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Original Research Article

Colonoscopic and histopathological assessment of colorectal polyps among north Indian population

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ABSTRACT

Background: Colonic polyps are the abnormal growths from the colonic mucosa, usually benign but there is a definite though a small risk for cancerous transformation. Scarce data about this condition is available from Northern India. In this study we aimed to determine the prevalence of colonic polyps in patients undergoing colonoscopy for various health indications. In addition, we studied the various characteristics of these polyps including the histological classification
Methods: In this observational cross-sectional study we included adult patients (≥18 years) who underwent colonoscopy from July 2016 to June 2018 at a tertiary care hospital setting in New Delhi, India. The socio-demographic variables were ascertained for all patients. Data about indication of colonoscopy, the findings on colonoscopy, finding regarding the colonic polyps (type, number, size, location and histological type) was collected.
Results: We found a total of 246 patients to have colonic polyps and total number of polyps found was 369.The median age of the patients was 56 years (IQR 44-68). Majority of the patients with polyps (74.8%) were males. Polyps were most commonly seen in left colon (35.36%). Histologically, most common type was adenomatous polyps 58.9% (Tubular adenoma in 44% and tubule-villous adenoma in 8%). Hyperplastic polyps were noted in 22% followed by inflammatory polyps in 14% polyps. Adenocarcinoma was reported in 2 polyps (0.8%).
Conclusions: Prevalence of colorectal polyps in our study is lower compared to most of the western countries. On histology majority of polyps were adenomatous.

Keywords: Colorectal polyps, Colonoscopy, Adenomatous, Dysplasia, Screening

INTRODUCTION

A colonic polyp is a discrete mass of tissue that protrudes into the lumen of the colon. Colon polyps are mostly detected on screening in asymptomatic patients though they can present with rectal bleeding, anemia and tenesmus. But the most crucial outcome of the colonic polyps which bothers the health care provider and the patient is their potential to transform into colorectal cancer (CRC). In fact, adenoma-carcinoma sequence is responsible for development of more than 95% of colorectal cancers.[1]

Adenoma-carcinoma has been seen to grow as a uniform progression from normal mucosa to adenoma and to carcinoma through an underlying carcinogenic pathway.[2,3] CRC accounts for more than half of all gastrointestinal (GI) cancers in the USA, and is one of the leading causes of gastrointestinal mortality. Adenomatous polyps, including conventional adenomas and sessile serrated adenomas (SSAs), are recognized as important precursors to the majority of the CRCs. The three major features seen to correlate with malignant potential of an adenomatous polyp are size, histologic type, and the degree of dysplasia.[4]

Studies have estimated that around more than one fourth of the Western population has colonic polyps, but a lower rate (10% to 15%) is reported for Asians as well as for the Africans.[5,6] Very scarce data is available from India on the frequency and spectrum of polyps. Hence, we felt a need to the study current trend of the colonic polyps in our place.

METHODS

The study was conducted in the department of gastroenterology, Indraprastha Apollo hospitals, Sarita Vihar New Delhi, India. It was an observational cross-sectional study. Patients undergoing colonoscopy in the department of gastroenterology at the Indraprastha Apollo hospitals, New Delhi, India from July 2016 to June 2018 were studied. Informed consent was obtained from all the participants. This study protocol was conducted in accordance with the provisions of the declaration of Helsinki and was approved by the institutional review board.

Total of 2948 patients underwent colonoscopy during the study period. 574 patients were excluded as per the pre-defined exclusion criteria such as age <18 years, known colorectal cancer (fresh or on surveillance), IBD, Hereditary polyposis syndromes, family history of colorectal cancer. The 2374 patients were included in study.

The socio-demographic variables which included patient's age, gender, and residence were ascertained for all patients. Data about indication of colonoscopy, the findings on colonoscopy, finding regarding the colonic polyps (type, number, size, location and histological type) was collected. Colorectal polyps when detected were measured by visual estimation and comparing with open biopsy forceps diameter which is around 5 mm. Biopsy forceps used was Endo jaw from Olympus. After estimation of size, polyps were removed with biopsy forceps or by polypectomy depending on the size of polyp. Resected polyps underwent histopathological examination and based on which prevalence of each histological type of polyps was assessed and recorded.

Statistical analysis

The data was entered and tabulated in Microsoft excel sheet and analyzed for various variables including age distribution, sex distribution and distribution of various characteristics of the polyps (type, number, size, location and histopathology of the polyps). All the results were analyzed using statistical package for the social sciences (SPSS) version 20 software All continuous data was described in terms of mean and standard deviation (SD). Prevalence of colorectal polyps was calculated. Chi square test was used to assess the relationships between categorical variables. P value of <0.05 was taken as statistically significant.

RESULTS

Total of 2372 patients were included in study. There were 1567 (66%) males and 807 (34%) females. A total of 246 patients were found to have polyps. Prevalence of polyps on colonoscopy was found to be 10.6% (Table 1). There was a significant difference (p=0.002) in occurrence of polyps between males (13.6%) and females (7.6%). Total number of polyps seen in 246 patients was 369, maximum number of polyps seen were 8 in single patient. We found that inflammatory polyps are common in younger age group while adenomatous polyps are common in older age group (Table 2).

Table 1: Sociodemographic profile of the study participants.

Variables	N	Percentage (%)
Age group (years)		
40	50	20.3
41-60	95	38.6
≥61	101	41.1
Total	246	100.0
Residence		
Rural	156	63.4
Urban	90	36.6
Total	246	100

Table 2: Age distribution of various types of polyps.

Variables (Years)	All polyps, (n=246)	Adenomatous polyps, (n=145)	Hyperplastic polyp, (n=54)	Inflam-matory polyps, (n=34)
Mean age	54.83	59.43	53.81	42.91
Median age	56	61	53	43.00
Interquartile IQR	44-68	49-69	43-66.5	27.75-54.25

Indications of colonoscopy

Constipation was the most common indication (21%) and among patients with polyps' most common indication was found to be per rectal bleeding (23%) followed by constipation (Figure 1).

Characteristics of the polyps

Most of the patients had single polyp (73.6%) and most of the polyps seen were of size less than 10 mm. Left colon was the most common site (35.36%) followed by rectum (26%) (Table 3).

Histological types of polyps

Polyps were broadly classified into adenomatous and non-adenomatous as per histology. Adenomatous polyps were more frequent (58.9%) as shown in Table 4.

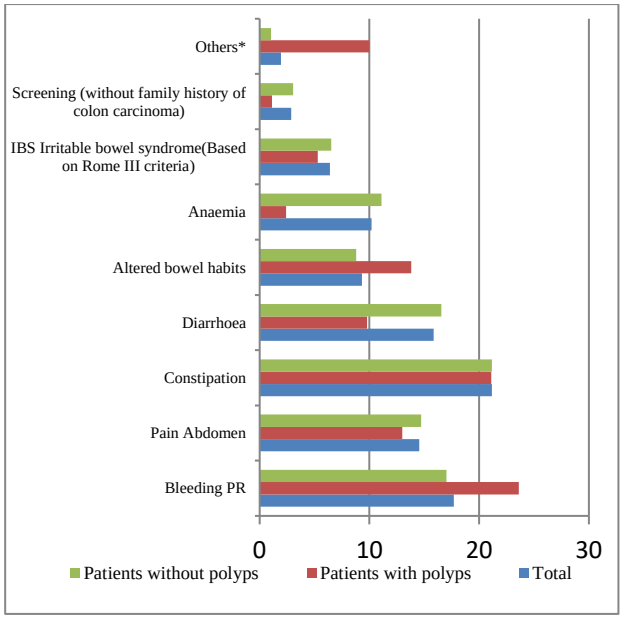

Figure 1: Distribution of participants according to the indication for colonoscopy.

P=0.021. *Others include less frequent indications like perianal abscess, weight loss, PUO (pyrexia of unknown origin), perianal pain.

Dysplasia

High grade dysplasia was found in 5.5% of adenomatous polyps, while no dysplasia was seen in non-adenomatous polyps. 40 % of villous adenoma had high grade dysplasia compared to only 4.1% of tubular adenomas (Table 5).

Diminutive polyps

We found that the most common histology of diminutive polyps was tubular followed by hyperplastic and inflammatory (Table 4).

Table 3: Distribution of characteristics of the polyps.

Variables	N	Percentages (%)
Number of polyps		
Single polyp	181	73.6
2	48	19.5
3-5	8	3.3
>5	9	3.7
Size of polyp (mm)		
<5	125	50.8
5-10	87	35.4
>10	34	13.8
Total	246	100.0
Site of polyp		
Right colon	37	15.04
Transverse colon	25	10.16
Left colon	87	35.36
Rectum	64	26.01
Multiple sites	33	13.41
Total	246	100

Table 4: Distribution of all patients with polyps on basis histopathology.

Variables	N	Percentages (%)
Histology of polyps, (n=246)		
Tubular adenoma	108	43.9
Tubulo-villious adenoma	20	8.1
Villous adenoma	5	2.0
Hyperplastic	54	22.0
Inflammatory	34	13.8
Others	8	3.3
Malignant (Adenocarcinoma)	2	0.8
Multiple polyps with different histology	15	6.1
Total	246	100
Histology of multiple polyps having different histopathology, cases of multiple polyps with mixed histology		
Tubular adenoma and tubule-villous	4	26.7
Tubular adenoma and hyperplastic	1	6.6
Tubular adenoma and inflammatory	3	20
Tubular adenoma and lipoma	4	26.6
Hyperplastic with inflammatory	1	6.6
Inflammatory and colitis	2	13.3
Total	15	100
Histology of diminutive polyps		
Tubular adenoma	61	48.8
Tubulo-villious	6	4.8
Villous	0	0
Hyperplastic	28	22.4
Inflammatory	22	17.6
*Others	6	4.8
Malignant (Adenocarcinoma)	0	0
Multiple polyps with different histology	2	1.6
Total	125	100.0

*Others: Tubular adenoma with hyperplastic polyp, tubular adenoma with mucosal polyp, tubular adenoma with lipoma.

Table 5: Dysplasia among subtypes of adenomatous polyps.

Type of adenoma	Dysplasia, N (%)		Total	P value
	Low grade	High grade		
Tubular adenoma	115 (95.8)	5 (4.1)	120	<0.001
Tubulo-villous	19 (95)	1 (5)	20	
Villous	3 (60)	2 (40)	5	
Total	137 (94.4)	8 (5.51)	145	

DISCUSSION

Colonic polyps are a frequent finding during colonoscopy for various indications; however limited data is available from India regarding the location and types of polyps detected during routine colonoscopy. In our study, polyps were about three times more common in men and were incidental findings in 10.3% of the total number of patients undergoing colonoscopy. Bhargava and Chopra reported a much lower prevalence of incidental colonic polyps of 2%.[7] A study from Kerala, India noted incidental polyps in 124 (5.1%) of 2412 colonoscopies.[8] The different results in these studies as compared to ours may be because of differences in the study population in terms of in terms of age, gender and ethnicity.

Polyps in our study were uncommon below 40 years; the median age being 56 years. In Amarapurkar's series the median age with colorectal polyps was 54.8 years.[9] Kumar et al found polyps in relatively young patients. [10] Amarapurkar et al found a total of 52.4% polyps were adenomatous in their study about the histo-morphological features of colorectal polyps in adults.[9] The authors also found a significant prevalence of high-grade dysplasia of 14% in their series. Another recent study by Jain et al found 290 (12.7%) of 2303 patients who underwent colonoscopy had colonic polyps. These studies found similar results as our study in terms of age distribution and common types of polyps and site of polyp.[11]

Similar to the study done by Jain et al we also found a male preponderance among adenomatous polyp with most of the patients being more than 60 years of age.[11,12] The results from many studies highlight that the profile of colonic polyps differs from one region to another. Multiple factors such as ethnicity, environmental factors, and variations in pathology reporting play a role for this variability.

A study conducted in Denmark during 1986-1987 reported that adenomas were more frequent type (60%) among 305 examined polyps and similar findings have been found in other researches also.[13-15] Two recently published studies from India (Amarapurkar et al and Jain et al have shown proportion of adenomatous polyps as 52.4% and 49% respectively.[9,11] Studies conducted from elsewhere in Asia have shown adenomas have accounted for 74% to 85% of polyps.[16,17] Findings from our study are almost consistent with other Indian studies.

Most common histological type of adenomatous polyp seen in our study was tubular (82%) followed by tubullovillous (13.7%) and villous (3.4%). Tubular adenoma has been found to be common histological type by various Asian and western studies. Although recent study by Amarapurkar et al from Mumbai showed only 45.9% of adenomatous polyps to be tubular but still the common type.[9] Our result was consistent with other Indian study from Bhargava et al which was an old study but was done in north India.[7] Our study was also consistent with western data in this regard.[18,19]

In our study HGD was seen in only 5.5% of patients and invasive carcinoma was found in only 2 polyps (0.4%). Amarapurkar et al reported prevalence of HGD as 14% and prevalence of cancer in 2.9% of polyps. The prevalence was higher than our study and reason may be that polyps of size more than 1 cm were higher in their study (34%) as compared to ours (13%).[9] Higher incidence of cancer (3.5%) was also found in Jain et al again due to possibly higher percentage of large polyps (54% polyps >1 cm).[11]

Approximately, 53.6% of diminutive polyps in our study were adenomatous quite comparable to the western studies where around 50% of such polyps have been found to be adenomatous.[20]

Should all incidental polyps found on colonoscopy be removed? We believe all polyps should have histological diagnosis. Based on our study, we propose that polypectomy (i.e., total removal) may not be strictly indicated for polyps <1 cm size located in the left colon especially polyps with favourable histology (non-adenomatous) seen on biopsy. For these polyps' strategy of close surveillance for any change in size can be opted and removal once size increases to more than 1 cm.

For adenomatous polyps <5 mm we may just follow them up provided endoscopically they are not depressed and don't harbour any dysplasia on histology. Endoscopic resection should be used for lesions >5 mm in size because the incidence of carcinoma is higher in these lesions and because it is often difficult to distinguish between benign adenomas and carcinomas by colonoscopy alone.

In comparison to the western countries Asia and India are considered as low incidence zones for colon cancer.[23] However, the incidence of CRC in Asia is predicted to increase by four folds in the coming decade.[21-27] However the literature is quite insufficient in India and other Asian countries, but recent studies have shown slight increase in prevalence of colorectal polyps in India.[9,11]

Limitations

It was a single centre hospital based study carried out mostly on symptomatic patients which may not represent majority of asymptomatic population. Lack of clinical and endoscopic follow up data prevents postulating definitive guidelines from the analysis.

CONCLUSION

Prevalence of colorectal polyps on colonoscopy is 10.3%. Most of these polyps are adenomatous, mostly tubular. Characteristics of adenomatous polyps more commonly associated with high grade dysplasia were size of polyp more than 10 mm, villous histology and age more than 60 years. The colorectal polyp prevalence is increasing in

India as also shown by recent studies but is still low as compared to western countries.

We feel a need to adopt strict colorectal cancer screening/surveillance program in India sooner than later. Multicentre studies, especially longitudinal across the Indian subcontinent are required to understand the natural history of adenomatous polyps in our population.

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