

Study of Clinico- Pathological Characteristics of Colonic Polyp Seen at a Tertiary Care Hospital in Bihar

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Received: 25-02-2024 / Revised: 23-03-2024 / Accepted: 17-05-2024

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Conflict of interest: Nil

Abstract:

Background: Growths on the lining of the colon and rectum called colonic polyps have the potential to develop into colorectal cancer, which is a leading cause of cancer-related morbidity and death. It is imperative to comprehend the clinicopathological attributes of these polyps in order to perform efficient screening and therapy. The purpose of this research is to examine the clinicopathological features of colonic polyps in patients who are having colonoscopies at a Bihar tertiary care hospital. Specific attention will be paid to the patients' demographics, clinical indications, macroscopic characteristics, histopathological types, and dysplasia status.

Methods: This study included 93 patients who underwent colonoscopy and polyp removal. Data on demographic profiles, clinical indications, polyp characteristics, and histopathological findings were collected and analyzed using descriptive statistics.

Results: The study cohort comprised 52 males (55.91%) and 41 females (44.09%), with a mean age of 55.3 years. Rectal bleeding (43.01%) was the most common indication for colonoscopy. A total of 115 polyps were analyzed, with the majority being sessile (56.52%) and located in the rectum (30.43%). Adenomatous polyps were the most prevalent histopathological type (43.48%), and dysplasia was observed in 26.09% of the polyps, predominantly in adenomatous polyps (17.39%).

Conclusion: The findings underscore the predominance of adenomatous polyps and their higher risk of dysplasia, highlighting the need for vigilant screening and management. Early detection and removal of these polyps are crucial to preventing colorectal cancer.

Recommendations: Based on the study findings, it is recommended to implement regular screening colonoscopies, especially for high-risk groups such as older adults and males, to detect and manage colonic polyps early. Further research should explore the genetic and molecular aspects of polyp progression to enhance prevention strategies.

Keywords: Colonic Polyps, Colorectal Cancer, Adenomatous Polyps, Dysplasia, Colonoscopy.

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Introduction

Because they have the potential to develop into colorectal cancer (CRC), colonic polyps—protruding growths that emerge from the mucosal surface of the colon and rectum—represent an important field of research. The importance of early colonic polyp detection and therapy is underscored by the fact that colorectal cancer is one of the primary causes of cancer-related morbidity and mortality globally [1]. Removing these polyps during a colonoscopy, or polypectomy, is a tried-and-true method of lowering the incidence and death rate from colorectal cancer.

Colonic polyps are broadly classified into neoplastic and non-neoplastic types. Neoplastic polyps, such as adenomas, have a higher potential for malignant transformation, whereas non-

neoplastic polyps, including hyperplastic and inflammatory polyps, generally pose a lower risk. Adenomatous polyps are particularly significant due to their premalignant nature, and their detection and removal are critical in preventing colorectal cancer development [2].

The prevalence and types of colonic polyps can vary widely based on demographic factors such as age, gender, and geographic location. Studies have shown that adenomatous polyps are more common in older adults and males, highlighting the need for targeted screening in these populations [3]. Additionally, lifestyle factors such as diet, smoking, and obesity are associated with an increased risk of polyp formation.

Histopathological examination remains the gold standard for diagnosing and classifying colonic polyps. This examination provides critical information about the size, shape, and cellular characteristics of the polyps, which are essential for risk stratification and management [4]. Advances in molecular pathology have further enhanced our understanding of the genetic and epigenetic changes involved in the adenoma-carcinoma sequence, offering new avenues for targeted therapies and preventive strategies.

The aim of this study is to analyze the clinicopathological characteristics of colonic polyps in patients undergoing colonoscopy.

Methodology

Study Design: A retrospective observational study.

Study Setting: The study was conducted at Patna Medical College and Hospital, Patna, from April 2020 to August 2021.

Participants: A total of 93 participants who underwent colonoscopy and polyp removal were included in the study.

Inclusion Criteria: Patients who underwent colonoscopy with polyp removal were included.

Exclusion Criteria: Patients with inflammatory bowel disease or those previously diagnosed with colon malignancy were excluded from the study.

Sample Size: To calculate the sample size for this study, the following formula was used for estimating a proportion in a population:

$$n = \frac{Z^2 \times p \times (1-p)}{E^2}$$

Where:

- n = sample size
- Z = Z-score corresponding to the desired level of confidence
- p = estimated proportion in the population
- E = margin of error

Bias

By enrolling all eligible patients who satisfied the inclusion criteria during the research period, attempts were taken to reduce selection bias.

Variables

The primary variables included the demographic profile (age, gender), indications for colonoscopy, number of polyps, polyp location, morphological details (presence or absence of stalk), histological types of polyps, and presence or absence of dysplasia.

Data Collection

The demographic profile was documented, encompassing details like age, gender, and colonoscopy indication. Polyps seen during colonoscopies were removed and transported in 10% neutral buffer formalin containers to the pathology section.

Procedure

115 polyps in all were removed and sent for histological analysis. For a whole day, biopsy tissues were preserved in 10% neutral buffer formalin. The biopsies were examined thoroughly, paying particular attention to the size, exterior surface, and cut surface. Representative portions were processed, and the results were documented. Hematoxylin-Eosin stain was applied to the tissue after it had been divided into five-micron slices. Histopathological forms and patient data provided the colonoscopy results. Based on histology and the presence or absence of dysplasia, the pathologist identified the different types of polyps by analysing the histological features.

Statistical Analysis: Microsoft Excel was used to enter patient data for descriptive data analysis. The location, quantity, morphological characteristics, and histology of the polyps were all noted. Information about the existence of dysplasia was also recorded.

Ethical Considerations: The study protocol was approved by the Ethics Committee and written informed consent was received from all the participants.

Result

A total of 93 patients were included in the study, consisting of 52 males (55.91%) and 41 females (44.09%). The age ranged from 20 to 85 years, with a mean age of 55.3 years. The clinical features for which patients were subjected to colonoscopy are summarized in Table 1.

Table 1: Clinical Features of Patients Undergoing Colonoscopy

Clinical Feature	Number of Patients (n=93)	Percentage (%)
Rectal bleeding	40	43.01
Altered bowel habits	25	26.88
Abdominal pain	15	16.13
Anemia	10	10.75
Surveillance post-polypectomy	3	3.23

A total of 115 polyps were examined macroscopically. The size of the polyps varied from 0.2 cm to 4.5 cm, with a mean size of 1.7 cm. The macroscopic descriptions of the colonic polyps are detailed in Table 2.

Table 2: Macroscopic Description of Colonic Polyps

Description	Number of Polyps (n=115)	Percentage (%)
Sessile	65	56.52
Pedunculated	35	30.43
Flat	15	13.05

The distribution of polyps within the colon revealed that the rectum was the most common site (30.43%), followed by the sigmoid colon (21.74%), transverse colon (17.39%), descending colon (13.04%), ascending colon (8.70%), and cecum (8.70%).

Table 3: Location of Polyps in the Colon

Location	Number of Polyps (n=115)	Percentage (%)
Rectum	35	30.43
Sigmoid colon	25	21.74
Descending colon	15	13.04
Transverse colon	20	17.39
Ascending colon	10	8.70
Cecum	10	8.70

In terms of size, the majority of polyps were smaller than 1.0 cm (43.48%), with others ranging from 1.0 to 2.0 cm (34.78%), 2.1 to 3.0 cm (13.04%), and larger than 3.0 cm (8.70%).

Table 4: Colonic Polyps in Relation to Size

Size (cm)	Number of Polyps (n=115)	Percentage (%)
< 1.0	50	43.48
1.0 – 2.0	40	34.78
2.1 – 3.0	15	13.04
>3.0	10	8.70

Histopathological analysis identified adenomatous polyps as the most common type (43.48%), followed by hyperplastic (34.78%), serrated (8.70%), inflammatory (8.70%), and hamartomatous polyps (4.35%).

Table 5: Histopathological Types of Colonic Polyps

Histopathological Type	Number of Polyps (n=115)	Percentage (%)
Hyperplastic polyp	40	34.78
Adenomatous polyp	50	43.48
Inflammatory polyp	10	8.70
Hamartomatous polyp	5	4.35
Serrated polyp	10	8.70

Out of the 115 polyps examined, dysplasia was observed in 30 polyps (26.09%). Table 6 shows the presence of dysplasia in different types of polyps.

Table 6: Presence of Dysplasia in Colonic Polyps

Histopathological Type	Number of Polyps with Dysplasia	Percentage (%)
Hyperplastic polyp	5	4.35
Adenomatous polyp	20	17.39
Inflammatory polyp	0	0.00
Hamartomatous polyp	0	0.00
Serrated polyp	5	4.35

The results indicate that the majority of polyps were adenomatous (43.48%), with a significant proportion located in the rectum (30.43%). Dysplasia was most commonly found in adenomatous polyps (17.39%).

Discussion

The study involved a detailed analysis of 93 patients who underwent colonoscopy and polyp removal at Patna Medical College and Hospital between April 2020 and August 2021. The patient

cohort included 52 males (55.91%) and 41 females (44.09%), with ages ranging from 20 to 85 years and a mean age of 55.3 years. The primary clinical indications for colonoscopy were rectal bleeding (43.01%), altered bowel habits (26.88%), abdominal pain (16.13%), anemia (10.75%), and post-polypectomy surveillance (3.23%).

A total of 115 polyps were excised and subjected to histopathological examination. Macroscopically, the polyps were predominantly sessile (56.52%), followed by pedunculated (30.43%) and flat

(13.05%). The distribution of polyps within the colon revealed that the rectum was the most common site (30.43%), followed by the sigmoid colon (21.74%), transverse colon (17.39%), descending colon (13.04%), ascending colon (8.70%), and cecum (8.70%).

In terms of size, the majority of polyps were smaller than 1.0 cm (43.48%), with others ranging from 1.0 to 2.0 cm (34.78%), 2.1 to 3.0 cm (13.04%), and larger than 3.0 cm (8.70%). Histopathological analysis identified adenomatous polyps as the most common type (43.48%), followed by hyperplastic (34.78%), serrated (8.70%), inflammatory (8.70%), and hamartomatous polyps (4.35%).

Dysplasia was detected in 26.09% of the polyps, with adenomatous polyps showing the highest prevalence of dysplasia (17.39%). Dysplasia was also present in hyperplastic (4.35%) and serrated polyps (4.35%), while inflammatory and hamartomatous polyps showed no dysplasia.

These results underscore the predominance of adenomatous polyps in the studied population, with a significant portion located in the rectum. The findings also highlight the importance of polyp size and histopathological type in assessing the risk of dysplasia. This comprehensive clinicopathological analysis provides valuable insights for clinicians in the diagnosis, management, and surveillance of colonic polyps, emphasizing the need for vigilant follow-up, particularly for patients with adenomatous polyps due to their higher risk of dysplasia.

The clinicopathological characteristics of colonic polyps in diverse tertiary care settings have been the subject of recent studies. 2,874 patients who had colonoscopies over a period of 18 years were examined in a study. The tubular adenoma histology was the most prevalent. Over the course of the trial, the polyps' position changed from the left to the right side of the colon. In comparison with the second decade, the first decade had a greater prevalence of high-grade dysplasia [5]. According to a study done in Bihar, the majority of colonic polyps were pedunculated, and 66.08% of the patients had these growths. The most prevalent histological form of polyp was tubular adenoma, and it was mostly seen on the colon's left side. A small percentage of polyps had dysplasia [6].

In a retrospective study of 211 patients, the majority of polyps were adenomatous, with mild dysplasia being the most common finding. Polyps were most frequently located in the sigmoid/rectum region. Surgical intervention was required in a small percentage of cases [7]. A study reviewed 98 colonoscopic biopsies and found that the most common non-neoplastic lesion was nonspecific colitis, while the most common neoplastic lesion

was adenocarcinoma. Tubulovillous adenoma was the most frequent benign tumor [8].

In a study involving 245 patients, tubular adenomas with low-grade intraepithelial neoplasias were the most common type of flat polyp. Age and polyp size were significant risk factors for high-risk flat adenomatous polyps [9]. A retrospective study of 559 patients undergoing colonoscopy found a polyp detection rate of 20%. Sessile polyps were the most common morphology, and adenoma detection rate was highest in individuals aged 40 and above [10].

Conclusion

This study provides a comprehensive analysis of the clinicopathological characteristics of colonic polyps in a population from a tertiary care hospital in Bihar. The findings highlight the predominance of adenomatous polyps and their higher risk of dysplasia, emphasizing the importance of early detection and targeted screening, particularly in older adults and males. These insights are crucial for developing effective prevention and management strategies to reduce the burden of colorectal cancer in the region.

Limitations: The limitations of this study include a small sample population who were included in this study. Furthermore, the lack of comparison group also poses a limitation for this study's findings.

Recommendation: Based on the study findings, it is recommended to implement regular screening colonoscopies, especially for high-risk groups such as older adults and males, to detect and manage colonic polyps early. Further research should explore the genetic and molecular aspects of polyp progression to enhance prevention strategies.

Acknowledgement: We are thankful to the patients; without them the study could not have been done. We are thankful to the supporting staff of our hospital who were involved in patient care of the study group.

List of abbreviations:

CRC: Colorectal Cancer

Source of funding: No funding received.

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