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Colorectal Carcinoma in Children and Young Adults in Ilorin, Nigeria

Carcinome Colorectal Chez Les Enfants Et Les Jeunes Adultes à Ilorin, Nigeria

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ABSTRACT

BACKGROUND: **Colorectal carcinoma is thought to be rare among children and young adults among whom presentation is usually at a late stage with poor prognosis.**

OBJECTIVE: **To review the demography, clinical presentation, morphology, and pathological stage of cases of colorectal carcinomas diagnosed in the children and adults.**

METHODS: **This was a retrospective review of cases of histologically diagnosed colorectal carcinoma of patients aged 40 years and below, between 1979 and 2008, using the request cards and hematoxylin and eosin stained slides.**

RESULTS: **Seventy-six (31.5%) of all cases of colorectal carcinoma were seen in patients aged 40 years and below. The mean age at presentation was 31years and the youngest aged 16 years. The male : female ratio was 1.6 : 1. The dominant clinical presentations were bloody diarrhea and rectal bleeding. Fifty-one (67.1%) cases were localized to the rectum, nine (16.1%) cases in the sigmoid colon, and eight (10.5%) cases in the caecum. Adenocarcinoma was the most common histological variant. Mucin-producing tumours were seen in 25 (32.9%) cases. Almost all the patients presented at advanced pathological stage.**

CONCLUSION: **Colorectal carcinoma is not rare among young Nigerians and it should be suspected when young patients present with chronic bloody diarrhoea. Digital rectal examination should be encouraged as part of clinical examination in this age group too since a large percentage of colorectal carcinomas is within the reach of the examining finger. WAJM 2011; 30(3): 202–205.**

Keywords: **Colorectal carcinoma, children, young adults, Ilorin**

RÉSUMÉ

CONTEXTE: carcinome colorectal est pensé pour être rares entre enfants et adultes jeunes, qui présentation est habituellement à un stade avancé avec un mauvais pronostic.

OBJECTIF: Revoir la démographie, la présentation clinique, la morphologie et le stade pathologique des cas de carcinomes colorectal diagnostiqué dans les enfants et les adultes.

MÉTHODES: Il s'agissait d'une revue rétrospective de cas de carcinome colorectal diagnostiqués par examen histologique des patients âgés de 40 ans et moins, entre 1979 et 2008, utilisant les cartes demande et diapositives hématoxyline et l'éosine tachés.

RÉSULTATS: Soixante-seize (31,5%) de tous les cas de carcinome colorectal ont été observés chez les patients âgés de 40 ans et moins. L'âge moyen au présentation était 31YEARS et le plus jeune âgé de 16 ans. LE ratio mâle: femelle était de 1,6: 1. Les presentations dominante cliniques étaient une diarrhée sanglante et des saignements rectaux. Cinquante et un (67,1%) cas ont été localisés dans le rectum, neuf (16,1%) des cas dans le sigmoïde, et huit (10,5%) des cas dans le caecum. Adenocarcinome était la variante histologiques les plus courants. Mucine-production tumeurs ont été observées dans 25 (32,9%) des cas. Presque tous les malades presentee au stade pathologique avancé.

CONCLUSION: Le carcinome colorectal n'est pas rare chez les jeunes Nigérians et il devrait être suspectée lorsque Patients jeunes présents avec diarrhée sanglante chronique. Toucher rectal exa-men doit être encouragée car partie de l'examen clinique ce groupe d'âge aussi, car un grand pourcentage de carcinomes colorectaux est à la portée du doigt instruction. **WAJM 2011; 30(3): 202–205.**

Mots-clés: Carcinome colorectal, enfants, jeunes adultes, Ilorin

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Abbreviations: APC, Adenomatous polyposis coli; **FAP,** Familial adenomatous polyposis; **H&E,** Hematoxylin and eosin.

INTRODUCTION

Colorectal carcinoma is rare in children and young adults in Africa, and developed countries.[1–3] Among the general population, both men and women, in the United States and other developed countries, colorectal carcinoma is the third most common cancer.[4] Colorectal carcinomas in persons younger than 40 years of age should raise the likelihood of germline genetic abnormalities.[5]

The commonest genetic abnormality associated with colorectal carcinoma is familial adenomatous polyposis coli (FAP), an autosomal dominant disease involving the adenomatous polyposis coli (APC) gene. Patients with FAP develop pancolonic and rectal adenomatous polyposis in mid-teenage years and may develop colorectal carcinoma if prophylactic total colectomy is not done. The risk of colorectal carcinoma is almost 100 percent, and usually before 40 years of age.[6] Other genetic abnormalities include variants of FAP and hereditary non-polyposis colorectal cancer. However, Giller[7] noted through genetic epidemiological research that roughly 10 percent of colorectal malignancies may arise in persons with a genetic susceptibility.

Even if none of these syndromes is present, patients with family histories of colorectal carcinomas still have an increased risk for the disease than the general population. Fuchs *et al*[8] confirmed this in the first prospective study of 32,085 men and 87,031 women who were first-degree relatives of patients with colorectal cancer, and pointed out that the risk was more evident in younger people. The youngest patient reported with colorectal carcinoma in the Nigerian literature was a three-year-old boy, but elsewhere, reports in children as young as nine months of age have been documented.[9, 10]

Most of the colorectal carcinomas in children are mucin-producing either in the form of mucinous adenocarcinoma or signet-ring carcinoma.[11–13] The peculiarity of colorectal cancer in children and young adults include its pathological stage at presentation and the prognosis. Several authors reported presentation at Duke's C and D pathological stage, hence poor 5-year survival.[2,3,14,15] The consensus among the authors is that the advanced stage at presentation was due to marked delay in diagnosis. Hey *et al* compared the survival rates of colorectal carcinoma in young patients and older patients, and they found a comparable prognosis state for stage.[16] Also, Chung *et al*[17] observed no significant difference in tumor characteristics and survival in patients with colorectal cancer aged less than 40 years.

The aims of this review were to highlight the burden of colorectal carcinomas in children and young adults in our setting, their pathological characteristics including site, morphology, pathological stage at presentation, as well as possible associated predisposing factors.

SUBJECTS, MATERIALS, AND METHODS

This was a retrospective review of all histologically diagnosed colorectal carcinomas in patients aged 40 years and younger in the Department of Pathology, University of Ilorin Teaching Hospital, Ilorin, Nigeria, from January 1979 to December 2008. The department is the only histopathological center in the State and also receives surgical specimens from other neighboring States in Nigeria.

The age, sex, anatomical distribution, gross features, histopathological diagnosis, and pathologic stage were obtained from the request cards in the department. The hematoxylin and eosin (H&E) stained slides were retrieved and reviewed to confirm the diagnosis, pathologic stage and the degree of differentiation. Fresh H&E slides were prepared where necessary. All cases with incomplete biodata were excluded from the study.

RESULTS

Seventy-six cases of colorectal carcinoma were reported in patients aged 40 and below during the period under review. This constituted 31.5% of the total burden of colorectal carcinoma in all age groups. Table 1 shows the 5-year distribution pattern with the highest number recorded in the last 10 years.

The mean age at presentation was 31 years, the youngest patient being 16 years of age. Two cases were seen in teenagers (16 and 18 year old boys). There were 47 (61.8%) cases in males and 29 (38.2%) cases in females giving a male: female ratio of 1.6 : 1.

The clinical features at presentations ranged from bloody diarrhea and bleeding per rectum, (37 cases), difficulty in defecation to constipation (28 cases), abdominal mass/distension (10 cases), and significant weight loss at the time of diagnosis in 18 cases.

Table 2 shows the anatomic distribution. Fifty-one (67.1%) cases were localized in the rectum, nine (16.1%) cases in the sigmoid colon, eight (10.5%) cases in the caecum, four cases in transverse colon, and two cases each in the ascending and descending colon. Out of the 76 cases reported, 27 cases were resected bowel segments. From these 27 cases, fungating and polypoid masses were seen in 16 cases while annular constricting masses were seen in 11 cases.

Table 3 shows the histological variants recorded. There were 51 (67.1%) cases of adenocarcinoma with varying degrees of differentiation (24 cases of well

Table 1: Five-year Occurrence of Colorectal Carcinoma in Patients Aged 40 years and below

Period	Number (%)		
	Male	Female	Total
1979–1983	6(12.8)	5(17.2)	11(14.5)
1984–1988	9(19.1)	3(10.3)	12(15.8)
1989–1993	4(8.5)	4(13.8)	8(10.3)
1994–1998	7(14.9)	2(6.9)	9(11.8)
1999–2003	8(17.0)	9(31.0)	17(22.4)
2004–2008	13(27.7)	6(20.7)	19(25.0)
Total	**47 (61.8)**	**29 (38.2)**	**76(100.0)**

Table 2: Distribution of Colorectal Carcinoma by Site

Anatomical Site	Frequency N(%)
Rectum	51 (67.1)
Sigmoid Colon	9 (11.9)
Descending Colon	2 (2.6)
Transverse Colon	4 (5.3)
Ascending Colon	2 (2.6)
Caecum	8 (10.5)
Total	**76 (100.0)**

Table 3: Histological Variants of Colorectal Carcinoma

Histological Variant	Number(%)
Adenocarcinoma	51 (67.1)
Well differentiated (24)	
Moderately differentiated and	
Poorly differentiated (17)	
Mucinous adenocarcinoma	17 (22.4)
Signet-ring cell carcinoma	8 (10.5)
Total	**76 (100)**

Table 4: Distribution of Patients with Colorectal Carcinoma by Age and Sex

Age range (years)	Male	Female	Total
Less than 10	–	–	–
11 – 20	4	1	5
21 – 30	17	14	31
31 – 40	26	14	40
Total	**47**	**29**	**76**

differentiated, 17 cases of moderately differentiated, and 10 cases of poorly differentiated), 17 (33.3%) cases of mucinous adenocarcinoma, and eight (10.5%) cases of signet-ring cell carcinoma.

Pathological staging was done for the 27 resected cases; 21 (77.8%) cases were at Duke's C, 5 (18.5%) cases at Duke's D, and only one (3.7%) case at Duke's B stage at the time of diagnosis.

DISCUSSION

Relatively few colorectal carcinomas occur in persons younger than 40 years old.[1–3] This review showed that a high percentage (31.5%) of the total colorectal carcinoma burden occurred in persons who are 40 years old and younger in our setting. This is in excess of the findings from the developed countries that reported as low as 2 percent to 3 percent.[2,3,18] The high percentage of colorectal carcinoma in this review is not peculiar to our centre. Sule and Mandong[19] reported 23.6 percent in their review of colorectal carcinomas in patients less than 30 years old in Jos, Nigeria.

The high percentage of colorectal carcinoma in this age group in Nigeria and possibly from other developing countries may be relative if fewer cases were reported in the older population in Nigeria. This may be due to lack of access to health care facilities by the aged, poor utilization of health facilities, reduced life expectancy, and failure to report and probably investigate all deaths. All these will result in the reduction of the total number of colorectal carcinoma expected in the aged population.

While the youngest patient treated for colorectal carcinoma in our centre was 16 years, the youngest patient reported in the literature was in a nine month-old child.[10] Colorectal carcinoma in children and teenagers should warrant suspicion of familial or hereditary predisposition. This is supported by the report of Udofot *et al*[9], which described a case of colorectal carcinoma in a three year-old Nigerian boy on a background of familial adenomatous polyposis coli. Also Musa *et al*[14] reported a strong familial predisposition to colorectal carcinoma in a Nigerian male child whose elder brother died of confirmed colorectal carcinoma and his father died of presentations that were related to colorectal carcinoma.

Establishment of genetic predisposition and significant family history of colorectal carcinoma in children and young adults will require aggressive screening and surveillance. Molecular studies on such tumours and on the individuals can reveal a germ-line mutation that will warrant screening of other siblings at early age with or without signs and symptoms.

The male predominance of 1.6:1 is similar to the observation of other authors and also similar to the findings in the older population. There may be more to the lifestyle reason given for the slight male predominance of colorectal carcinoma in the general population since this is also observed in children and young adults.

Bloody diarrhoea and bleeding per rectum were reported in 37 cases in this study. Bloody diarrhoea might be mistaken for infectious gastrointestinal disease and prolonged treatment of such will lead to advanced stage at the time of diagnosis of colorectal carcinoma. Therefore, there is need for clinical suspicion of colorectal carcinoma in patients that present with gastro-intestinal symptoms regardless of their age.

Rectosigmoid region was the predominant anatomical location in this review (60/76), and this is similar to the location of colorectal cancers in older patients. The clinical significance of this is the value of digital rectal examination in the detection of those rectal tumors that are within the reach of the examining finger. Hence, digital rectal examination should not be restricted to adult patients and patients who presented with gastrointestinal symptoms only.

The predominant histological variant is still adenocarcinoma with varying degree of differentiation (51/76) similar to the findings in older patients. However, mucinous adenocarcinoma and signet-ring cell carcinoma constitute a sizeable proportion of colorectal carcinoma in this review and indeed other reports in children and young adults.[11,12,19] The significance of these mucin-producing malignant cells to the prognosis in this age group has not been demonstrated.

Pathological staging, which was done for 27 resected cases revealed that almost all (26/27) the patients presented at advanced stage, and only one case presented at Duke's B stage. This is similar to the observation of most authors.[2,3,13–16,21] And it is agreed that poor prognosis reported for colorectal carcinoma in children and young adults is due to the advanced stage at presentation. The delayed presentation in this environment may be due to low clinical index of suspicion and mistaking colorectal carcinoma for other benign gastrointestinal diseases.

Conclusion

Colorectal carcinoma is not rare among young Nigerians and should be suspected in patients who present with chronic gastro-intestinal symptoms. Rectal examination should be encouraged in all children and young adults who present with gastrointestinal symptoms since a large percentage of these malignancies are within the reach of the examining finger.

Aggressive screening of siblings and first-degree relatives of young patients with colorectal carcinoma should

be encouraged to detect the disease early presentation and thus reduce in morbidity and mortality associated with the desease.

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