Colorectal Polyps in Kano: A Ten Year Histopathological Review

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ABSTRACT

Background: Colorectal polyps are mucosal growths that occur in the large intestines. The adenomatous variants are precursors of colorectal cancer which is the third and fourth most common cancer among males and females respectively.

Objectives: This study documents the frequency, distribution and histopathological characteristic of colorectal polyps in our centre.

Method: This was a 10-year retrospective study of colorectal polyps diagnosed in the Pathology laboratory of a tertiary hospital from 2007 to 2016. Archived histopathology slides were reviewed to confirm the diagnosis. Relevant clinical information was obtained from patients' request forms. Data were presented as mean, standard deviation, frequencies and percentages. Relationships between neoplastic polyps and age, gender and anatomic site were measured using Fishers exact test.

Result: There were 124 cases of colorectal polyps recorded. Of these, were 82 (66.0%) males and 42 (34.0%) females (M:F=1.9:1). The average age at presentation was 29.0 ±23.6 years. Highest frequency of 45(36.2%) cases was in the 1st decade of life. There were 87(70.0%) cases in distal colon/rectum while 37(30.0%) were in the proximal colon. Juvenile polyps had the highest frequency overall, (60 cases, 48.0%), followed by tubular adenoma (31 cases, 25.0%), hyperplasic polyp (11 cases, 8.9%), villous adenoma (9 cases,7.3%), inflammatory polyp (6 cases,4.8%), tubulo-villous adenoma (3 cases, 2.4%), retention polyp (2 cases, 1.6%) and sessile serrated polyp (2 cases, 1.6%).

There were 43 (34.7%) cases of neoplastic polyps. The average age of patients with neoplastic polyps was 47.3 years and they are located mostly in proximal colon (23/37 cases) ($P<0.05$).

Conclusion: Colorectal polyps are common in our environment especially juvenile polyp encountered mostly in children. We recorded significantly lower prevalence, lower mean age at presentation of neoplastic polyps compared to Western populations. This highlights the need for earlier age screening colonoscopy to detect and treat premalignant polyps.

Key Words: colorectal, neoplastic, non-neoplastic, polyp,

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Introduction

Colonic polyps are mucosal out growths that occur throughout the large intestines. The adenomatous polyps are established precursors of colorectal cancer which is the third and fourth most common cancer among males and females' respectively[1]. Studies have showed that over 95% of colorectal cancer arises from colonic polyps[2].

The prevalence of colonic polyps varies widely between different geographical areas and are more frequent in the western world where the incidence of colorectal cancer is high while lower rates are seen in regions with low incidence of colorectal cancer. It is estimated that 30% of the Western population have colonic polyps while a lower rate (10–15%) is noted in Asia and Africa[3,4].

The frequency of colonic polyps' increases with increasing age[5]. Among middle-aged individuals, the prevalence is as high as 30%. It occurs more common among men than women[6].

Colonic polyps appear as either sessile or pedunculated lesions grossly. Histologically they are classified as neoplastic and non neoplastic[7]. The neoplastic polyps (Adenomatous polyps) are sub-classified by their histological appearance as tubular, villous, or tubulo-villous adenomas and are of importance because they have malignant potential, and represent a stage in the development of colorectal cancer. Therefore, it is important to discover and excise these polyps at an early stage to prevent malignant transformation. The non-neoplastic are further classified as hyperplastic, hamartomatous or inflammatory[8]. The epithelial type (either adenomatous or hyperplastic) represents the most common form of colorectal polyps, followed by non-epithelial (inflammatory and juvenile polyps)[6].

Neoplastic polyps may present as solitary sporadic cases or as hereditary polyposis syndromes with numerous polyps throughout the gastrointestinal tract[8]. Early detection, characterisation and removal of these polyps as well as determining whether or not they are syndromic is not only essential in interrupting the possibility of progression to colorectal cancer but also to serve as basis to initiate a surveillance screening program for the early detection of cancer.

There is an increasing incidence of colorectal cancer in Nigeria [9, 10, 11] and paucity of literature on colorectal polyps which are established precursors of colorectal cancer.

This study is therefore aimed at documenting the frequency, distribution and histopathological characteristics of colorectal polyps in our centre.

Materials and Method

This was a 10-year retrospective review of all cases of colorectal polyps diagnosed in the Pathology laboratory of a tertiary hospital from January 2007 to December 2016. The hematoxylin and eosin (H&E) stained slides were retrieved from the archive and reviewed to confirm the diagnosis. Relevant clinical information such as the age, anatomical site, and gender were obtained from patients' request forms. SPSS version 20 software was used to analyze the data. Quantitative data were presented as mean, standard deviation, frequencies and percentages. Relationships between neoplastic polyps and age, gender and anatomic site were measured using Fishers exact test. A confidence interval of 95% was used and a P-value of ≤ 0.05 was considered significant.

Result

There were 124 cases of colorectal polyps seen during the 10-year study period. Of these, were 82 (66.0%) males and 42(34.0%) females with a sex ratio of 1.9:1

Table 1: Frequency and sex distribution of histological types.

Histological type		Gender	
	Frequency (%)	Males	Females
Non-Neoplastic Polyps			
Juvenile polyp	60 (48.0)	36	24
Hyperplastic polyp	11 (8.9)	9	2
Inflammatory polyp	6 (4.8)	4	2
Retention polyp	2 (1.6)	2	0
Sessile serrated polyp	2(1.6)	2	0
Total	**81 (65.3)**	**53**	**28**

Neoplastic Polyp			
Tubular adenoma	31 (25.0)	23	8
Villous adenoma	9 (7.3)	5	4
Tubulo-villous adenoma	3 (2.4)	1	2
Total	**43 (34.7)**	**29**	**14**
Grand Total (%)	**124(100.0)**	**82(66.0)**	**42(34.0)**

Adults comprised 57.7% while 42.3% occurred in children under 13 years of age. The average age at presentation was 29.0 ±23.6 years. Highest frequency of 45(36.2%) cases was in the 1st decade of life. This was followed by 20 (16.0%) cases recorded in the 4th decade.

Table 2: Age distribution of histological types

Histological type	Age group (years)								
	1-10	11-20	21-30	31-40	41-50	51-60	71-70	>70	Total
Non-Neoplastic Polyps									
Juvenile polyp	45	12	2	0	1	0	0	0	60 (48.0)
Hyperplastic polyp	0	0	1	4	1	1	3	1	11 (8.9)
Inflammatory polyp	0	0	1	3	1	0	0	1	6 (4.8)
Retention polyp	0	0	0	1	0	1	0	0	2 (1.6)
Sessile serrated polyp	0	0	1	1	0	0	0	0	2(1.6)
Total	**45**	**12**	**5**	**9**	**3**	**2**	**3**	**2**	**81(65.3)**
Neoplastic Polyp									
Tubular adenoma	0	0	6	5	8	4	4	4	31 (25.0)
Villous adenoma	0	0	0	5	0	0	2	2	9 (7.3)
Tubulo-villous adenoma	0	0	0	1	0	2	0	0	3 (2.4)
Total	**0**	**0**	**6**	**11**	**8**	**6**	**6**	**6**	**43(34.7)**
Grand Total	**45**	**12**	**11**	**20**	**11**	**8**	**9**	**8**	**124**
(%)	(36.2)	(9.7)	(8.9)	(16.)	(8.9)	(6.5)	(7.3)	(6.5)	(100.0)

As shown in table 3, 87(70.0%) cases were located in the distal colon and rectum while the rest (30.0%) were in the proximal colon. Juvenile polyps had the highest frequency of 60 (48.0%) cases, followed by tubular adenoma (31 cases, 25.0%) and hyperplasic polyp (11 cases, 8.9%). Other histological types include villous adenoma (9 cases, 7.3%), inflammatory polyp (6 cases, 4.8%), tubulo-villous adenoma (3 cases, 2.4%), retention polyp (2 cases, 1.6%) and sessile serrated polyp (2 cases, 1.6%).

There were 43 (34.7%) cases of neoplastic polyps and 81 (65.3%) non-neoplastic polyps. The average age of patients with neoplastic polyps was 47.3 years and the sex ratio was 2:1 for males and females. Neoplastic polyp are commoner among individuals greater than the age of 40 years (26/36 cases) and are located mostly in proximal colon (23/37 cases) (P<0.05). However, the non-neoplastic polyps were more commonly located in the distal colon and rectum and affect predominantly patients younger than the age of 40 years. (P<0.05). No statistically significant correlation between gender and neoplastic polyps (P>0.05). Table 4. Four cases (9.3%) among the neoplastic polyps showed high grade dysplasia. All the 4 cases were seen in individuals less than 40 years of age.

Table 3: Site distribution of histological types.

Histological type	COLON SITE		
	PROXIMAL	DISTAL	Total (%)
Non-Neoplastic Polyps			
Juvenile polyp	3	57	60 (48.0)
Hyperplastic polyp	6	5	11 (8.9)
Inflammatory polyp	3	3	6 (4.8)
Retention polyp	0	2	2 (1.6)
Sessile serrated polyp	2	0	2 (1.6)
Total	**14**	**67**	**81(65.3)**
Neoplastic Polyp			
Tubular adenoma	19	12	31 (25.0)
Villous adenoma	2	7	9 (7.3)
Tubulo-villous adenoma	2	1	3 (2.4)
Total	**23**	**20**	**43 (34.7)**
Grand Total(%)	**37 (30.0)**	**87 (70.0)**	**124(100.0)**

Table 4: Correlation of clinicopathologic parameters with neoplastic and non-neoplastic polyps

Clinicopathologic parameter		Frequency (%)	Neoplastic n=43	Non-neoplastic n=81	P Value
Gender:	Male	82	29	53	>0.05
	Female	42	14	28	
Age:	<40 years	88	17	71	<0.05
	≥40 years	36	26	10	
Site:	Distal	87	20	67	<0.05
	Proximal	37	23	14	

Discussion

In this study, colorectal polyps showed male preponderance (M:F 1.9:1), and occurred most commonly in the first decade of life. Non-neoplastic polyps were seen more frequently than neoplastic polyps (65.3% versus 34.7%). Juvenile polyp was the most common histologic subtype recorded for both neoplastic and non-neoplastic polyps and was observed almost exclusively in patients younger than the age of 10 years. The neoplastic polyps (tubular adenoma, villous adenoma, and tubulo-villous adenoma) were however predominantly seen among individuals older than 40 years with prevalence peaking in the fourth decade ($P<0.05$). A vast majority of the neoplastic polyps were located in the proximal colon while the non-neoplastic polyps showed predilection for the distal colon and rectum ($P<0.05$).

Most published literatures showed male predominance in the occurrence of colorectal polyps.[12] In agreement with the findings of this study, reviews conducted in the United States (US), Asia and in Nigeria by Ibrahim et al., and Alatise et al., in Ilorin and Ife respectively all found a male predominance[12, 13, 14, 15]. However, this study showed no relationship between gender of the patient and presence or absence of neoplasm ($P>0.05$).

Juvenile polyp was the most frequently recorded polyp in this study in contrast to adenomatous polyp reported by several studies[13, 14, 15]. This lesion was also the most commonly encountered paediatric polyp and the most often diagnosed in the first decade of life, with a peak incidence between the ages of 2 and 6 years[8, 16, 17]. Most of the juvenile polyps seen in our setting were located in the rectum and diagnosed in children less than 10 years of age and are pedunculated with a mean polyp diameter of 2cm[18]. Although Juvenile polyps have no malignant potential[19], multiple juvenile polyps are important because more than five polyps indicates juvenile polyposis syndrome and a risk factor for CRC[16].

Hyperplastic polyps are the most common non-neoplastic polyp in the colon. They show histological characteristics of hyperplasia without dysplasia and hence are not considered pre-malignant. However, hyperplastic polyps greater than 2 cm in diameter may pose a slight risk of dysplasia and malignant degeneration. Hyperplastic polyps are usually located in the distal colon and are commonly less than 5 mm in size[8]. They comprised of 8.9% of all the polyps reviewed in this study and are the second most frequent among the non neoplastic polyps. Albastri et al., in Saudi Arabia and Laird et al., in the United States (US) have shown hyperplastic polyps to be more prevalent among females but this review revealed a significant male dominance[13,20,21]. We found the peak age incidence of these lesions in the 4th decade and a mean age of 45.5 years. This finding contrast with that of Umana et al., in Benin, Nigeria and Laird et al., in US which showed a peak age incidence in the 6th decade[20, 21].

Neoplastic (Adenomatous) polyps are more common in developed countries. In the US, neoplastic polyps were seen in 20–40% of screening colonoscopies in individuals older than 50 years of age[8]. In another study in the US, neoplastic polyps constituted 97% of the total polyps reviewed with mean age of 64 years and the incidence was observed to increase with age[12]. Lower rates of neoplastic polyps are however seen in Asia and Africa[3,4]. In our study neoplastic polyps constituted 35.0% of all the polyps reviewed. This was much lower than the prevalence reported by most of the studies; Laird et al.[21] and Nouraie et al.[12] both in the US reported proportions of 59.9% and 73.3% respectively and similar studies from Asia conducted by Albastri et al.[13] in Saudi Arabia and Hodadoostan et al.[22] in Iran found the prevalence of 71% and 91% respectively. The risk factors for the development of adenomas are the same as that of CRC and included genetic susceptibility, cigarette smoking, obesity and diets high in red meat and low in fiber and calcium[23,24]. The average age of patients with neoplastic polyps in this study was 47.3 years and the sex ratio was 2:1 for males and females respectively. Similar studies from Kuwait and Saudi Arabia found comparable average age of

44.8 years and 49 years respectively[13, 25]. However, Studies from western countries showed significantly higher average age of presentation. In the US, the mean age was found to be 64.7 years, while Lim et al., in the United Kingdom reported a mean age of 68.0 years[12, 26]. The younger average age at presentation of neoplastic polyps in this study was about 2 decades earlier than that observed in developed countries and mirrors the age of presentation (46.2 years) of colorectal cancer in Nigeria which was also about 2 decades earlier than that seen in Western populations. As also observed by Alatise et al.[15] in Ife, Nigeria, this makes a case for earlier age at commencement of colorectal cancer screening in this country.

A vast majority of neoplastic polyps are located in the proximal colon and may be missed if only sigmoidoscopy was done during screening[27]. Our study, like most other similar studies[12,15,20] showed neoplastic polyps to be predominantly located in proximal colon compared to the distal colon ($P<0.05$). Studies in our environment has implied that flexible sigmoidoscopy may miss a third of proximally located polyps[15]. Similar to that study, other studies have also revealed that a large number of adenomas and carcinomas are located in the proximal colon will be missed if endoscopy of the colon is limited to the distal colon[22]. Colonoscopy has therefore been suggested for screening of the whole colon rather than sigmoidoscopy in detecting predominantly proximally located adenomas[21].

Neoplastic (Adenomatous) polyps are sub-classified by their histological appearance as tubular, villous, or tubulo-villous adenomas[8]. Several studies including this review has revealed tubular adenoma as the commonest histological subtype, constituting 65-72% of all polyps removed[8,12] Other neoplastic polyps recorded by this study include villous adenoma and tubulo-villous adenoma having proportions of 21% and 7% respectively. Of the 43 cases of neoplastic polyps, 4 (9.3%) showed high grade dysplasia; including 2 cases of villous adenoma and a case each of tubular adenoma and tubulo-villous adenoma. The tubulo-villous adenoma was found to harbour focal invasive carcinoma. Carcinomas that are limited to the muscularis mucosae do not metastasize, and complete excision of the polyp is curative. However, simple polypectomy is not adequate treatment for tumours that have breached the muscularis mucosae because such tumours have gained metastatic potential[8]. All the 4 cases with high grade dysplasia were seen in adults younger than the age of 40 years ($P > 0.05$) though studies have shown increase risk of dysplasia with advancing age[22]. Higher rates of high grade dysplasia were recorded in Benin and Ife in Nigeria and in Saudi Arabia who reported 29.4%, 34.6% and 64.5% respectively[13,15,20]. High grade dysplasia harbours increase risk of malignancy and correlates with increase in polyp size and villous histology[8].

Conclusion

Colorectal polyps are relatively common in our environment especially juvenile polyp encountered mostly in paediatric age group. We recorded significantly lower prevalence, lower mean age at presentation and lower rates of high grade dysplasia of adenomatous polyps in our setting compared to Western populations. This underscores the need for early screening colonoscopy in individuals older than 40 years to detect and treat premalignant polyps before they undergo malignant transformation.

References

1. International Agency for Research on Cancer (IARC). Cancer fact sheet. GLOBOCAN 2012. Available from http://globacon.iarc.fr.factsheet/cancer/colorectal.asp
2. Bond JH. Clinical evidence for the adenoma-carcinoma sequence, and the management of patients with colorectal adenomas. *SeminGastrointest Dis* 2000; 11:176-84.
3. Coode PE, Chan KW, Chan YT. Polyps and diverticula of the large intestine: a necropsy survey in Hong Kong. *Gut.* 1985; 26:1045–1048.
4. Tony J, Harish K, Ramachandran TM, Sunilkumar K, Thomas V. Profile of colonic polyps in a southern Indian population. *Indian J Gastroenterol*. 2007; 26:127–129

5. Villavicencio RT, Rex DK. Colonic adenomas: prevalence and incidence rates, growth rates, and miss rates at colonoscopy. *SeminGastrointest Dis*. 2000; 11:185–193.
6. Bond JH. Polyp guideline: diagnosis, treatment, and surveillance for patients with colorectal polyps. Practice Parameters Committee of the American College of Gastroenterology. *Am J Gastroenterol* 2000; 95: 3053-63.
7. Colucci PM, Yale SH, Rall CJ. Colorectal polyps. Clin Med Res. 2003; 1:261–262.
8. Shussman N, Wexner SD. Colorectal polyps and polyposis syndromes. *Gastroenterology Report.* 2014 Feb 1;2(1):1-5.
9. Rotimi O, Abdulkareem FB. Fifty-three years of reporting colorectal cancer in Nigerians--a systematic review of the published literature. *Niger Postgrad Med J.* 2014 Mar;21(1):68-73.
10. Abdulkareem FB, Faduyile FA, Daramola AO, Rotimi O, Banjo AF, Elesha SO, et al., Malignant Gastrointestinal Tumours in South Western Nigeria: A Histopathologic Analysis of 713 Cases. *W Afri J of med*. 2009; 28(3):173–176.
11. Abdulkareem FB, Abudu EK, Awolola NA, et al., Colorectal Carcinoma in Lagos and Sagamu, Southwest Nigeria: A Histopathological Review. *W J of Gastroen*. 2008; 14(42): 6531-6535
12. Nouraie M, Hosseinkhah F, Brim H, Zamanifekri B, Smoot DT, Ashktorab H. Clinicopathological features of colon polyps from African-Americans. *Dig Dis Sci* 2010 May 1;55(5):1442-9.
13. Albasri A, Yosef H, Hussainy A, Bukhari S, Alhujaily A. Profile of colorectal polyps: a retrospective study from King Fahad Hospital, Madinah, Saudi Arabia. *Asian Pac J Cancer Prev.* 2014 Jan 1;15(6):2669-73.
14. Ibrahim OO, Anjorin AS, Afolayan AE, Badmos KB. Pathological characterization of colorectal polyps in Ilorin, Nigeria. *Afr J Med Med Sci.*2010 Sep;39(3):215-9.
15. Alatise OI, Arigbabu AO, Agbakwuru AE, Lawal OO, Sowande OA, Odujoko OO, Adegoke O, Ojo O. Polyp prevalence at colonoscopy among Nigerians: A prospective observational study. *Nig J ClinPract* 2014;17(6):756-62.
16. Durno CA. Colonic polyps in children and adolescents. *Canadian Journal of Gastroenterology and Hepatology.* 2007;21(4):233-9.
17. Wang LC, Lee HC, Yeung CY, Chan WT, Jiang CB. Gastrointestinal polyps in children. *PediatrNeonatol* 2009; 50:196-201.
18. Lofty-John C A, Aminu M M, Mustapha U I, Akinfenwa T A. Juvenile polyp in children in Kano Nigeria: Clinical presentation and management challenges. *Niger J Basic ClinSci* 2014; 11:20-3
19. Nugent KP, Talbot IC, Hodgson SV, Phillips RK. Solitary juvenile polyps: Not a marker for subsequent malignancy. *Gastroenterology*. 1993; 105:698–700.
20. Umana IO, Obaseki DE, Ekanem VJ. The clinicopathological features of lower gastrointestinal tract endoscopic biopsies in Benin City, Nigeria. *Saudi Surgical Journal*. 2017 Jan 1;5(1):9.
21. Laird-Fick HS, Chahal G, Olomu A, Gardiner J, Richard J, Dimitrov N. Colonic polyp histopathology and location in a community-based sample of older adults. *BMC Gastroenterology.* 2016 Dec 1;16(1):90.
22. Hodadoostan MK, Reza F, Elham M, Mohammad Alizade AH, Molaie M, Mashaiekhy R, Doagoo SZ, Moosavy M, Malek FN, Zali MR. Clinical and pathology characteristics of colorectal polyps in Iranian population. *Asian Pac J Cancer Prev.* 2010 Jan 1;11(2):557-60.
23. Fu Z, Shrubsole MJ, Smalley WE, Wu H, Chen Z, Shyr Y, Ness RM, Zheng W. Lifestyle factors and their combined impact on the risk of colorectal polyps. *Am J epidemiol*. 2012 Nov 1;176(9):766-76.
24. Burnett-Hartman AN, Passarelli MN, Adams SV, Upton MP, Zhu LC, Potter JD, Newcomb PA. Differences in epidemiologic risk factors for colorectal adenomas and serrated polyps by lesion severity and anatomical site. *Am J epidemiol* 2013 Mar 10;177(7):625-37.

25. Al-Enezi SA, Alsurayei SA, Ismail AE, Aly NY, Ismail WA, Abou-Bakr AA. Adenomatous colorectal polyps in patients referred for colonoscopy in a regional hospital in Kuwait. *Saudi J Gastroenterol* 2010 Jul;16(3):188.
26. Lim TR, Mahesh V, Singh S, Tan BH, Elsadig M, Radhakrishnan N, Conlong P, Babbs C, George R. Endoscopic mucosal resection of colorectal polyps in typical UK hospitals. *World J Gastroen*. 2010 Nov 14;16(42):5324
27. Imperiale TF, Wagner DR, Lin CY, Larkin GN, Rogge JD, Ransohoff DF. Using risk for advanced proximal colonic neoplasia to tailor endoscopic screening for colorectal cancer. *Ann Inttern Med*. 2003 Dec 16;139(12):959-65.

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