

HOSPITAL FREQUENCY OF LARGE BOWEL CANCER: FACTORS THOUGHT TO INFLUENCE OUTCOME

N Mbah

Department of Surgery, Usmanu Danfodiyo University Teaching Hospital, Sokoto. Nigeria.

ABSTRACT

Background: One of the leading causes of death from malignancies is cancer of the large gut. Elsewhere in the developed world, the disease severity and operative mortality are falling due to increased use of screening, earlier diagnosis and improvement in surgical techniques.

Aim: To report our experience with this disease at the Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto.

Patients and Methods: This is an 8-year retrospective analysis (January 1998 – December 2005) of all established cases of large bowel cancer managed at the surgical services of the Usmanu Danfodio University Teaching Hospital (UDUTH), Sokoto.

Results: A total of 40 cases of colorectal cancer were seen in this centre during the study period. There were 21 (52.5%) males and 19 (47.5%) females, representing a male: female ratio of approximately 1:1. The modal age was the 5th decade. The youngest patient was 15 years old. Forty-two percent of patients were below 40 years of age. All were symptomatic at time of detection. There was no patient in Dukes' stage A category. Nineteen (47.5%) were stage D at presentation. Potentially curative resection was performed in 5 (12.5%) patients. Another 22 (55.0%) cases had palliative surgical treatment. The remainder were either inoperable (n= 3; 7.5%), refused colostomy (9; 22.5%) or died before surgical treatment (1; 2.5%). Among those who were surgically treated, 6 (22.2%) died within 30 days of operation. The mean duration of post-operative follow up was 16 months (5–67 months).

Conclusion: Cancers of the large intestine are not uncommon in this part of the world. A rising frequency of colorectal cancers in our locality is observed. Presentation to hospital is usually late. A significant number of patients are below 40 years of age.

Key Words: Colorectal Cancer, Sokoto Area, Hospital Frequency, Outcome. *(Accepted 19 February 2008)*

INTRODUCTION

Colorectal cancer is a disease for which screening and preventive measures have proven effectiveness¹. Improvement in preoperative diagnosis of this condition in the developed nations has increased early detection and improved operability rates^{1,2}. Advances in surgical techniques and newer adjuvant methods of treatment have contributed in lowering the morbidity and postoperative mortality rates from this disease³⁻⁵. In the United States of America, there was a fall in the incidence (4.7%) and mortality (3.9%) from colorectal cancer in 1986-90, compared with the period 1973-86⁴. Conversely, the incidence of large bowel malignancy is reportedly rising in the developing world^{6,7}. We report our experience with large bowel cancer in a tertiary health facility located in the Sokoto area of Nigeria.

MATERIALS AND METHODS

The Usmanu Danfodiyo University Teaching Hospital (UDUTH) Sokoto is a 500-bed tertiary health facility. The institution's target population includes patients from Sokoto and the neighbouring states in the northwestern. The case records of all patients with clinically established diagnosis of colorectal cancer managed in this center during an 8-year period (Jan.1998 - Dec.2005) were reviewed. The diagnostic protocol for every patient at presentation included the clinical findings, abdominal ultrasound, proctosigmoidoscopy/biopsy and tissue histology. Liver function test, plain chest and appropriate skeletal X-rays were done to confirm distant visceral organ and bone metastasis where indicated. These findings were employed for the clinical staging of each case using the Dukes' classification system. Colonoscopy, computed tomography (CT) scanning and barium enema studies were not routinely employed for diagnosis during the period under review. The location of the primary

Correspondence: Dr N Mbah
E-Mail:nonsodr@yahoo.co.uk

tumor in the colon or rectum, the presence and site of tumor metastasis, surgical treatment, intraoperative findings, histological diagnosis, clinical (Dukes') stage of the disease, survival data and follow-up were evaluated. The hospital did not have facilities for radiation treatment during the period under consideration. Tables and charts were employed for the data presentation. The results were analyzed using simple arithmetic means and group percentages.

RESULTS

Between January 1998 and December 2005, 40 patients with histologically confirmed large bowel cancer were seen at the Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto.

The average annual hospital incidence was 5 patients per annum (fig 1). Twenty-one patients were males and 19 were females (M: F = 1.1:1). The ages ranged from 15 years to 85 years (mean 45.2 years) Table 1 shows the age and sex distribution with modal age being 5th decade. The distribution of the tumors showed 72.5% in the sigmoid colon and rectal region (table 2). There were no identifiable synchronous tumors, polyps, chronic granulomatous lesions or a positive family history of the disease in any of the operated patients. Hospital presentation after 1 year of onset of symptoms was observed in 21 (52.5%) of the 40 patients. None of the patients studied was identified in Dukes' stage A category (fig. 2). The tissue histology revealed adenocarcinoma in 35 (87.5%) patients and squamous cell carcinoma in 5 (12.5%). Twenty seven (67.5%) patients underwent surgical treatment. Three (7.5%) of these cases were emergency operations for acute intestinal obstruction. Potentially curative resection was performed in 5 (12.5%) cases. Overall, 22 (55.0%) patients underwent palliative surgical treatment (table 3). Superficial wound infection and colostomy-related complications accounted for 73% of the post-operative morbidity. All resolved on conservative treatment. Six deaths occurred within 30 days of surgery (6/27; 22.2%). The mean duration of post-operative follow up was 16 months (5 to 67 months). Of the remaining 13 (32.5%) surgically untreated patients most of whom had undergone tissue biopsy, 9 (22.5%) declined permanent colostomy and left against medical advice, 3(17.5%) others were deemed inoperable and discharged on conservative management while 1(2.5%) died before operative treatment. All patients with adequate hematological profiles received bolus intravenous injection of 5-fluorouracil (5-FU) administered over five days every six weeks until lost to follow up or death.

Figure 1: Annual Hospital Incidence of Colorectal Cancer (Sokoto, Nigeria).

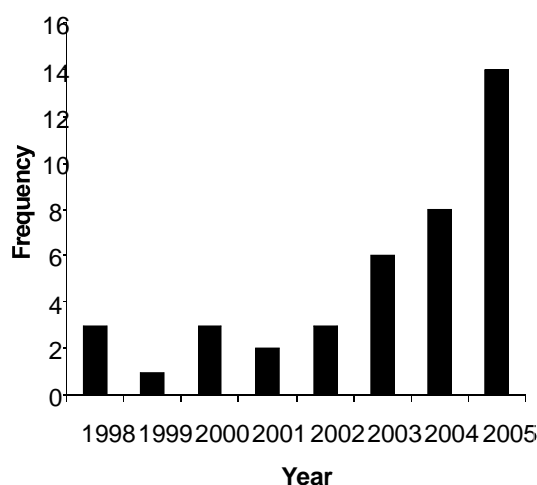


Table 1: Age and Sex Distribution in Colorectal Cancer (Sokoto, Nigeria)

Age (years)	Male	Female	Total (%)
0 – 9	-	-	-
10 – 19	1	-	1 (2.5)
20 – 29	4	3	7 (17.5)
30 – 39	2	7	9 (22.5)
40 – 49	7	5	12 (30.0)
50 – 59	4	3	7 (17.5)
60 – 69	2	1	3 (7.5)
= 70	1	-	1 (2.5)
Total (%)	21 (52.5)	19 (47.5)	40 (100.0)

Figure 2: Clinical Stage of Colorectal Cancer at Presentation (Sokoto, Nigeria).

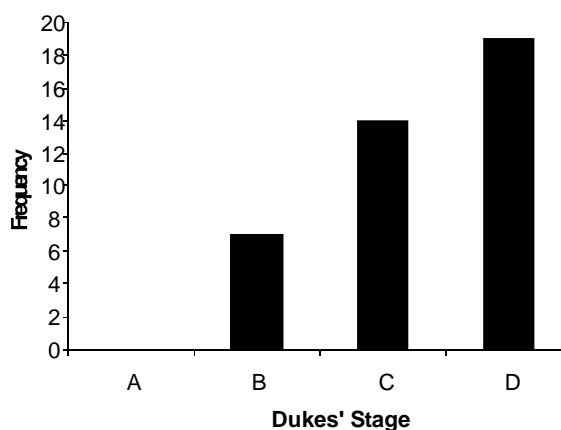


Table 2: **Anatomical Distribution of Colorectal Cancer.**

Tumour Site	Male	Female	Total (%)
Caecum	3	1	4 (10.0)
Ascending Colon	1	-	1 (2.5)
Transverse Colon	3	1	4 (10.0)
Descending Colon	2	-	2 (5.0)
Sigmoid Colon Only	-	3	3 (7.5)
Recto-Sigmoid	1	5	6 (15.0)
Rectum	11	9	20 (50.0)
Total	21	19	40 (100.0)

Table 3: **Operative Treatment of Colorectal Cancer.**

Type of Operation	Freq. (%)
Hemicolectomy (right or left)	7 (17.5)
Internal by-pass	
Ileo-transversostomy	3 (7.5)
Ileo-sigmoidostomy	2 (5.0)
Simple colostomy alone	8 (20.0)
Abdomino-perineal excision of the rectum	4 (10.0)
Hartmann's procedure	3 (7.5)
None	13 (32.5)
Total	40 (100.0)

DISCUSSION

The medical literature is replete with accounts of large bowel cancer from both the developed and developing countries¹⁻⁷. Large bowel cancer is the leading cause of cancer deaths in the United States of America and Europe after lung cancer^{1,8,9}. The distribution, epidemiology, management and treatment outcome of large gut malignancies vary worldwide. Our report showed a low average annual hospital incidence for colorectal cancer (5 cases per annum) similar to the mean annual incidence of 12 patients/year reported from the United Arab Emirates¹⁰ but in sharp contrast with the over 30 cases/year seen in a single institution in Finland¹¹, 70/year in China¹², 76/year in the United Kingdom¹³ and 150/year in the United States of America¹⁴. Our study agrees with earlier observations that large gut cancers have lower incidence in African communities^{6,7}. In spite of this fact, the disease showed increasing frequency in our environment over the period 1998-2005, comparable to observation from other centres in sub Saharan Africa^{6,7}. Many experts attribute this upward surge to the westernized dietary habits of African populations. The increased awareness by both patients and medical staff has also contributed to the rising frequency in our setting. Screen detection of colorectal cancers and their predisposing lesions in asymptomatic individuals

involve a digital rectal examination, fecal occult blood testing and proctosigmoidoscopy¹⁵. Barium enema and colonoscopy are usually reserved for the high-risk patients such as those with predisposing conditions or strong family history^{16,17}. In the United States, African Americans who were less likely to undergo screening tests for colon cancer had an increased incidence and mortality rates from large bowel malignancies during the 1996 to 2000 period⁸. In Nigeria, there is no national health policy for the screening of asymptomatic individuals for cancers of the large intestine. This is partly accountable for the advanced and late stages at which the disease is detected in our health community.

Carcinoma of the large bowel has been described in all age groups. The youngest reported was in a premature infant¹⁸. Our study identified 42.5% patients less than 40 years of age while the youngest was a boy of 15. Other series from Asia and Africa had observed rates of 20% and above among colorectal cancer cases who were below age 40^{6,7}.

Ajao et al⁷. noted that all 11 cases with rectal cancer in their series sought alternative methods of cure before hospital presentation. This provides another explanation for the poor prognosis of the disease in the developing world. When the interval between the onset of symptoms and diagnosis was brief, better survival rates were reported following surgical treatment^{5,8}. The average delay in presentation seen in the present study was 1 year. Such long delays had been attributed to poverty, ignorance and poor access to proper health facility⁷.

Cancer staging is pivotal to its management²². Accurate staging of large bowel malignancies in our center was a huge challenge during the period 1998-2005. Reliance for staging was placed on clinical findings, ultrasound scans and plain radiographs. The non-availability of endorectal ultrasound facility, functional computed tomography (CT) scanner, barium enema studies and colonoscopy during the period studied meant that some cases were under staged. Incidentally, Adesanya and da Rocha-Afodu reported similar constraints from Lagos⁶.

The rectum and sigmoid colon constituted the predominantly involved sites in about 72.5% of our cases when compared to other parts of the large gut. Other workers in Africa had also documented recto-sigmoid predominance of large bowel cancer in their series⁶⁻⁷. Burkitt²³ believed that the prolonged duration of contact between fecal carcinogens and the large bowel epithelium of the rectum and sigmoid colon may be responsible for this site-predilection of the disease. The recto-sigmoid preponderance of the tumors in the present series differs from the shift to the right side of the colon which was found in some African-American ethnic population with large gut

cancers in the United States^{8,24}. It was worthy of note to observe the absence of adenomatous polyps in all our operated patients. Adenomatous polyps were commonly present in the middle and right colon of African Americans in the United States²⁴. This finding may explain the rarer observance of colorectal cancers on the right side of the colon in our indigenous African patients in contrast with their migrated counterparts in North-America.

The presence of the greater majority of large bowel malignancies in the region of the rectum and sigmoid colon in this report has an important clinical value. Such lesions are within the reach of a digital rectal examination and proctosigmoidoscopy. Consequently, a properly conducted digital rectal assessment and proctosigmoidoscopy routinely performed on all hospital patients with rectal bleeding and other abdominal symptoms would lead to earlier detection of this disease in a significant number of patients in our health community.

The ideal treatment of colorectal cancer is curative resection^{5,22}. Incidentally, the proportion of our patients suitable for curative surgical treatment (12.5%) pales significantly when compared with the 73 and 80% reported elsewhere^{10,25}. The range of surgical operations offered the patients in this survey reflect the usual spectrum of procedures performed for the palliative treatment of large bowel and anal cancers in other Nigerian studies when presentation is late^{6,26}. None of our patients had any form of sphincter-saving rectal resection. In the series by Pitluk and Poticha, 16% of the patients were managed palliatively by anterior resection for the advanced disease²⁰. Anterior resection is a sphincter-saving procedure ideal for rectal malignancies. It is performed in cases where an adequate healthy margin is obtained beyond the palpable borders of the tumor and which is sufficient to permit a colo-anal anastomosis. Unfortunately, this procedure is uncommonly performed in many Nigerian centres mainly for reasons of the very distal location and the bulky nature of the rectal cancers seen in our environment⁶. Colostomy, either performed alone or as part of other procedures was therefore imperative in the greater majority of our cases who came with fixed recto-sigmoid lesions. Incidentally, colostomy is not generally accepted in our society. It is rejected by a significant patient population for socio-cultural reasons⁴⁵. There have been cases of suicide after colostomy in some areas²⁸. Intensive public enlightenment campaigns are therefore necessary in order to reverse this negative attitude in our community.

The 22.2% post-operative mortality from our study is at variance with published rates of 0.5 to 4.2%^{11,26} from larger series on colorectal cancer in the

Developed world where the overall 5-year survival also exceeded 50^{11,25}. In those reports, over 40% of their patients presented with the localized disease (Dukes A and Dukes B). Studies have shown that when screen-detected premalignant and early large bowel cancers (Dukes A and Dukes B) are promptly resected, the morbidity is minimal, a longer survival is achieved and in most instances cure is attained^{5,19,22}.

Remarkable success had been reported with the use of intra-operative radiotherapy and external beam irradiation for the treatment of the locally advanced large bowel and anal cancers²⁹. As many patients in our environment come with the advanced disease most of which are situated in the rectum and sigmoid region, the availability of this facility in our centre will be of great advantage.

CONCLUSION

Large bowel cancer is not uncommon in the Sokoto area of Nigeria. The annual hospital frequency is rising. More than 40% of the patients are below 40 years of age. All were symptomatic at time of diagnosis. The high incidence of colorectal cancer in the young calls for extra vigilance by healthcare providers. This would facilitate early detection and prompt operative treatment thereby reducing morbidity and mortality.

REFERENCES

1. **Rudy DR, Zdon MJ.** Update on colorectal cancer. *Am Fam Phys* 2000; 61(6): 1759-70, 1773-74. Available from url: <http://www.aafp.org.afp/20000315/1759.html> (accessed on 15th Dec 2006).
2. **Nazarian HK, Guiliano AE, Hiatt JR.** Colorectal carcinoma: Analysis of management in two medical eras. *J Surg Oncol* 1993; 52: 46-49.
3. **Jatzko G, Lisborg P, Wette V.** Improving survival rates for patients with colorectal cancer. *Br J Surg* 1992; 79: 588-591.
4. **Nelson RL, Persky V.** The rise and fall of colorectal cancer. *Dis Colon Rectum* 1994; 37:1175-6.
5. **Steele RJC.** Modern challenges in colorectal cancer. *Surgeon* 2006; 4 (5): 285-289.
6. **Adesanya AA, da Rocha-Afodu JT.** Colorectal cancer in Lagos: a critical review of 100 cases. *Nig Post Med J* 2000; 7(3): 129-136.

7. **Ajao OG, Soyannwo OA, Ladipo JK, Okeke LI, Adabamowo CA.** Experience with 5-fluoro-uracil and levamisole in the management of advanced rectal carcinoma. *Afr J Med med Sci* 1996; 25: 239-241.
8. **Rex DK, Rawl SM, Rabeneck L, Rex EK, Hamilton F.** Colorectal cancer in African Americans. *Rev Gastroenterol Dis* 2004; 4 (2): 60-65.
9. **Boyle P, Ferlay J.** Cancer incidence and mortality in Europe, 2004. *Ann Oncol* 2005; 16(3): 481-88.
10. **Al-Shamsi SR, Bener A, Al-Sharhen M, Al-Mansoor TM, Azab IA, Rashed A et al.** Clinico-pathological pattern of colorectal cancer in the United Arab Emirates. *Saudi Med J* 2003; 24(5): 518-22.
11. **Paimela H, Lindstrom O, Tomminen T, Livonen M.** Surgery for colorectal cancer in a low- volume unit: assessment of key issues in the achievement of acceptable clinical results. *Int J Gastrointest cancer* 2005; 35(3): 205-10.
12. **Feng B, Zheng MH, Mao ZH, Li JW, Lu AG, Wang ML et al.** Clinical advantages of laparoscopic colorectal cancer surgery in the elderly. *Aging Clin Exp Res* 2006; 18 (3): 191-5.
13. **Gomez D, Dalal Z, Raw E, Roberts C, Lyndon PJ.** Anatomical distribution of colorectal cancer over a 10 year period in a district general hospital: Is there a true "rightward shift". *Postgrad Med J* 2004; 80(949): 667-9.
14. **Taylor V, Lessler D, Mertens K, Tu SP, Hart A, Chan N et al.** Colorectal cancer screening among African Americans: the importance of physician recommendation. *J Natl Med Assoc* 2003; 95(9): 806-12.
15. **Winawar SJ, Shike M.** Prevention and control of colorectal cancer. In: Greenwald P, Kramer BS, Weed DL, eds. *Cancer prevention and control*. 1995. New York: Marcel Dekker: 537-559.
16. **Johnson CD, Carlson HC, Taylor WF.** Barium enemas of the colon: sensitivity of the double- and single- contrast studies. *Am J Radiol* 1983. 140: 1143-1149.
17. **Lieberman DA, Smith FW.** Screening for colon malignancy with colonoscopy. *Am J Gastroenterol* 1991. 86: 946-951.
18. **Ahfeld F.** Zur casusistik der congenitalen neoplasmen. *Arch Gynaekol* 1880; 16: 135.
19. **Vakili C, Fatourechi V.** Age distribution of patients with carcinoma of the colon in a general hospital in Iran. *Surg* 1976; 79(1): 118-119.
20. **Pitluk H, Poticha SM.:** Carcinoma of the colon and rectum in patients less than 40 years of age. *Surg Gynecol Obstet* 1983; 57: 336-338.
21. **Gallagher EG, Michael GZ.** Rectal carcinoma in patients in the second and third decades of life. *Am J Surg* 1972; 124: 655-659.
22. **Mander BJ, Carney LJ, Scott HJ, Donaldson DR.** Jass staging is a predictor of outcome following "curative" resection of Dukes' B colorectal carcinoma. *Surgeon* 2006; 4 (4): 227-230.
23. **Burkitt DB.** Epidemiology of carcinoma of the colon and rectum. *Cancer* 1971; 28: 3-13.
24. **Greene FL.** Distribution of colorectal neoplasms. A left-to-right shift of polyps and cancer. *Am J Surg* 1983; 49: 62-65.
25. **Koyama Y, Kotake K.** Overview of colorectal cancer in Japan: report from the registry of the Japanese society of the colon and rectum. *Dis Colon Rectum* 1997; 40(S 10): S 2- 9.
26. **Ameh EA, Nmadu PT, Rafindadi AH,** Colorectal and anal cancers in Zaria: a clinico-pathological study. *GI cancer* 1999 3(1): 11-15.
27. **Obiekwe DM.** Permanent colostomy The social problems encountered in Enugu, Nigeria. *Orient J Med* 1991; 3(1): 62-65.
28. **Adekunle OO, Lawani JA.** Clinical aspects and management of carcinoma of the rectum in Nigeria. *East Afr Med J* 1982; 59: 206-213.
29. **Gunderson LL, Martin JK, Beart RW.** Intraoperative and external beam irradiation for locally advanced colorectal cancer. *Ann Surg* 1988; 207 (1): 52-59.