



Colon Cancer of a Bangladeshi 17-Year-Old Girl without Known Genetic Predisposition Following Enteric Fever Induced Complication.

Ferdous Ara Begum^{*,1}, Mosfika Rahman², Nurunnabi¹, Iffat Zaman¹, Md. Arifur Rahman¹, Khademul Islam³, Golam Mostofa⁴, Qamruzzaman Chowdhury¹

1. Department of Oncology, Bangladesh Specialized Hospitals Ltd, Shyamoli, Dhaka, Bangladesh.
2. Department of Medical Oncology, National Institute of Cancer Research and Hospital, Mohakhali, Dhaka, Bangladesh.
3. Department of Surgery, LabAid Specialized Hospitals Limited, Dhaka.
4. Anowara Medical Services, Dhanmondi, Dhaka, Bangladesh.

Corresponding Author: Dr. Ferdous Ara Begum, Consultant, Department of Oncology, Bangladesh Specialized Hospitals Ltd, Dhaka, Bangladesh.

Copy Right: © 2022 Dr. Ferdous Ara Begum, This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Received Date: January 05, 2022

Published Date: February 01, 2022

Abstract

Background: Generally, young-onset CRC is the “hallmark” of hereditary CRCs with highly penetrant germline mutations. However, the bulk of young-onset CRCs appear to be sporadic and therefore the molecular mechanisms driving cancer initiation and progression are unclear..

Discussion- *Young patients present with more advanced-stage disease at diagnosis compared with older patients. The diagnosis of CRC in young patients is usually delayed because it's seldom suspected. Acute bowel symptoms necessitate immediate exploration at which era perforation of the massive bowel with multiple metastatic deposits may be observed. Ileus by tumor occurs more frequently in adolescents than in adults with this cancer.*

Conclusion- *A 17-year-old female patient with abdominal pain perforation and colon obstruction thanks to sporadic carcinoma with mucinous histology.*

Case

17 years 9 months old young lady dancer from Bangladesh presented to a tertiary hospital in Dhaka with complaints of pain in the abdomen with distension. She had also a history of lower limb weakness following fever 3 months back and was clinically diagnosed as GBS wherefrom she recovered spontaneously with supportive care. She underwent computer tomography of the abdomen pelvis as ultrasonography failed to detect the cause of her abdominal pain except for a polyp in the gallbladder; that revealed- Neoplastic narrowing in left mid colon dilated bowel loops containing air-fluid levels. Colonoscopy was inconclusive to detect any focal lesions in the colon. Then she moved to another hospital and was clinically diagnosed as a case of mechanical obstruction/ enteric fever-induced perforation / burst appendix. After admission, she found to have septicemia with ARDS. After correction, she underwent her **first** laparotomy followed by segmental resection of the terminal ileum with ileo-colic anastomosis with proximal defunctioning ileostomy with appendectomy with peritoneal toileting. Laparotomy revealed – severe ileitis due to enteric fever was noted at the entire ileum. Multiple patchy gangrenous point and multiple perforations were found up to 60 cm of distal ileum just proximal to the ileocecal valve and then resection of that segment and ileocolic anastomosis with loop ileostomy was done. Her HPR revealed – Ileal perforation with peritonitis. She developed well and was discharged.

After one month of her initial laparotomy, she was re-admitted for her ileostomy closure that was performed. Two days of post-closure due to abdominal pain, a second re-laparotomy was performed. Per operative, findings were perforation at the previous anastomotic site and then control fistula was done. Ileostomy closure anastomosis was found healthy. After that postoperative, she was well and improved. After that she again developed intestinal obstruction and a colonoscopy was performed that

revealed mucosal swelling, slight irregularity and ulceration at the distal descending colon. Biopsy was taken and HP showed poorly differentiated adenocarcinoma, diffuse type. For the staging purpose, PET CT did that revealed - No hypermetabolic lesion is detected in the post-operative site of the colon nor any hypermetabolic abdominopelvic lymph node suggest no local residue, dilated pelvis & ureter, No other visceral, nodal, or osseous hypermetabolic lesion is noted.

Then she was planned for an operative procedure for her malignancy on the transverse colon. After 1 month of her 2nd laparotomy, she underwent **3rd definitive operation-** a left hemicolectomy with a proximal defunctioning loop ileostomy was done. Per operatively- there were no ascites, no peritoneal seedlings, the liver was found healthy and free from any form of macro metastatic nodules. There was extensive interloop adhesion was identified, ascending, transverse and descending colon found hugely distended and full of fecal matters. A stricture-like growth was distal descending colon which causes luminal narrowing and resulting in complete obstruction. Few pericolic LNs were found enlarged and hard in palpation, para-aortic LNs and LNs along the axis of IMA were not palpable.

Histopathology revealed an annular ulcerative growth in the colonic mucosa that was about 4.5cm showed poorly differentiated adenocarcinoma, Tumor invades through the visceral peritoneum with lymph node metastasis, 11 out of 11 regional LNs showed metastasis, LVSI- Identified but PNI- Not seen. Histological features suggestive of Microsatellite instability not identified. Further IHC was done that was expressive for CDX2 and CK20 and immunonegative for CK7 which confirmed colonic adenocarcinoma. Her pathological stage- pT4aN2bMx, IIIC.

Introduction

According to GLOBOCAN 2018 data colorectal cancer (CRC) is the 3rd most commonly diagnosed and 2nd most deadly malignancy in the world [1]. In 2020, it is estimated that there will be 147950 new cases of colorectal cancer which represents 8.2% of all new cancers cases in the United State². An estimated 53,200 people will die of this disease in 2020 which represents 8.8% of all cancer death [2]. Five years relative survival of CRC PS 64.6%. CRC is more common in men than women and among those of African American descent [3]. CRC is most frequently diagnosed among people aged 65-74 years, the median age of diagnosed 67 years [2]. The rate of new cases of CRC was 38.2 per 100,000 men and women per year². For CRC death rate increases with age. CRC is the 2nd leading cause of cancer death in the United State [4]. The percent of CRC deaths is highest among people aged 75-84 years, the median age at death 73 years [5]. The death rate was 13.9 per 100,000 men and women per year². Approximately 4.2% of men and women will be diagnosed with colorectal cancer at some point during their lifetime [2]. In 2017, there were an estimated 1, 34,087 people living with CRC in the United State [2]. In the United State CRC incidence and mortality has been decreasing among individuals older than 55 years, and this has been largely attributed to population-based CRC

screening recommendations in place since the 1980s [6-7]. However, the incidence of CRC among the adolescent and young adult (AYA) population (Particularly those 18-40 yrs) has shown an alarmingly opposite trend. In this population, CRC is being increasingly diagnosed, according to independent analyses from the following two major cancer databases [6, 8]. In the United State the SEER Program and the National Cancer Database (NCDR) [9, 10].

In Canada, A slight decline was observed in the colon and rectal cancers during 2005–2015, regardless of age at diagnosis [24].

For colon cancer, the adjusted incidence rates increased annually over roughly the past four decades by 2.4% in those aged 20 to 29 years, by 1% in those aged 30 to 39 years and by 1.3% in those aged 40 to 49 years [6]. Given the projection of current incidence rates to the year 2030, the largest predicted increase in colon 90% cancer incidence will occur in the 20 to 34 years age group, whereas the incidence rate for colon will decrease by 41%, for those older than age 50 years [11].

This case of colonic cancer aged 17 years is the uncommon presentation and hence should be of interest to clinicians to increase their index of suspicion as early cases are potentially curable.

Discussion

Although CRC is one of the most frequent tumors in adults, patients rarely occur before the age of 20 years, 12-14 with an annual incidence of only one to two cases per one million people in the US, according to only about 80 cases per year [15].

Colorectal carcinoma (CRC) rarely occurs in children and adolescents. It is generally considered to be a disease of an older person; more than 90% of CRC patient is above 55 years old. 16 Groups of young patients known to be at increased risk for colorectal carcinoma are those with inflammatory bowel disease, hereditary nonpolyposis colon cancer (HNPCC) and polyposis syndromes of the gastrointestinal tract [17].

We reported this case as a young age sporadic colorectal cancer (YSCC) because the patient was 17 years old and had neither family history of colon cancer nor any other malignancy, and showed MSS (microsatellite stability) without any germline abnormality. She had no risk factors such as inflammatory bowel disease or multiple colon polyp.

YSCC also presents features similar to adult colorectal cancer, such as abdominal pain, altered bowel habit, weight loss and rectal bleeding¹⁸. In some pediatric reports, acute presentation, including intestinal obstruction and acute pain mimicking appendicitis account for almost 50% of presentation [19].

However, young patients present with more advanced-stage disease at diagnosis compared with older patients. This may be because of delayed diagnosis and poorer pathological findings¹⁶. Recent evidence showed that the incidence of colorectal cancer decreased among older adults, yet this decline didn't appear in adults younger than 50 years. The evaluation of age-related incidence trends of colon and rectal cancers in China during 2005-2015 decreased by -2.2% (95%CI: -3.1, -1.3) per year [25].

The diagnosis of CRC in young patients is often delayed because it is seldom suspected. Acute bowel symptoms necessitate immediate exploration at which time perforation of the large bowel with multiple metastatic deposits may be observed. Intestinal obstruction by tumor occurs more frequently in adolescents than in adults with this cancer [20-21].

Another distinct feature of YSCC its pathological characteristics. It has a higher proportion of patients with nodal metastasis, distant metastasis and poorly differentiated tumors. YSCC also shows aggressive tumor biology, including mucinous component, signet-ring cell carcinoma, and perineural, vascular, and lymphatic invasion [22].

Most CRC in adults is moderately differentiated or well-differentiated adenocarcinoma.¹⁴ In contrast, more than half of reported cases of childhood CRC are poorly differentiated mucinous adenocarcinoma and many are of them signet-ring cell type [20,23].

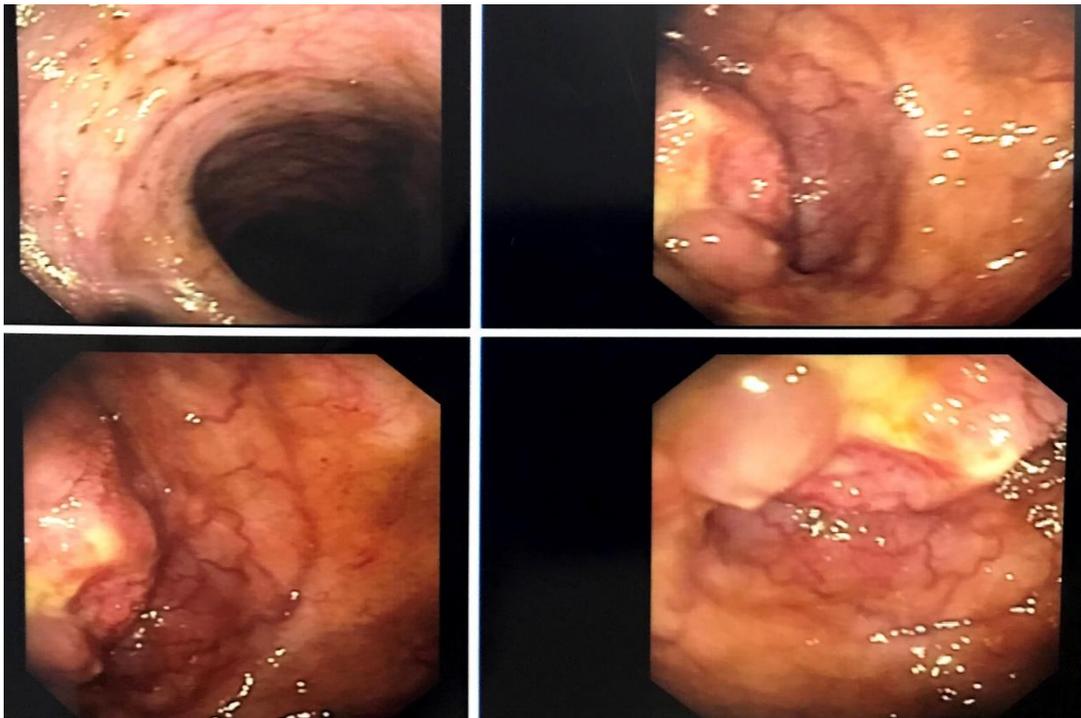


Image 1: Colonoscopic view

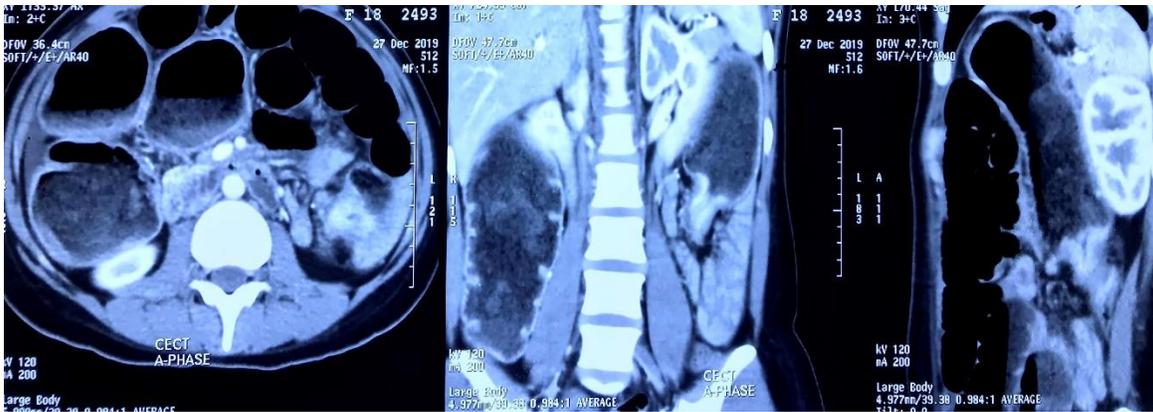


Image CT_2: Axial, Coronal and Sagittal view of the growth in the descending colon.

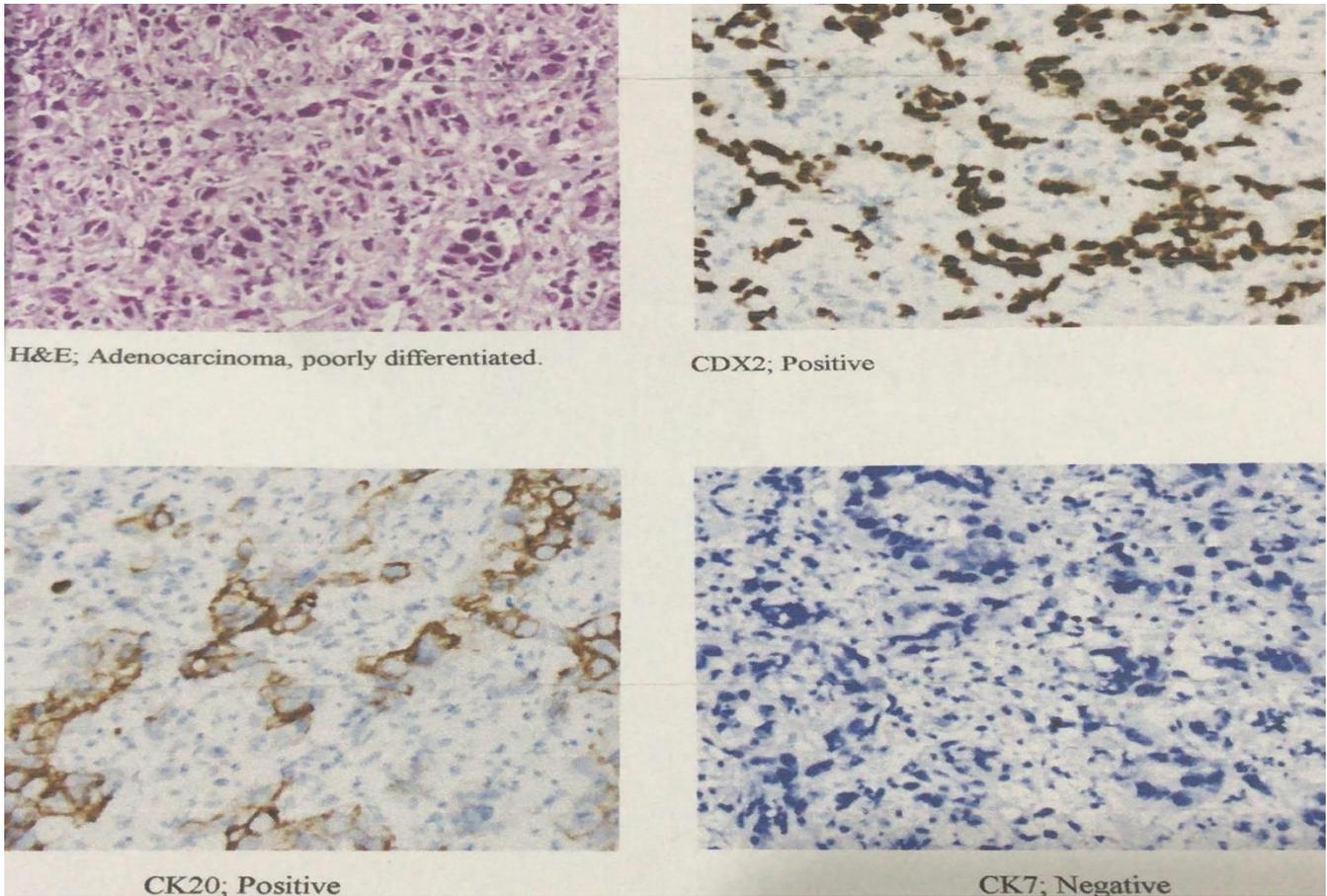


Image 3: HP_IHC: Histopathology and CK7, CK20, CDX2

Conclusion

In conclusion, we reported a case of a 17-year-old female patient with abdominal pain perforation and colon obstruction due to sporadic colon cancer with mucinous histology.

She had absolutely no predisposing condition. Her histopathological report revealed multiple regional nodal [11] involvement with lymphovascular invasion. Her cancer diagnosis was delayed by the physician's failure to consider malignancy in the differential diagnosis. Therefore, even in low-risk young patients, symptoms such as unexplained abdominal pain, rectal bleeding, or change in bowel habits should be considered a representation of significant colorectal lesions.

This case warrants increased awareness and aggressive pursuit of symptoms in young patients without any risk features.

References

1. Rawla P, Sunkara T, Barsouk A. Epidemiology of colorectal cancer: incidence, mortality, survival, and risk factors. *Prz Gastroenterol.* 2019; 14(2): 89–103.
2. National Cancer Institute. SEER Stat Fact Sheets: Colon and Rectum Cancer. <http://seer.cancer.gov/statfacts/html/colorect.html>. Accessed 18 Apr 2017.
3. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2016. *CA Cancer J Clin.* 2016; 66:7–30.
4. Facts about colon cancer & rectal cancer. <https://fightcolorectalcaner.org/colorectal-cancer/facts-stats/>
5. Virk GS, Jafri M and Ashley C. Colonoscopy and colorectal cancer rates among octogenarians and nonagenarians: nationwide study of US veterans. *Clin Interv Aging.* 2019; 14: 609–14.
6. Siegel RL, Fedewa SA, Anderson WF, Miller KD, Ma J, Rosenberg PS, Jemal A. Colorectal cancer incidence patterns in the United States, 1974–2013. *J Natl Cancer Inst.* 2017; 109(8): 322.
7. Edwards BK, Ward E, Kohler BA, Ehemann C, Zauber AG, Anderson RN, et al. Annual report to the nation on the status of cancer, 1975-2006, featuring colorectal cancer trends and impact of interventions (risk factors, screening, and treatment) to reduce future rates. *Cancer* 2010; 116: 544-73.
8. Abdelsattar ZM, Wong SL, Regenbogen SE, Jomaa DM, Hardiman KM, Hendren S. Colorectal cancer outcomes and treatment patterns in patients too young for average-risk screening. *Cancer.* 2016; 122(6):929-34.

9. Gabriel E, Attwood K, Al-Sukhni E, Erwin D, Boland P, Nurkin S. Age-related rates of colorectal cancer and the factors associated with overall survival. *Journal of gastrointestinal oncology*. 2018; 9(1):96.
10. You YN, Xing Y, Feig BW, Chang GJ, Cormier JN. Young-onset colorectal cancer: Is it time to pay attention? *Arch Intern Med*. 2012; 172(3): 287-9.
11. Bailey CE, Hu CY, You YN, Bednarski BK, Rodriguez-Bigas MA, Skibber JM, Cantor SB, Chang GJ. Increasing disparities in the age-related incidences of colon and rectal cancers in the United States, 1975-2010. *JAMA Surg*. 2015; 150:17-22.
12. Skibber JM, Minsky BD, Hoff PM. Cancer of the colon. In: DeVita VT, Hellman S, Rosenberg SA, editors. *Cancer: principles and practice of oncology*. Philadelphia: Lippincott Wilkins & Williams; 2001. p. 1216-71.
13. Rodriguez-Bigas MA, Lin EH, Crane CH. Adenocarcinoma of the colon and rectum. In: Kufe DW, Weichselbaum RR, Bast RC, et al., editors. *Cancer medicine*, vol. 2. Hamilton (ON): BC Decker; 2003. p. 1635-65.
14. Ries LAG, Kosary CL, Hankey BF. *SEER Cancer Stat Rev*. 2004; 1975-2001.
15. Pappo AS, Furman WL. Management of infrequent cancers of childhood: colorectal carcinoma. In: Pizzo PA, Poplack DG, editors. *Principles and practice of pediatric oncology*. Lippincott Williams & Wilkins; 2006. p. 1174-201.
16. O'Connell JB, Maggard MA, Livingston EH, Yo CK. Colorectal cancer in the young. *Am J Surg*. 2004; 187:343-8.
17. Dozois EJ, Boardman LA, Suwanthanma W, Limburg PJ, Cima RR, Bakken JL, Vierkant RA, Aakre JA, Larson DW. Young-onset colorectal cancer in patients with no known genetic predisposition: can we increase early recognition and improve outcome? *Medicine* 2008;87(5):259-63.
18. Hill DA, Furman WL, Billups CA, Riedley SE, Cain AM, Rao BN, Pratt CB, Spunt SL. Colorectal carcinoma in childhood and adolescence: a clinicopathologic review. *J Clin Oncol*. 2007; 25(36):5808-14.
19. Saab R, Furman WL. Epidemiology and management options for colorectal cancer in children. *Paediatr Drugs*. 2008;10(3):177-92.
20. Rao BN, Pratt CB, Fleming ID, Dilawari RA, Green AA, Austin BA. Colon carcinoma in children and adolescents. A review of 30 cases. *Cancer* 1985;55(6):1322-6.
21. Bhatia S, Pratt CB, Sharp GB, Robison LL. Family history of cancer in children and young adults with colorectal cancer. *Med Pediatr Oncol*. 1999;33(5):470-5.

22. Chung MY, Park YS, Ryu SR, Ahn SB, Kim SH, Jo YJ, Han JK and Joo JE. A Case of Colonic Mucinous Adenocarcinoma in 19-year-old Male Patient. Clin Endosc. 2012;45:103-107
23. Sebbag G, Lantsberg L, Arish A, Levi I, Hoda J. Colon carcinoma in the adolescence. Pediatr Surg Int. 1997;12(5-6):446-8.
24. Scott, A., Stoltzfus, K., Tchelebi, L., Trifiletti, D., Lehrer, E., Rao, P., Bleyer, A. and Zaorsky, N., 2020. Trends in Cancer Incidence in US Adolescents and Young Adults, 1973-2015. JAMA Network Open, 3(12), p.e2027738.
25. Wang, J., Liu, L., Cai, Y., Gao, Y., Guo, Z., Yu, F. and Ping, Z., 2021. Trends in the age-related incidence of colon and rectal cancers in China, 2005–2015. Digestive and Liver Disease.