Colorectal Polyps: A Histopathological Study in Tertiary Care Center

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ABSTRACT

Introduction: Gastrointestinal polyps are commonly encountered in the colorectal region. They can be non-neoplastic or neoplastic. Neoplastic polyps include adenomas which are clinically important because of their premalignant nature. The study was carried out to analyze the histomorphological spectrum of polyps in our institution with special emphasis on adenomatous polyps.

Material and methods: This is a retrospective study done from January 2015 to December 2019 in the Department of Pathology, Dhulikhel Hospital - Kathmandu University Hospital (DH - KUH). Relevant clinical data of the patients were obtained from the histopathological records of the patient from the pathology department and biopsies stained with Haematoxylin and Eosin were studied under the light microscope.

Results: A total of 168 cases of polyp were studied from 125 patients. The most common indication for colonoscopy in patients with polyp was per rectal bleeding. The age of the patient ranged from 2 to 83 years. The rectum was the commonest location. 106(63.1%) of polyps were non-neoplastic and 62(36.9%) of polyps were neoplastic. Juvenile polyp(71;42.3%) was the commonest polyp. Tubular adenoma(55;32.7%) was the commonest neoplastic polyp. The maximum number of neoplastic polyps were seen in the age group of 51-60 years (11;29.7%). Male predominance was seen in neoplastic as well as non-neoplastic polyp. High grade adenoma(4;6.7%) was more commonly seen in adenomatous polyp >2cm(3;75%) followed by 1-2cm(1;25%) and none in <1cm.

Conclusions: This study gives a fair insight into the distribution of neoplastic and non-neoplastic polyp in the colorectal region. Adenomatous polyp are premalignant lesions so screening of the patients for further treatment and prevention is needed.

Keywords: Adenoma; Colorectal polyp; Juvenile polyp

INTRODUCTION

Gastrointestinal polyps are masses that project above the level of surrounding mucosa which are most commonly present in the colon and rectum.¹ Major clinical presentations in symptomatic cases of colorectal polyp include gastrointestinal bleeding, abdominal pain, intestinal obstruction, and rectal prolapse, however, most polyps remain asymptomatic and unrecognized.² Colonoscopy is a procedure used to visualize inside of the colon and rectum and used in screening, assessment, and management of colorectal diseases.³

Colorectal polyps can be classified as neoplastic and non-neoplastic. Neoplastic polyp includes adenoma and non-neoplastic polyp can be classified as inflammatory, hamartomaous or hyperplastic.¹,⁴
According to the population-based cancer registry in Nepal, cancer of the colon and rectum is the third commonest site for cancer irrespective of age and sex. Around 80-90% of colorectal carcinoma originates on the background of polyp which undergoes dysplasia, adenocarcinoma in situ, and adenocarcinoma sequence. The prevalence of intestinal adenomas varies in different parts of the world and is common in westernized countries. Studies done in our country show the frequency of neoplastic polyp ranges from 22-30%. Early recognition of these polyps and colonoscopic polypectomy following histological examination are important for identifying the nature of the lesion for further management of the patient. Simple colonoscopic removal of them can stop the development of colorectal cancer and prevent disease and death. This study aimed to evaluate the frequency of histological variants among colorectal polypectomy specimens concerning age, sex, size, and site and with special emphasis on adenomatous polyp.

**MATERIALS AND METHODS**

This retrospective study was carried out in the Department of Pathology, Dhulikhel Hospital - Kathmandu University Hospital (DH-KUH). Ethical approval from the Institutional Review Committee was obtained. 173 specimens labeled as polypectomy specimens from 130 patients that underwent lower gastro-endoscopy were received in the Department of Pathology during a period of five years from January 2015 to December 2019 were included in the study. Tissue that was histologically inadequate for evaluation and autolyzed samples were excluded from the study.

All the biopsy specimen were fixed in 10% formalin for 24 hours. The specimen was then subjected to gross examination, noting the largest size, appearance, external surface, and cut surface. The findings were recorded and the representative bits were given. The tissue was processed and was cut into five-micron sections. Slides were stained with H & E stain. The patient’s history, location of polyp, age, gender, and colonoscopic findings were obtained from the patient’s record file and histopathological forms. The histopathological features were studied.

Patient data were entered in Microsoft Excel and descriptive data analysis was done using Statistical Package for social sciences (SPSS) 16.0 software.

**RESULTS**

A total of 173 specimens were received as polypectomy specimens from 130 patients that underwent lower gastro-endoscopy. Out of these, 125 patients had a polyp on histological examination. Five of the samples were histologically not polyp and diagnosed as normal histology in 2 cases, chronic colitis in two case and low-grade dysplasia in 1 case. Out of 125 patients histologically diagnosed as polyps, a total of 168 polypectomy specimen were received. Single polypectomy biopsy was received in 104 patients and multiple polyps were received from 21 patients. The age of the patient ranged from 2 to 83 years. Maximum cases were in the age group of 0-10 years (23.2%) whereas minimum cases were in the more than 70 years (1.5%) age group. Male predominance was seen with male to female ratio of 1.8:1. Per rectal bleeding was the major indication for lower gastro endoscopy as depicted in figure 2.

Most of the biopsies were received from the rectum (49.7%) which was followed by the sigmoid colon (15.6%). (Figure 2) Out of 168 polyps, 118 polyps were pedunculated and 50 were sessile.

Non-neoplastic polyps comprised the majority of polyps comprising 63.1% of cases and neoplastic polyps were 36.9%. Various histological types of polyps diagnosed are shown in table 1.
Colorectal polyps are a common colonoscopic finding which is usually received as a specimen for histopathological examination. Colorectal polyps can be broadly categorized as neoplastic and non-neoplastic which is essential for further management of the patients as simple colonoscopic removal of them can stop the development of colorectal cancer and prevent disease and death.7

Polyps are usually asymptomatic and may present with GI bleeding, abdominal pain, intestinal obstruction, and rectal prolapse.8 In our study, we included the symptomatic cases, and per rectal bleeding was the most common presentation (60%) which is similar to the finding by Yousef et al (63.1%), Tony et al (40%), and Fonteyn et al (22.5%).9,10,11

The age of the patients ranged from 2 years to 83 years. The majority of the patients were children and belonged to the age group of 0-10 years (23.2%), followed by 51-60 years (17.6%). Comparable to our finding, Kumar et al12 had 85% of the cases below 20 years. In contrast, majority of cases were in the age group of >60 years in studies conducted by Jaint et al and Wickramasinghe et al.14,15

In the present study, the male (64.8%) preponderance was observed similar to other studies.11,14,16

Based on location, rectum (49.7%) was the commonest site followed by a sigmoid colon (15.6%) which is in concordance with the studies done by Tony et al, Wickramasinghe et al and Kumar et al.11,13,15 Non-neoplastic polyps of the colon can be further classified as hyperplastic, inflammatory, hamartomous, Peutz-Jeghers, juvenile, angiogenic, inflammatory fibroid, and lymphoid polyps. In the present study, non-neoplastic polyp constituted a major number of cases (63.1%) which is in concordance with the studies done by Kumar et al, Wisedopas et al, and Mbakop et al.13,17,18 (Table 3)

Table 1: Histological types of polypoidal lesions

| Type of Polyp | Number (%) |
|---------------|------------|
| Neoplastic    | 62 (36.9)  |
| 1. Tubular adenoma | 55 (32.7) |
| 2. Tubulovillous adenoma | 5 (3) |
| 3. Sessile serrated adenoma | 1 (0.6) |
| 4. Lipoma | 1 (0.6) |
| Non-neoplastic | 106 (63.1) |
| 1. Hyperplastic polyp | 12 (7.1) |
| 2. Juvenile polyp/Retention polyp | 7 (4.23) |
| 3. Peutz-Jeghers polyp | 13 (7.7) |
| 4. Inflammatory polyp | 10 (6) |
| Total | 168 (100) |

The juvenile polyp was the commonest histological variant of polyp diagnosed with a total of 71 polyps received from 62 patients. The highest incidence was in the 0-10 years age group consisting of 17.3% cases followed by 1120 years (7.7%) and 21-30 years (5.9%) of age group respectively. The Predominant number of polyps was from the rectum followed by the sigmoid colon. Male and female were 54.9% and 45.1% respectively. The mean size of the polyp was 16.2 mm.

Out of 168 cases, 61 (36.3%) cases of adenomatous polyp were identified. 55 cases of tubular adenoma were received from 33 patients. Five cases of tubulovillous adenoma were obtained from 4 patients. Maximum number of adenoma (tubular adenoma and tubulovillous adenoma) were seen in 51-60 years age group (29.7%) followed by 31-40 years (21.6%), 41-50 years and 61-70 years (18.9%) each, 21-30 years (8.1%) and >70 years (2.7%). The male to female ratio was 2.1:1. The rectum was the commonest site. The majority of adenoma was low grade (93.4%). High grade adenoma was more commonly seen in adenomatous polyp >2 cm (7.5%) followed by 1-2 cm (1.25%) and none in <1 cm. (Table 2)

Table 2: Characteristic of adenomatous polyps and their relationship with a grade of dysplasia

| Polyp Characteristic | High grade(n) | Low grade(n) |
|---------------------|---------------|--------------|
| Tubular              | 4             | 51           |
| Tubulovillous        | -             | 5            |
| Sessile serrated adenoma | -         | 1            |
| Size of polyp (Tubular and tubulovillous) | - | 28 |
| 1-2 cm               | 1             | 20           |
| >2 cm                | 3             | 8            |
| Morphological type(Tubular and tubulovillous) | Pedunculated | 36 2 |
| Sessile              | 20            | 2            |

DISCUSSION

Juvenile polyps are focal malformations of the epithelium and lamina propria which mainly occur in the first 2 decades of life but can present at older ages as well.14 Juvenile polyp was the commonest histopathological finding comprising 42.3% of cases. This is consistent with the studies done by Kumar et al(91.5%) and Mbakop et al(54%) in which children and young adults form the major number of patients. Most patients were in the age group of 0-10 years (17.3%) followed by 11-20 years (7.7%) and 21-30 years (5.9%). This is in agreement with the findings of Tony et al where the age range was 4-28 years.11 Rectum (73.2%) followed by a sigmoid colon (12.7%) was the common site of occurrence which coincides with various studies.13,20 Male predominance was observed similar to Tony et al, Youssuf et al and Leeet al.10,11,20

In contrast, neoplastic adenomatous polyp formed the commonest finding in other studies carried out by Tony et al (81.2%), Jain et
Hyperplastic polyps were benign epithelial proliferations located commonly in the rectum. In present study total of 7.1% of hyperplastic polyps was diagnosed which is similar to studies done by Fong et al and Albasi et al.2,23

Inflammatory polyps are secondary to inflammatory disorders of the intestine. Inflammatory polyp consisted of 6% of cases. The finding is in concordance with Albasi et al (5.8%).23 Most of these patients were within the age group of 51-60 years in our study. However, in studies by Patil et al, Sherpa et al and Albasi et al majority of cases were within the 5th decade of life.6,9,23 Various neoplastic lesions can form a polypoid lesion in the colon. Adenomatous neoplastic polyps are clinically important as 80-90% of colorectal carcinoma originates on the background of polyp which undergoes dysplasia, adenocarcinoma in situ, and adenocarcinoma sequence.6 Adenomas can be traditionally divided into three types: tubular, villous, and tubulovillous.4 These polyps can be sessile when do not have a stalk or termed pedunculated if have stalk.1 In our study tubular adenoma was the most common subtype (91.7%) followed by the tubulovillous type. A similar higher incidence of tubular adenoma was observed in various studies.10-12,18,21 Similar to Tony et al14,15 pedunculated adenomatous polyp was higher compared to sessile adenomas. The maximum number of adenomas were seen in the 51-60 years age group (11 cases; 18.3%) which is in concordance to Qureshi et al.19 Male preponderance as in our study was seen in various other studies.14,19,21 Adenomas were commonly located in rectum (18 cases; 30%) adenoma which is similar to Geramizadeh et al. In our study low-grade adenoma was common (93.4%) which coincides with Jain et al and Geramizadeh et al.12,14 Studies have shown the presence of villous component to increases the neoplastic grade of the polyp.11,16,24 However no such finding was observed in our study and this could be due to the small number of cases with a villous component.

Based on the size of the polyp majority of the adenomatous polyp were <1cm (48.4%), and the least number of adenomatous polyp were >2cm (13.3%). This finding is in accordance with studies of Yousef et al, Tony et al, Fong et al, and Albasi et al.10-12,21 In present study 75% of high-grade adenomas were larger than 2cm and 25% were 1-2cm in none. Of the adenoma <1cm had features of high-grade adenoma. Similar findings of larger adenoma with high-grade dysplasia were observed by Tony et al (76%) and Yadav et al (44.4%).11,16

**CONCLUSIONS**

Colonoscopy is a common procedure used for the identification and removal of colorectal polyps. The present study provides a fair insight into the histomorphological patterns of polyp in our institution. Adenomatous polyps were less common compared to studies from other countries. The most common indication for colonoscopy was per-rectal bleeding. The most common histological variant was a juvenile polyp. Tubular adenoma was the most common neoplastic polyp.

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