplasia**		
Obstruction	7	5.3	Present	53	40.45
Abdominal Pain	35	26.71	Absent	78	59.55
Anemia	4	3.05	**Grade Of Dysplasia**		
Fecal Incontinence	1	0.76	Low Grade	25	19.08
Abdominal Distension	1	0.76	High Grade	28	21.37
Altered Bowel Habit	14	10.68	**Associated Malignancy**		
Dyspepsia	13	9.92	Present	4	3.05%
Screening	2	1.52	Absent	127	96.94
Diarrhea	14	10.68	**Histomorphological Type**		
Dysphagia	4	3.05	Hyperplastic Polyp	24	18.32
Jaundice	1	0.76	Inflammatory Polyp	33	25.19
Site			Fibroepithelial Polyp	2	1.52
Esophagus	2	1.50	Malignant Polyp	4	3.05
Stomach	31	23.55	Juvenile Polyposis	1	0.76
Small Intestine	15	11.40	Pj Polyp	2	1.52
Colon	50	38.10	Fundic Gland Polyp	1	0.76
Rectum	26	19.80	Adenomatous	16	12.21
Anal Canal	7	5.30	Serrated Lesion	34	25.95
Nature Of Polyp			Traditional Serrated Adenoma	5	3.81
Sessile	113	86.20	Submucosal Lipoma	2	1.52
Pedunculated	17	12.90	Chronic Reactive Colitis	1	0.76
Both	1	0.76	Neuroendocrine Tumor	4	3.05
Type Of Biopsy			Pga Polyp	1	0.76
Small	106	80.90	Ganglioneuromatous	1	0.76

Polypectomy	14	10.60			
Excision	6	4.50			
Hemorrhoidectomy	1	70.00			
Colectomy	4	3.00			

Table 2: Distribution of polyps of GI tract

	Esophagus	stomach	Small intestine	Large intestine
No. of cases (%)	2 (1.5%)	31(26.5%)	15 (12.2%)	83 (59.5%)
Age range (Mean) in years	62 & 76 years	18 to 75 (56)	24 to 98 (47)	16 to 78 (56)
Male:Female ratio	2:0	2.5:1	1.14:1	1.89:1
Commonest site	Lower end	Antrum	Duodenum	Left colon
Commonest Type	Hyperplastic & Carcinoma	Hyperplastic Polyp	Hyperplastic polyp	Adenomatous polyp

Table 3: Distribution of polyps in stomach

Polyps In Stomach	**Number Of Cases**
Hyperplastic Polyps	14
Fundic Polyps	1
Inflammatory Polyps	9
Neuroendocrine Polyp	1
Serrated Polyps	1
Total	29

Table 4: Distribution of polyps of small intestine

Polyps In Stomach	**Number Of Cases**
Hyperplastic polyp	1
Inflammatory polyp	7
Neuroendocrine polyp	1
Adenomatous polyp	3
Serrated lesion	1
Sub mucous lipoma	1
Total	15

Table 5: Distribution of polyps in right and left colon

Right Colon		**Left Colon**		**Others**	
Caecum	6	Splenic Flexure	4	Anal Canal	7
Ascending Colon	12	Descending Colon	4		
Hepatic Flexure	4	Sigmoid Colon	7		
Transverse Colon	9	Rectum	26		
Total	**31**	**Total**	**41**		

Table.6: Histomorphology of polyps of large intestine

Polyps of large intestine	**Number**
Hyperplastic polyps	6
Inflammatory polyps	15
Hamartomatous polyps (Peutz jeghers polyp, Juvenile polyp)	3
Adenomatous polyps	12
Mesenchymal polyps a Lipomatous polyps b Fibroepithelial polyp	4 1 2

c. Ganglioneuromatous	1
Malignancies: a. Adenocarcinoma b NHL	3 1 2
Chronic reactive colitis	1
Familial adenomatous polyposis	1
Serrated lesions	31
Traditional serrated adenoma	5
Total	**81**

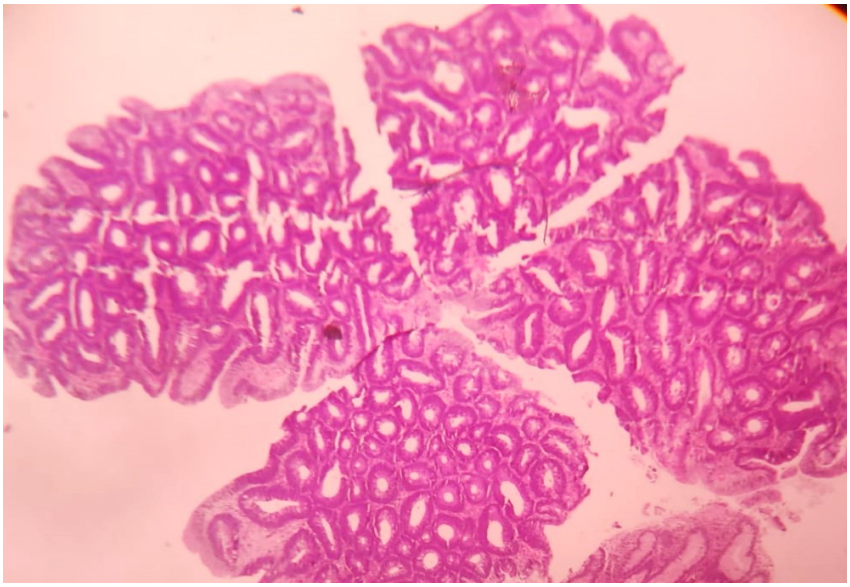

Figure 1: Adenomatous polyp shows closely packed glands with nuclei exhibiting high grade dysplasia

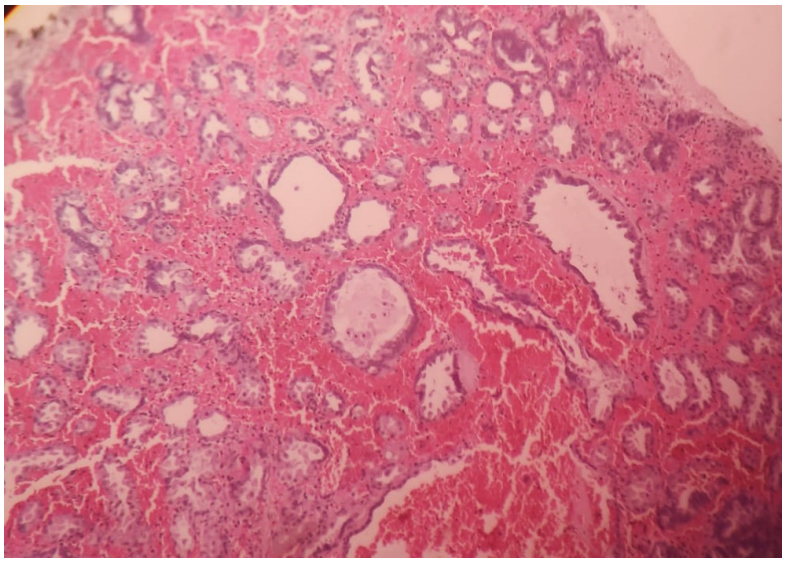

Figure 2: Fundic gland polyp

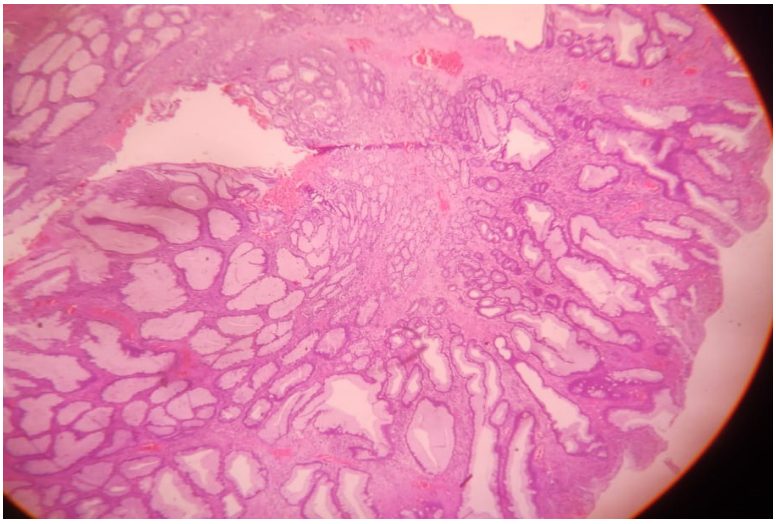

Figure 3: Hyperplastic polyp

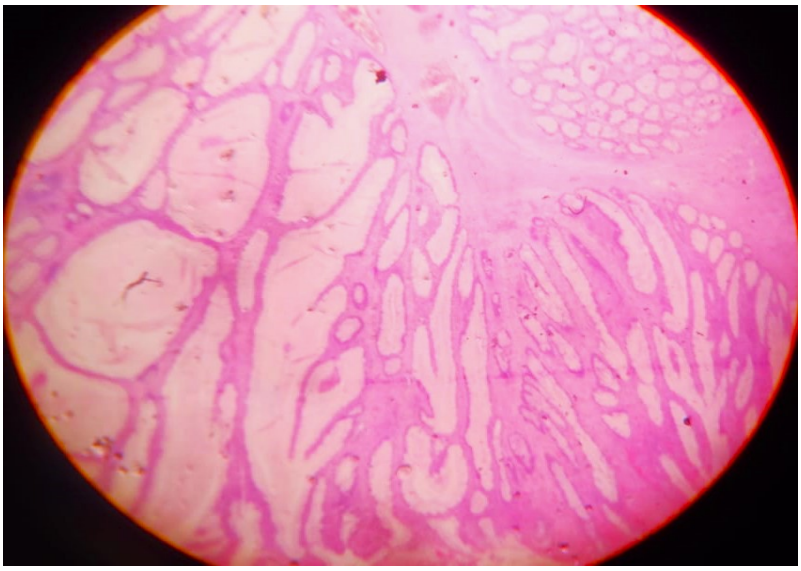

Figure 4: Peutz jeghers polyp

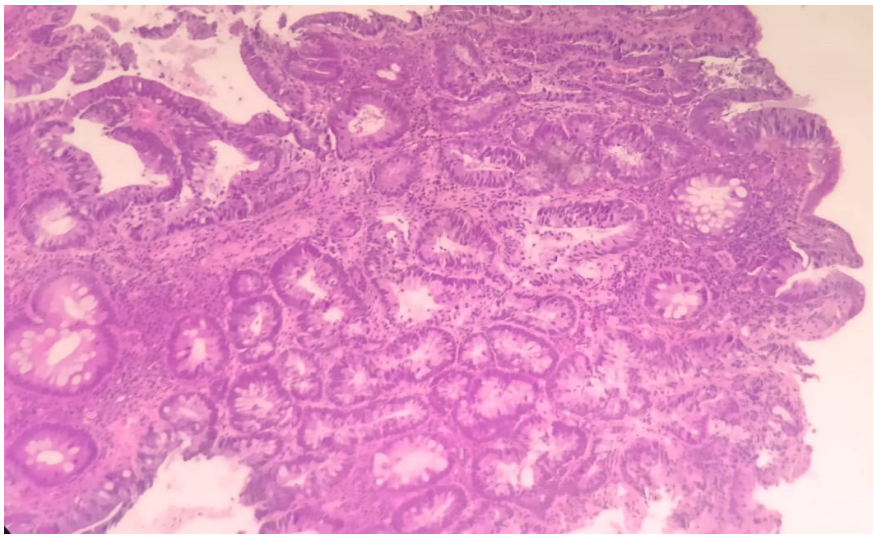

Figure 5: serrated lesion with low grade dysplasia

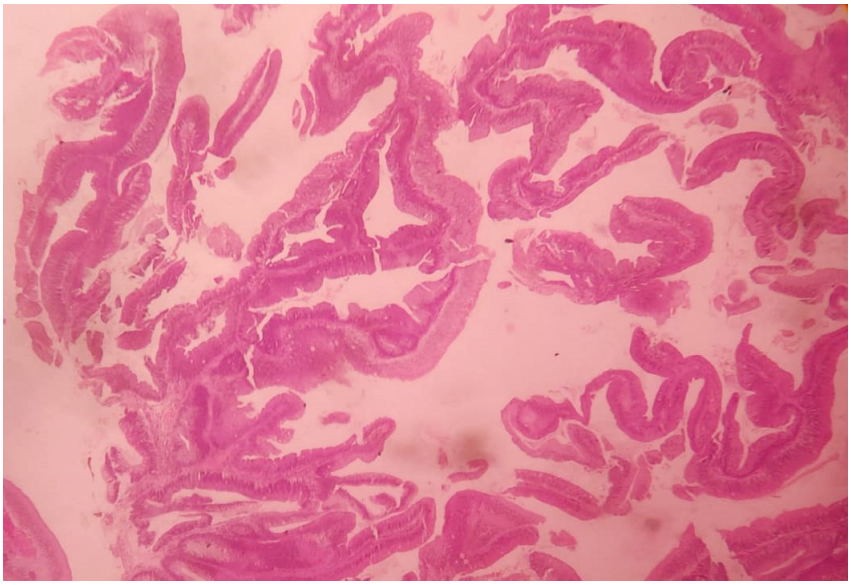

Figure 6. Traditional serrated adenoma

Discussion

Polyps of the GI tract have varying incidence depends on the site of the tract. But incidence of Gastric polyp is increasing due to Helicobacter Pylori infection and Proton pump inhibitor usage. The prevalence of polyp in our study is 5.1 correlated with other studies done. Median age of the patients presented with polyp was 56 years, it is similar to the study done by Amarkumar et al [6] and Wickramasinghe DP et al at Sri Lanka. [7] Most of the patients had single polyp(n=92). Multiple polyps were seen in 39 patients. Most common site was large intestine (n=81)63.2%, followed by stomach (n=31)23.55%, small intestine (n=15)11.40%, oesophagus(n=2)1.50%. Polyps are rare in oesophagus and associated with malignancy. Our study shows one malignant polyp (squamous cell carcinoma) out of two.

Polyps of stomach constitutes 23.5%, it is almost close to the previous study done by Shanthi et al at our Institute [8]. Age group ranges from 18 to 75 years with median age of 56 years, Males were more common. Antrum was the most common site. Hyperplastic polyps were the most common polyps in stomach. In western world Fundic gland polyp incidence is more which is not appreciated here.one serrated polyp was noted in stomach which was associated with high grade dysplasia. Neuroendocrine polyp are more commonly noted in stomach than other region of GI tract. No malignant polyp was seen in stomach.

Regarding small intestine polyps, duodenum is the commonest site, which constitutes 73.5% of all small bowel polyp. Inflammatory polyp was the common type identified in our study which differs from the previous study done by Shanthi et al at our Institution 10 years before where hyperplastic polyp was more common. Adenomatous polyp was also noted in 26.6% of Small intestine polyp associated with dysplasia and one serrated polyp associated with dysplasia. Serrated polyps were not reported in the previous studies done at our Institution 8 to 10 years back. One Neuroendocrine polyp was noted and no malignant polyps noted in small intestine.

Large intestine harbour 63.2% of GI polyps with age range from 16 to 78 years, median age 56 years with male predominance. Left sided colonic polyps are more in number than in right side colon; Rectum was the most common site (32% of all large intestine polyp).

Serrated lesions are most (n=5) common type of polyp noted in large bowel (38.2%, n=32), Adenomatous polyp (n=13), Traditional serrated adenoma (n=5). Others are inflammatory, hyperplastic polyp, fibroepithelial, chronic active colitis, submucosal lipoma. Multiple polyposis cases were seen with familial adenomatous polyposis, ganglio-neuromatous polyposis, Peutz jeghers syndrome and Juvenile polyposis syndrome.

Specific entity

Serrated lesions were noted in 33 cases of GI tract, one in duodenum all other in large intestine. Age ranges from 25 to 87 years with median age of 56 years. Males were more common. Serrated lesions morphologically range from only superficial serration to those with exaggerated serrated architecture and to advanced dysplasia [9,10]. Sessile serrated pathway is the one recently recognised as premalignant mechanism in addition with conventional adenoma carcinoma sequence. Recently histological classification of serrated polyps defined by WHO in the 5th edition of the classification of tumours of Digestive system. It includes microvascular hyperplastic polyp, Goblet cell hyperplastic polyp, sessile serrated polyp, sessile serrated polyp with dysplasia, Traditional serrated adenoma, and serrated adenoma unclassified [11]. Almost all serrated lesions are associated with dysplasia in our study, low grade in 56% and high grade in 36%.

Conclusion

Incidence of polyps is increasing globally, colorectal polyps predominantly seen in Gastrointestinal tract, apart from adenomatous polyps with dysplasia, serrated lesion with dysplasia are increasingly seen and noted with significance.

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