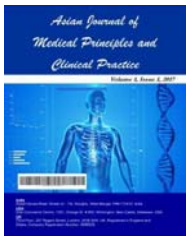

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Clinicopathologic Characteristics of Colorectal Polyps: A Study from South Egypt Cancer Institute

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Authors' contributions

This work was carried out in collaboration between all authors. Author IMK conduct the study, performed the statistical analysis and wrote the first draft of the manuscript. Authors TME and AEMO wrote the protocol and reviewed the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Several studies have found associations between different colorectal polyp subtypes and colorectal cancer. The identification of colorectal polyps can reduce CRC mortality through earlier diagnosis of cancers and the removal of polyps which are the precursor lesion of CRC.
Aim To study the clinicopathologic characteristics of colorectal polyps in patients from South Egypt Cancer Institute, Assiut University, Egypt.
Material and Methods: A total of 74 colorectal polyps were obtained from the Department of Pathology Archives of South Egypt Cancer Institute, Assiut University. Data regarding age, gender, size, histologic types of polyps, site, and degree of dysplasia were retrieved and analyzed using SPSS version 20.
Results: The average age was 31.6 years. The majority of cases were non-adenomatous polyps (70.6%), while adenomatous polyps represent 21 cases (29.4%). Colorectal polyps were slightly common in males (56.8%) than in females (43.2%). The rectum was the most common site for polyp

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development. Most of the colorectal polyps were of medium size (1-2 cm), and tubulovillous adenoma was the most frequent type among adenomatous polyps.
Conclusion: Our study revealed similar type and distribution of colorectal polyps as that in previous studies with minor differences.

Keywords: Colorectal polyps; dysplasia; histologic types; Egypt.

1. INTRODUCTION

The prevalence of colorectal polyps varies widely between different geographical areas. It was estimated that 30% of the Western population have colorectal polyps while a lower rate (10–15%) was noted in Asia and Africa [1]. The colorectal polyps were of a high rate in patients older than 50 years as compared to those younger than 50 years [2].

Colorectal polyps are common diseases of the gastrointestinal system. Generally, colon polyps can be divided into adenomatous polyps and non-adenomatous polyps. Adenomatous polyps have a risk to develop into tumors, but non-adenomatous polyps do not [3].

Adenomatous polyps are tumors of benign neoplastic epithelium with variable potential for malignancy. The World Health Organisation (WHO) classifies adenomas into tubular (less than 20% villous architecture), tubulovillous and villous [4]. A tubular adenoma is the most common histological subtype, constituting approximately 65–80% of all polyps removed. Tubular adenomas are most often pedunculated and generally harbor less atypia than villous adenomas do, although the degree of atypia is variable [5]. Adenomas that are ≥10 mm in diameter or have high-grade dysplasia or villous components are considered advanced polyps and have the greatest risk of developing into a malignancy [6].

The aim of this study is to shed light on the clinicopathologic characteristics of colorectal polyps diagnosed in South Egypt Cancer Institute during the period of Jan 2009 to Dec 2014.

2. MATERIALS AND METHODS

2.1 Study Design

This is a retrospective study. A total of 74 formalin fixed paraffin embedded blocks were included in this study. All cases were obtained from the Department of Pathology Archives of South Egypt Cancer Institute, Assiut University. We included all colorectal polyps biopsied by colonoscopy (66 cases) and in surgically-resected specimens for colon cancer (8 cases) from Jan 2009 to Dec 2014.

The clinicopathological data of all colorectal polyps were collected, including patient age, gender, lesion size, the location described in the endoscopic reports, histological type and degree of dysplasia. This study was conducted under the approval of Faculty of Medicine ethics committee, Assiut University with an IRB no.17100506

2.2 Statistical Study

Continuous variables are presented as mean and standard deviation (SD), while categorical variables are presented as numbers and proportions. Independent sample t-tests were used for comparisons of continuous normally distributed variables. Categorical variables were compared using the chi-square test, with a p - value less than 0.05 significance level was used. All statistical analyses were performed using SPSS IBM Statistics version 20.

3. RESULTS

A total of 74 colorectal polyp specimens were included in the study. Thirty patients (40.5%) were children and adolescents (18 years and below) and 44 patients (59.5%) were adults (above 18 years). The age of the patients ranged from 2 – 75 years with the average age was 31.6 (± 2.7) years. Out of 74 patients; 42 (56.8%) patients were males with male to female ratio 1.3:1. The most frequently polyp type was non-adenomatous polyps 53 (70.6%) cases, while adenomatous polyps represent 21 (29.4%) cases. Collectively, most of colorectal polyps were of medium size (1-2 cm) comprising 38 out of 74 cases (51.4%) followed by the small-sized polyps (36.5%) and lastly the large-sized polyps (> 2 cm) representing 10.8% of all polyps. (Table 1).

Table 1. Characteristics of the studied cases

Clinico-pathological features	No.
Age (mean ± SE)	31.6 ± 2.7
Gender	
Male	42 (56.8%)
Female	32 (43.2%)
Polyp type	
Adenomatous	21 (29.4%)
Non adenomatous	53 (70.6%)
Polyp size	
< 1 cm	27 (36.5%)
1-2 cm	38 (51.4%)
>2 cm	8 (10.8%)
N/A	1 (1.4%)

According to histopathologic types of adenomatous polyps, tubulovillous adenoma was the most frequent type comprising 13(61.9%) cases, whereas both tubular and villous adenomas represent 5(23.8%) case, and 3(14.3%) cases, respectively. Out of 53 non-adenomatous polyps, 29 (54.7%) were hamartomatous polyps with 16 (30.2%) cases, and 8 (15.1%) cases were inflammatory and hyperplastic polyps respectively. The average age of adenomatous polyps was 44.7 ± 3.8 years, while for hamartomatous, inflammatory and hyperplastic polyps (the average age was 8.1, 49.7, and 54.1years respectively, (Table 2).

Table *2.* Different histologic types of polys with age distribution

Polyps	No. (%)	Age (Mean ± SE)
Adenomatous		44.7 ± 3.8
Tubulovillous	13 (61.9%)	
Tubular	5 (23.8%)	
Villous	3 (14.3%)	
Non adenomatous		
Hamartomatous	29 (54.7%)	8.1 ± 1.1
Inflammatory	16 (30.2%)	49.6 ± 3.3
hyperplastic	8(15.1%)	54.1 ± 5.1

Regarding the anatomical distribution of colorectal polyps, cecum and ascending colon were the most common site for adenomatous polyps (57.1%) followed by rectum (19%). While in case of non-adenomatous polyps, rectum was the commonest site comprising 35 cases for all non-adenomatous polyps and hamartomatous polyps representing the major type (27 cases out of 35 cases) (Table 3).

This study revealed that most of adenomatous polyps were of medium size (1-2 cm) comprising 14 (57.1%) cases and the tubulovillious type was the commonest (38.1%). In non-adenomatous polyps, hamartomatous polyps were the commonest polyps that have a medium size (1-2 cm) representing 21 out of 53 (40.4%) cases of non-adenomatous polyps. While in inflammatory and hyperplastic polyps, the commonest size was the small sized polyp (< 1cm) representing about 17.3% and 9.6% of non-adenomatous polyps respectively (Table 4).

3.1 Association of Gender with Different Characteristics of Polyps

Considering gender difference and type of colorectal polyps, statistically significant association was found between gender and colorectal polyps type ($p < 0.04$). In this study, 64.2% of non-adenomatous polyps were males compared to 35.8% of cases were females, whereas adenomatous polyp were more frequent in females (61.9%) than in males (38.1%) of cases. Therefore, we can conclude that polyp type was significantly influenced by gender type. No statistically significant difference in age between males and females ($p > 0.05$). Also, no significant association between gender and polyps size ($p > 0.05$) (Table 5).

3.2 Correlation between Polyp Types and Age Groups

We explored the association between polyp types and age group. It was observed that younger age patients (below 20 years) have more often non-adenomatous polyps compared to older age groups (***p = 0.01***) . When analyzed separately, in non-adenomatous polyps hamartomatous polyps occurred more frequently in young patients compared to other types of polyps (***p < 0.001***). However, in adenomatous polyps, tubulovillous adenomas occur more frequently in the age group (40-60 years) compared to other types, however it was not statistically significance (*p >0.05*) (Table 6).

3.3 Association of Dysplasia and Different Characteristics of Adenomatous Polyp

Our data showed that high grade dysplasia is more common in females than males, with male to female ratio about 1: 2.2, and this was not statistically significant (*p= 0.325*). Also no statistically significant association between degree of dysplasia and different histopathologic types of adenomatous polyps (*p = 0.91*). Regarding polyp size and degree of dysplasia, no significant association was found (*p = 0.848*) (Table 7).

Table 3. Anatomical distribution of different colorectal polyps

Polyp type	Site						
	Cecum and ascending colon	Transverse colon	Decsending colon	Sigmoid	Rectum	Anal canal	Multicentric
Adenomatous	12 (57.1%)	0 (0.0%)	1 (4.8%)	1 (4.8%)	4(19.0%)	1(4.8%)	2(9.5%)
Hamartomatous	1(3.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	27(39.1%)	0(0.0%)	1(3.4%)
Inflammatory	5 (31.3%)	2 (12.5%)	1 (6.3%)	1(6.3%)	6 (37.5%)	1(6.3%)	0 (0.0%)
Hyperplastic	1 (12.5%)	0 (0.0%)	2 (25.0%)	2(25.0%)	2 (25.0%)	1(12.5%)	0(0.0%)

Table 4. Polyp size regarding polyp type

Polyps	<1 cm	1-2 cm	>2 cm
Non-adenomatous			
Inflammatory	9 (17.3%)	2 (3.8%)	4 (7.7%)
Hyperplastic	5 (9.6%)	3 (5.8%)	0 (0.0%)
Hamartomatous	7 (13.5%)	21 (40.4%)	5 (9.6%)
Adenomatous			
Tubular	3 (14.3%)	2 (9.5%)	0 (0.0%)
Tubulovillous	2 (9.5%)	8 (38.1%)	3 (14.3%)
villous	1 (4.8%)	2 (9.5%)	0 (0.0%)

Table 5. Relation between gender and different characteristics of polyps

Characteristic features	Gender		*P* value
	Male N = 42	Female N = 32	
Age (mean ± SE)			0.328*
31.6 ± 2.7	30.1 ± 3.6	35.5 ± 4.1	
Polyp type			**0.04****
Adenomatous	8 (38.1%)	13(61.9%)	
Non adenomatous	34(64.2%)	19(35.8%)	
Polyp size			0.826**
< 1 cm	14 (51.9%)	13 (48.1%)	
1-2 cm	22 (57.9%)	16 (42.1%)	
>2 cm	5 (62.5%)	3 (37.5%)	

**Independent-sample t-test **chi-square test*

Table 6. Correlation between different types of polyps and age groups

Polyps	<20s	20-40s	41-60s	>60s	*P value*
Non adenomatous					**< 0.001**
Inflammatory	1 (1.9%)	2 (3.8%)	10 (18.9%)	3 (5.7%)	
Hyperplastic	0 (0.0%)	2 (3.8%)	3 (5.7%)	3 (5.7%)	
Hamartomatous	27 (50.9%)	2 (3.8%)	0 (0.0%)	0 (0.0%)	
Adenomatous					0.381
Tubular	0 (0.0%)	1 (4.8%)	2 (9.5%)	2 (9.5%)	
Tubulovillous	2 (9.5%)	3 (14.3%)	7 (33.3%)	1 (4.8%)	
Villous	1 (4.8%)	0 (0.0%)	2 (9.5%)	0 (0.0%)	

Table 7. Association of dysplasia and different characteristics of adenomatous polyp

	Low grade dysplasia	High grade dysplasia	*P* value
Age	37 ± 12.1	47± 3.2	0.464
Gender			
Male	3 (37.5%)	5 (62.5%)	0.325
Female	2 (15.4%)	11(84.6%)	
Adenomatous polyp			
Tubulovillous	3 (23.1%)	10 (76.9%)	0.912
Tubular	1 (20%)	4 (80%)	
Villous	1 (33.3%)	2 (66.7%)	
Polyp size			
< 1 cm	1(16.7%)	5 (83.3%)	0.848
1-2 cm	3 (25%)	9 (75%)	
>2 cm	1 (33.3%)	2 (66.7%)	

4. DISCUSSION

Removal of colorectal polyps by endoscopy and accurate histologic diagnosis are important for therapeutic approach and decreasing the incidence of CRC because some of them bear a malignant potential which still represents a central issue in preventive medicine**.**

This study, showed a male predominance this goes in line with other studies that reported a male predominance about 58.8% [7] and other study that showed a male to female ratio was 1:1:57 [8] .However, An Iranian group showed a slight female predominance about 50.3% in their study [9]. Similarly, Munteanu et al. reported slight females preponderance (56.6%). This could be attributed to different sample size.

The mean age of our studied patients was found to be 31.6 years which was lower than that reported in the literature. In Arabic region reported that the average age was 49 years [10]. In a kuwaiti study an average age of 45 years has been reported [11]. Also, a study of Iranian group showed that mean age of participants was 57 years [9]. This difference could be due to large number of children and adolescents in our study group.

Our data revealed that non-adenomatous polyps were more frequent than adenomatous polyps. This agrees to some extent with other studies [11,12] that reported predominance of non-adenomatous polyps compared to adenomatous polyps among their studied cases. Furthermore, two Egyptian studies done by Ahmady et al. [13] and El-Badry et al. [14] who found that adenomatous polyps were 20% and 17.3% of the total polyps, respectively. However, our data contradict a study which reported that the frequency of both neoplastic and non-neoplastic polys were 50% each [15].

In adenomatous polyps, we observed that tubulovillous adenomas were the most frequent type followed by tubular then villous type. These data were similar to those reported in a study by El-Badry et al. [14], Albasri et al. [10] and Wickramasinghe et al. [8]. However, results from recent publications found that tubular adenomas were more common than tubulovillous adenomas and then villous adenomas. For example, an Iranian study found that tubular adenoma comprised about 24.9% of all polyp types followed by tubulovillous adenomas with 7.1% and lastly villous adenomas were 2.7% [9].

In non adenomatous polyps, this study revealed that hamartomatous polyps were the commonest type representing 54.7%, whilst inflammatory and hyperplastic polyps were 30.2% and 15.1% respectively. In agreement with our data, Ahmad et al. [16] found that juvenile polyps

(hamotomatous poly) represent 67.1% of all polyps. Moreover, Ahmady et al. [13] reported that juvenile polyps represent 48.2% of all polyps type. On the contrary, a study showed that hyperplastic polyps were most frequent representing 71.4% and hamartomatous polyps were less frequent representing 8.6% of cases [17]. Also, another study observed that hyperplastic polyps were the commonest type comprising about 23.1% of all polyp types [9]. This difference could be attributed to the higher number of children and adolescents involved in our study (40.5%).

According to anatomical distribution of polyps, we found a predominance of rectal polyps among all types of polyps followed by the cecum and ascending colon. Similarly, a study done by Wickramasinghe et al. [18] claimed highest number of rectal polyps found in rectum (33.5%) followed by sigmoid colon (22.9%). On the contrary, several studies reported that sigmoid colon was the commonest site [9,10,19].

In this study, cecum and ascending were the most common site for adenomatous polyps (57.1%) followed by rectum (19%). In agreement with our study, El-Badry et al. found that adenomatous polyps were higher in the right side than that of the left side [14]. On the other side, other studies showed that (56%) of adenomas were left-sided and (44%) of adenomas were right-sided [20]. Also, Delavari and his colleagues reported that distal colon was more prone to develop adenomatous polyps and cancer than proximal colon [21]. Furthermore, a study in Saudi Arabia that reported that adenomatous polyps were frequently located in left colon [22].

The current study found that more than half of colorectal polyps ranged from 1-2 cm (52.1%) followed by the small sized polyps (36.5%). These data contradict a study which reported that the majority of polyps (42.5%) were small (<1 cm), (38.7%) of a medium size (1-2 cm) and 18.8% of a large size (>2 cm) [17]. This difference may be explained by the large number of adenomatous polyps in their study.

In our study patients with high grade dysplasia have a mean age of 47 years old. Similar to a study done by Cekodhima et al. showing that high grade of dysplasia associated with patients above 45 years old and it is common in both tubular and tubulovillous component [17]. These data are also in agreement with other studies [10, 23]. In the current work high grade dysplasia were common in female than male with male to female ratio 1:2.2. which contradicts Albasri et al. [10]. Contradicting to our study, a strong significant association was found between high grade dysplasia and polyp size and type [7, 10] which was due to small number of adenomatous polyps in this study.

One of the important limitation of this study is the small sample size.

5. CONCLUSION

Our study showed clinicopathologig features such as age and gender nearly similar to recent literatures. Rectum was the most common site followed by cecum and ascending colon. Also, tubulovillous adenoma was the commonest type in our study. There is no statistical significance association between degree of dysplasia and any of clinicopathologic characteristics of adenomatous polyps. The data in this study could be used as a corner stone for future analysis of colorectal polyps using larger sample size.

CONSENT

As per international standard or university standard written patient consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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