

Study on Influence of Patient Age and Colorectal Polyp Size on Histopathology Findings at a Tertiary Care Hospital

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ABSTRACT

Background: In many developed countries Colorectal cancer (CRC) is a major cause of morbidity and mortality. Globally, 8.9% of all cancers are regarded as CRC and is believed to be the third foremost cause of death due to cancer in men and women in the United States.

Subject and Methods: Total 167 patients with colonic polyps, diagnosed during colonoscopy were integrated in this study.

Results: In our study 167 polyps were analysed, 52.1 of which were females and 47.9 were males. Polyps were found to be solitary in 50.5% of cases. 70.6% were sessile and 29.4 % were pedunculated in terms of morphology.

Conclusion: Although there were evidences of adenomatous and villous components along with dysplasia in the polyps, patient age was more frequently associated with sessile polyps proximally located to the splenic flexure.

Keywords: Adenomas, Colorectal Cancer, Colorectal Polyps, Dysplasia.


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INTRODUCTION

A major cause of morbidity and mortality in many developed countries is believed to be colorectal cancer (CRC). Globally, 8.9% of all cancers is understood to be CRC and is the third leading cause of death due to cancer in men and women in the United States.^{1,2}

It is believed to be the fourth most common malignant neoplasm and the leading third cause of cancer mortality in India. A polyp is defined as a mass projecting into the lumen of a hollow viscus anywhere in gastrointestinal, respiratory and genitourinary tracts typically arising from the mucosal layer.³ Colorectal polyps had been histologically categorised as neoplastic and non-neoplastic.⁴ Colonic adenomas are the commonest neoplastic polyps are which form the precursors of majority of colorectal adenocarcinoma. The non-neoplastic polyps may be hyperplastic, hamartomatous or inflammatory. Based on colonoscopy, colonic polyps may be categorized as sessile or pedunculated. On the basis of adenomas architecture, are classified as tubular, villous and tubulovillous. The incidence of invasive polyp carcinoma is reliant on the size and histology. The risk of malignancy increases with increase in the degree of dysplasia in adenomatous polyps. When the tumour cells have infiltrated the submucosal layer; the polyp is considered to be malignant.⁵

The intend of our present study was to analyze the demographic and histo-morphological spectrum of colorectal polyps in this region.

SUBJECTS AND METHODS

This retrospective and cross-sectional study was carried out in the Surgical Oncology Department of our tertiary care hospital, from January 2015 to June 2018.

Overall, 167 patients who had colonic polyps detected during colonoscopy were included in this study. However, the indications for colonoscopy were not accounted. Reports were obtained from the hospital database. Only those who had evidence of polyps in the colon or rectum were considered for analysis.

Demographic data of patient were reviewed to collect the histopathological results of resected specimens. Each polyp was individually analyzed, although several were resected from the same patient.

Patients with inflammatory bowel disease, colorectal malignancy, genetic syndromes associated with polyposis, incomplete colonoscopies, polyps with malignant transformation, and unresected polyps were excluded from the sample. Separately the age, sex of the patient, site, size of the polyps, sessile or

pedunculated nature was noted and tabulated. The polyp's size was categorised as less than 0.5 cm, 0.6-1.0 cm, and more than 1cm. Finally, all polyps, resected from patients aged 44 years or younger were compared with those resected from patients aged 45 years or older. Polyps located closer to the splenic flexure of

colon was considered proximal, whereas those located after the splenic flexure were regarded distal. All statistical analyses were performed in the SPSS 20.0 software environment. Fisher's exact test was utilized for inter-group comparisons. The significance level was set at $p < 0.05$.

Table 1: Shows the characteristics of resected polyps according to size.

Polyp characteristics		Polyp size			
		<0.5 cm N (%)	0.6-1.0 cm N (%)	>1.1 cm N (%)	
Morphology	Sessile	92 (86%)	20 (48%)	06 (33.3%)	
	Pedunculated	15 (14%)	22 (52.4%)	12 (66.6%)	
Site	Distal	65 (61%)	27 (64.3%)	12 (66.6%)	
	Proximal	42 (39.3%)	15 (35.7%)	6 (33.3%)	
Histopathology	Adenoma	50 (47%)	29 (69.1%)	14 (77.8%)	
	Other	57 (53.3%)	13 (30.9%)	4 (22.2%)	
Dysplasia	Present	49 (46%)	28 (66.7%)	15 (83.3%)	
		Low	47 (44%)	20 (48%)	10 (55.6%)
		Grade Moderate	2 (1.9%)	7 (16.7%)	4 (22.2%)
	High	0 (0.0%)	1 (2.4%)	1 (5.6%)	
	Absent	56 (52.3%)	12 (28.6%)	3 (18.7%)	
	Indeterminate	2 (1.9%)	2 (4.8%)	0 (0.0%)	

Table 2: Shows the histopathological features of resected polyps according to size.

Histopathology	Polyp size		
	0 to 0.5 cm N (%)	0.6-1.0 cm N (%)	>1.1 cm N (%)
Tubular adenoma	46 (43%)	18 (42.9%)	6 (33.3%)
Villous adenoma	2 (1.9%)	3 (7.1%)	3 (16.7%)
Tubulovillous adenoma	3 (2.8%)	8 (19%)	5 (27.8%)
Hyperplastic polyp	29 (27.1%)	6 (14.3%)	2 (11.1%)
Inflammatory polyp	15 (14%)	5 (11.9%)	1 (5.6%)
Hamartoma	1 (0.6%)	0	0 (0.0%)
Normal mucosa	8 (7.5%)	2 (4.8%)	1 (5.6%)
Other	5 (4.7%)	1 (2.4%)	0 (0.0%)

RESULTS

Totally 167 polyps were analysed in our study, 52.1 out of which were females and 47.9 were males. Solitary polyps were found in 50.5% of cases. Morphologically, 70.6% were sessile and 29.4 % were pedunculated (stalked). The commonest site was the left colon (41.3%), followed by the right colon (21.4%), the transverse colon (18.9%), and the rectum (18.4%). In 7% of cases polyps were scattered throughout the colon. Mostly they were <1 cm in size according to the physician's examining which was (89.2%). However, the polyp size estimated by the endoscopist was concordant with that determined by the pathologist in 82.6% of cases. On histopathological examination, 42.6% of polyps were tubular adenomas, 2.9% were villous adenomas, 7% were tubulovillous adenomas, 23.2% were hyperplastic, 13% were inflammatory, and 4% were hamartomas. Other diagnoses were established in 7.3 % of cases. Table-1 shows the comparison of

polyps by size, showed that larger polyps tend to be pedunculated and were more likely to exhibit adenomatous component and dysplasia. There were no differences between-group in polyp sites.

Polyp size histopathology findings are described in Table 2. It was observed that, 41.9% of polyps were tubular adenomas, 4.8% were villous adenomas, 9.6% were tubulovillous adenomas, 22.2% were hyperplastic, 12.6% were inflammatory, and 0.6% were hamartomas. Other diagnoses were established in 3.6% of cases. Comparison of age-based polyp histopathology presented that subjects aged 45 or older were more probable to have sessile polyps in the proximal colon. There were however no significant age-related differences in presence of dysplasia. There were no statistically significant differences in inter-group in villous component presence ($p > 0.05$).

DISCUSSION

The site of projection of polyp is any lesion is the mucosal surface into the lumen.⁶ They are frequently observed in gastrointestinal tract from oesophagus, stomach, small intestine into the large intestine. Various histological types, differ in their presentation age, size, location and clinical features. Further, presence of one type of polyp does not necessarily rule out presence of another type of polyp. Moreover, most polyps could not be differentiated on gross examination and transformation to malignant nature or ability for malignant transportation in epithelial polyp holds true on gross examination. In this study the lower incidence of polyps might be explained by the fact that the indication for colonoscopy was not taken into account, and that some of the colonoscopies included were performed under suboptimal bowel preparation conditions. The polyp detection rate depends on a swarm of variables, including the demographics of the screened population (age, sex, family history of CRS), the quality of bowel preparation, technique and expertise used by endoscopist and endoscope withdrawal time.⁷ Just over half of all polyps in this series (50.5%) were solitary.

According to Lowenfels et al.⁸, approximately two-third of patients have solitary polyps, and the frequency of larger polyps increases with advancing age. Colonoscopy is one of the most effective screening options because detection and removal of colorectal polyps through colonoscopy can reduce the incidence of colorectal cancer by upto 90%.^{9,10}

In our study, we have noticed increased prevalence of colonic polyps in patients above 44 years which was concordant with the study conducted by Rajeev Jayadevan.¹¹ The left sided polyps were more common than right sided ones, comparable to Thomas et al. study.¹² The histological features and size of adenomas are the most crucial determinants of malignant potential.¹³ Adenomas may be classified as tubular, villous, or tubulovillous, according to their glandular architecture. Over 41.9% of colonic adenomas are tubular.¹⁴ Most polyps resected from the patients were ≤ 1 cm in size, left-sided, and had tubular adenoma as the predominant histopathological type, which corroborates previous findings.¹⁵ However, in patients over the age of 45, polyps were more commonly located in the proximal colon. Prior studies have reported age as a major risk factor for proximal lesions.¹⁶ Other authors, however, have disagreed on age-related differences in polyp distribution.¹⁷

There was a higher incidence of adenoma and dysplasia in patients over the age of 45, with no statistically significant difference. Although other studies have reported a higher incidence of adenomas in general and advanced adenomas particularly after fifth decade of life.^{18,19} There were no significant differences between groups in villous component presence. Villous polyps may become malignant in 30-71% of cases.²⁰ The presence of a villous component in endoscopically resected adenomas is an important predictor of advanced lesions on follow-up colonoscopy.²¹

One important finding of this study was the absence of any significant difference in histopathology features when the size for polyps was set at 0.5 cm or 0.6-1.0cm and more than 1cm. In both cases, increasing polyp size was associated with increased odds of adenoma, villous component, and dysplasia. Few researchers have assessed the rate of advanced histology on the basis of polyp size.²² One such study concluded that removal of a greater

number of polyps (including smaller polyps) with a lower rate of adenoma resection is preferable than removal of fewer polyps for a higher rate of adenoma resection.²³

CONCLUSION

The prevalence of colorectal polyps increases above the age of 44 years. Histologically, polyp size was associated with the presence of adenomatous and villous components along with dysplasia, whereas patient age was more frequently associated with sessile polyps located proximally to the splenic flexure. Further studies of genomic and molecular analysis could help in understanding pathogenesis and its biological behaviour with respect to adenoma carcinoma sequence in details.

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