Adenocarcinoma of the Colon in a Nigerian Child: Case Report

Eno-Obong Bassey,[1] Chimenye Nnoli,[1] Nsisong Udoudo[1]

ABSTRACT

Background: Colon carcinoma is rarely seen in children, but it can occur. Clinical features of this illness in childhood are non-specific and often mimic other gastrointestinal disorders in children. This increases the risk of the disease being overlooked or misinterpreted, leading to a delay in diagnosis until the child presents at a more advanced stage with a poorer prognosis. Therefore, it is important to highlight the sporadic occurrence of this condition. **Case-Report**: This article reports on a 12-year-old Nigerian female, who presented to a tertiary health facility with a month's history of abdominal pain associated with abdominal distension, anorexia, postprandial emesis, constipation and weight loss. She had received various treatments over the counter, with only partial relief of symptoms. Adenocarcinoma of the colon was diagnosed following an emergency laparotomy and histologic examination of the excised colonic specimen. **Conclusion**: Colorectal carcinoma should be considered in any child presenting with alterations in bowel habits, abdominal pain, or distension, especially in resource-poor settings where diagnostic facilities may be suboptimal, as early diagnosis can lead to better treatment outcomes.

Keywords: Adenocarcinoma, Colorectal Carcinoma, Child, Nigeria

INTRODUCTION

Colorectal carcinoma is a relatively rare illness in children comprises approximately 1% of paediatric malignancies. It is one of the uncommon primary gastrointestinal malignancies in children.[1] Its overall incidence is reported to be low in Nigeria, documented as 3.4/100,000 compared to a ten-fold higher incidence of 35.8/100,000 reported annually in the United States.[2] Due to its rare occurrence, and reduced index of suspicion in children, the symptoms can easily be overlooked and diagnosis delayed until the disease reaches an advanced stage. At this stage, the prognosis and treatment outcome worsen.[3] The presenting symptoms of this disease in children are usually nonspecific, with symptoms and signs mimicking other benign gastrointestinal conditions. It is noteworthy that any family with a history of inflammatory bowel disease should increase a physician's clinical suspicion of the possibility of the disease.[1-4]

Worldwide, there have been various documented reports of sporadic cases involving people less than 20 years of age, with less than 12 patients below the age of 10 years and the youngest being nine months old at the time of diagnosis.[3-12] Some researchers from the western and northern parts of Nigeria have reported colorectal cancer mostly in older children and young adults, the youngest being 16 years of age.[3,4] Genetic instability without hereditary nonpolyposis colorectal cancer (HNPCC) is said to be a major causative mechanism.[13,14]

In contrast to adult patients, childhood adenocarcinoma is associated with a poorer prognosis thus requiring a high index of suspicion for early diagnosis and better outcomes.

CASE REPORT

A 12-year-old female pupil was admitted through the children's emergency unit of a tertiary hospital with complaints of abdominal pain, abdominal swelling, vomiting, weight loss and fever all of one month's duration. She had been apparently well until about one month before her presentation, when she developed colicky abdominal pain, worse in the left lumbar region, occurring at all times of the day. The pain was non-radiating, with no known aggravating

Department of Paediatrics,[1] University of Uyo Teaching Hospital, Uyo. Akwa Ibom State, Nigeria.

Corresponding Author:
Dr Eno-Obong Bassey
Department of Paediatrics
University of Uyo Teaching Hospital
Uyo, Akwa Ibom State, Nigeria
Email: utukenoobong@yahoo.com

factors, but was relieved by rectal enema using local herbs.

Abdominal swelling was insidious in onset and generalized. There was no history of trauma prior to the onset of symptoms. Post-prandial vomiting was noticed around the same time. The vomiting was projectile, non-bilious, and not copious, occurring about two to three times daily. The fever was low-grade and intermittent, not worse at any time of the day, and was relieved by the intake of paracetamol tablets. Weight loss was noted as the illness progressed, evidenced by loose-fitting clothes and emerging bony prominence.

On account of the symptoms, she was given over-the-counter medications and later taken to a secondary facility where an oral antacid and other unknown medications were given to no avail. Subsequently, she was taken to church for prayers, which was offered with olive oil given topically and orally. Failure of symptoms to abate led to presentation in this facility for further care.

There was no history of previous hospital admissions, surgery or blood transfusion. She had no known drug allergy and was not on any routine medications. The mother's pregnancy and perinatal histories were not contributory to the illness at presentation. She was predominantly breastfed, with the family diet introduced at one year of age. Her mother stopped breastfeeding her at fifteen months of age. In her pre-morbid state, she ate three meals daily with a good appetite. She had not received any childhood immunization, for reasons that were not ascertained and had yet to attain menarche. She was the youngest of six children in a polygamous family setting. She lived with her father until the onset of the illness when she was transferred to her mother for continued care.

On review of the digestive system, there was tenesmus, abdominal swelling/pain, vomiting and constipation. There was no diarrhoea and no haematochezia. Other systems were essentially normal.

A general physical examination revealed a conscious, chronically ill-looking child, in continuous painful distress. She was moderately pale, afebrile, not jaundiced and not cyanosed. She was moderately dehydrated and had no pedal oedema or peripheral lymphadenopathy. The digestive system examination showed a parched tongue, with a markedly distended abdomen. There was tenderness over the umbilical region. Her abdominal girth was 88cm, (measured 15cm from the xiphisternum). There were no palpable organs. A digital rectal examination revealed a collapsed rectum.

She was not dyspnoeic, with a respiratory rate of 20 cycles per minute, and breath sounds were vesicular. The cardiovascular system examination showed a pulse rate of 100 beats per minute, full volume and regular, with a supine blood pressure measurement of 90/50mg (right arm). The first and second heart sounds were normal.

A diagnosis of Intestinal Obstruction secondary to Midgut Volvolus was made, with a differential diagnosis of an intra-abdominal malignancy being considered.

She was admitted into the children's ward, and Nil Per Oris (NPO) was instituted. A nasogastric tube was immediately inserted, to decompress the abdomen, while plans for a paediatric surgical review were underway.

An abdominal ultrasound scan, serum electrolytes, urea, creatinine, and uric acid were requested, along with additional electrolytes—calcium and phosphate. An immediate Packed Cell Volume, including a Full Blood Count and HIV screening, were all ordered. An input/output chart was initiated to document fluid balance. Parenteral analgesic and antibiotics were commenced: Intravenous Pentazocine 15mg 8hourly, Intravenous Ceftriaxone 1g 12hourly, Intravenous Metronidazole, 260mg 8 hourly and Intravenous Fluid 5% Dextrose in saline 8 hourly.

After some delay due to financial and logistical constraints, she underwent an exploratory laparotomy four days after admission. A sigmoid mass was resected and sent for histology.

Intra-operative findings revealed dilated loops of bowel, including descending, ascending and transverse colon as well as the small bowel. There was a constricting sigmoid colon tumour, plastered to the posterior abdominal wall, measuring about 8 x 6 cm centred at the sigmo-rectal junction. There was haemorrhagic peritoneal fluid and a collapsed rectum. The liver, spleen, stomach and kidneys appeared normal, but there were multiple mesenteric lymph nodes.

Histologic findings were as follows: Macroscopically, a sigmoid colon segment was significantly mal-rotated with a circumferential grey-white, firm tumour measuring 9 x 2.5cm. There was attendant severe narrowing of the gut lumen. Microscopically, the histologic sections of the sigmoid colon tumour showed an extensively invasive malignant epithelial neoplasm extending from the mucosa to the serosa. The tumour comprised occasionally fused malignant glands and nests of atypical cells within a dense desmoplastic stroma. Foci of necrosis, mitotic figures, and chronic inflammation were also observed. Sections of the resected gut margins were viable and free of tumour cells. A histologic diagnosis of invasive moderately differentiated adenocarcinoma, at least stage 3, was made.

Post-surgery, she was commenced on intravenous ceftriaxone, metronidazole, and rectal diclofenac. A review by the dietitians led to her being started on F-75 formula feeds, which were subsequently upgraded to F-100, both of which were well tolerated. After the necessary haematologic and pre-chemotherapy preparation, she was started on the FOLFOX regimen (Oxaliplatin, Folinic Acid, and 5-Fluorouracil), scheduled for six cycles every three weeks.

However, her caregivers struggled to complete just two cycles of chemotherapy, facing severe financial exhaustion, which led to the abandonment of treatment for over two months. When she returned two months later, she presented with new signs and symptoms of intestinal obstruction, which were managed conservatively using nasogastric decompression, intravenous fluids, and analgesics. This provided temporary relief, but shortly thereafter, the family left against medical advice and was lost to follow-up.

DISCUSSION

Colon cancer is relatively rare in the paediatric age group, though it could occur sporadically. There is a need for increasing awareness of this illness in the childhood population so that its diagnosis is not delayed or missed, till it gets to very advanced stages.[15-18] This is particularly important in resource-poor West African regions, where a variety of simple childhood gastrointestinal disorders could also give rise to symptoms that could mimic serious scenarios, like adenocarcinoma of the colon.[19-24] In contrast with our index patient who was female, some studies, particularly in Nigeria, have shown a slight preponderance in males with values ranging from 1.6 to 3:1.[2,3,22,23] while some other studies reported an equal male-to-female incidence.[24,25]

Our index patient presented with symptoms of abdominal pain and distension, post-prandial vomiting, weight loss and pallor similar to other presentations in a few case reports.[8-11]

Various studies have found a relationship between patients with early-stage colon cancer and inherited genetic predisposition to the disease.[3,6,9] Screening for genetic markers in the child in the present case may have helped to identify any genetic abnormal predispositions which would further be invaluable in evaluating her siblings or close relatives, but such are not available in the centre. However, there was no known history of familial adenomatous polyposis, familial juvenile polyposis or ulcerative colitis in the family of our index patient - conditions which have been strongly associated with colorectal carcinoma, particularly in the adult population.[26]

Adenocarcinoma of the colon in childhood has the potential for more rapid tumour growth, particularly in actively growing children. This may have contributed to the observed rapid deterioration in the condition of this index child. Some authors found a progressive increase in the incidence of the disease in patients older than 10 years.[7-11] Our patient presented with symptoms of abdominal pain and distension, anorexia and bowel habit changes as in other case reports.[8-11] Without a high index of suspicion at the onset, there is a risk that colon cancer will be diagnosed at a late stage, especially in children with no apparent predisposing factor.

In children, tumour sites are distributed equally throughout all parts of the colon, as observed in our index patient, whereas in adults, left-sided colonic and rectal tumours predominate.[6] The histologic finding of adenocarcinoma in our index patient is similar to a report by Ibrahim et al[3] on children and young adults in which up to 67.1% of the cases were found to be this variant.

The mainstay of treatment is surgical resection of the affected gut or tumour site, with the inclusion of at least 5cm of macroscopically normal bowel along with significant lymph node resection.[27] Chemotherapy, using the FOLFOX regimen, is extremely important in advanced cases. Being of rarer incidence, paediatric colorectal carcinoma is not likely to be detected early and the use of

chemotherapy either as adjuvant or neoadjuvant treatment is almost sine qua non. Our index patient received both surgical treatment and incomplete chemotherapy before her treatment was abandoned, and she was lost to follow-up. This is a common pattern observed in many centres that treat childhood cancers across many countries, especially in low and medium-income countries. It remains a major cause of poor outcomes of treatment and paediatric cancer mortality.[28-31]

CONCLUSION

A high index of suspicion should prompt the consideration of colon cancer as a differential diagnosis in children presenting with nonspecific gastrointestinal symptoms that do not respond promptly to conventional therapy. Continuous public health education, with an emphasis on early presentation, is crucial. We recommend including childhood cancers with potential for moderate to excellent prognosis post-treatment as part of healthcare insurance packages in Nigeria. This inclusion would help reduce the morbidity and mortality associated with the disease.

REFERENCES

1 King-Jun K, Lung-Huang L, Shih-Hung H, Jia-Uei W. CARE-Pediatric colon Adenocarcinoma. A Case Report and Literature Review Comparing Differences in Clinical Features Between Children and Adult Patients. Medicine 2015; 94(6): e503

2 Irabor DO. Colorectal carcinoma in West Africans: some considerations on its relatively lower incidence compared to Caucasians. Pak J Med Sci 2008: 24(2): 331-335.

3 Ibrahim OK, Afolayan AE, Adeniji KA, Buhari OM, Badmos KB. Colorectal carcinoma in children and young adults in Ilorin, Nigeria. West Afr J Med. 2011:30(3):202-5

4 Ameh EA , Nmadu PT. Colorectal adenocarcinoma in children and adolescents: a report of 8 patients from Zaria, Nigeria. West Afr J Med. 2000:19(4):273-6.

5 Kravarusic D, Feigin E, Dlugy E, Steinberg R, Baazov A, Erez I, Lazar L, Kapuller V, Grunspan M, Ash S, Freud E. Colorectal carcinoma in childhood: a retrospective multicenter study. J Pediatr Gastroenterol Nutr. 2007: 44(2):209-11.

6 Gips M, Wolloch Y. Carcinoma of the colon in youngsters: a report of three cases. Isr J Med Sci. 1993:29(11):730-2.

7 Shah RS, Pikale HS, Birmole BJ, Kulkarni BK, Borwankar SS. Adenocarcinoma of the colon in a child. J Postgrad Med. 1992:38(2):81-3.

8 Al-Tonbary Y, Darwish A, El-Hussein A, Fouda A. Adenocarcinoma of the colon in children: Case series and mini-review of the literature. Hematol Oncol Stem Cell Ther 2013; 6(1):29-33.

9 Ahmad HR, Faruk JA, Sholadoye TT, Mohammed AJ, Aliyu HO, Mado SM et al. Carcinoma of the colon in a child. J Community Support Oncol 2018; 16(3): e152-e155

10 Chattopadhyay S, Gupta P, Aich RK, Deb AR. Colorectal carcinoma in a ten-year-old girl: a case report. J Cancer Res Ther. 2012; 8(1) :120-122

11 Salas-Valverde S, Lizano A, Gamboa Y, Vega S, Barrantes M, Santaaria S et al. Colon carcinoma in children and adolescents: prognostic factors and outcome – a review of 11 cases. Pediatr Surg Int. 2009; 25(12):1073-1076

12 Ferrari A, Rognone A, Casanova M, Zaffignani E, Piva L, Collini P et al. Colorectal carcinoma in children and adolescents: the experience of the Istituto Nazionale Tumori of Milan, Italy. Pediatr Blood Cancer 2008; 50 (3):588-593.

13 Sharma MS, Kumar S, Agarwal N. Childhood colorectal carcinoma: A case series. Afr J Paediatr Surg 2009: 6 (1);65-67.

14 Sebbag G, Lantsberg L, Arish A, Levi I, Hoda J. Colon carcinoma in the adolescent. Pediatr Surg Int. 1997; 12 (5–6)446-448.

15 Saab R, Furman WL. Epidemiology and management options for colorectal cancer in children. Paediatr Drugs 2008; 10 (3):177-19.

16 Kern WH, White WC. Adenocarcinoma of the colon in a 9-month-old infant; report of a case. Cancer. 19+58; 11 (4):855-857

17 Karnak I, Ciftci AO, Senocak ME, Büyükpamukçu N. Colorectal carcinoma in children. J Pediatr Surg. 1999; 34 (10): 1499-1504

18 Rao BN, Pratt CB, Fleming ID, Dilawari RA, Green AA et al Colon carcinoma in children and adolescents. A review of 30 cases. Cancer, 1985:55(6):1322-6.

19 Ibrahim OK , Afolayan AE, Adeniji KA, Buhari OM, Badmos KB. Colorectal carcinoma in children and young adults in Ilorin, Nigeria. West Afr J Med. 2000;19(4):273-6.

20 Siboe MM, Abdalla RO, Lakati KC, Oduor P, Adenocarcinoma of the Colon in a 10-year-old child. Case report. Ann Afr Surg 2010:(5) ;47

21 Tonary AD, Ahmad E, Ashraf F. Adenocarcinoma of the colon in children: Case series and mini review of the literature. Hematology/Oncology and Stem Cell Therapy. 2013; 6(1):29-33.

22 Yawe K.T, Bakari A.A, Pindiga U.H, Mayun A.A. Clinicopathological pattern and challenges in the management of colorectal cancer in sub-Saharan Africa. J. Chin Clin Med, 2007:12(2): 688-694.

23 Edino S.T, Mohammed AZ, Ochicha O. Characteristics of colorectal carcinoma in Kano, Nigeria: an analysis of 50 cases. Niger J Med 2005. 14(2): 161-166.

24 Rahman, GA Rectal cancer: Pattern and outcome of management in University of Ilorin Teaching Hospital, Ilorin, Nigeria. Ann Afr Med 2010. 9(3): 164-169.

25 Hooft JE, Bemelman WA, Breumelhof R, Siersema PD, Kruyt PM, Klaas et al. Colonic stenting as bridge to surgery versus emergency surgery for management of acute left-sided malignant colonic obstruction: a multicenter randomized trial (Stent-in 2 study). BMC Surg 2007:7: 12

26 Poles GC, Clark DE, Mayo SW, Beierle EA, Goldfarb M, Gow KW. Colorectal carcinoma in paediatric patients; a comparison with adult tumors, treatment and outcomes from National Cancer Database. J Pediatr Surg. 2016; 51:1061–6.

27 Goldberg J, Furman WL. Management of colorectal carcinoma in children and young adults. J Pediatr Hematol Oncol 2012:1; 34: S76-9.

28 Rokitka DA, Curtin C, Heffler JE, Zevon MA, Attwood K et al. Patterns of loss to follow-up care among childhood cancer survivors. J Adolesc Young Adult Oncol 2017:6:1; 67-73.

29 Hazanka M, Mishra R, Saika BJ, Bhuyan C, Nyuthe CW et al Causes of treatment abandonment of paediatrc cancer patients -Experience in a regional cancer centre in Northeast India. Asian Pac J Cancer Prev 2019; 20($): 1133-1137

30 Slone JS, Chinda-Liyoka C, Perez M, Mutalina N, Newton R et al Paediatric Malignancies, treatment outcomes and abandonment of paediatric cancer treatment in Zambia. PLoS One 2014; 21:9(2): e98102

31 Mansell R, Pursell E Treatment abandonment in children with cancer in sub-Saharan Africa: Systematic literature review and meta-analysis J Adv Nurs. 2018.74;4: 800-808.