

Adenocarcinoma Colon

Y.K. Sarin
S. Jacob
B.R. Prabhakar
R. Shah

Although adenocarcinoma of the colorectum is a commonly encountered visceral malignancy in adults, it is extremely rare in children. Only about 400 cases involving subjects less than 20 years were reported in the literature till 1988(1). The quoted incidence in the first two decades of life is close to 1 case per million children(2). The vast majority of the cases in the pediatric age group have been over 10 years of age and for all practical purposes, carcinoma of colon in childhood is a disease of adolescents(3). We report a case of the entity in a female pre-adolescent and highlight the striking differences between adults and children harboring this disease.

Case Report

An 11^{1/2} year old girl presented with 10 days history of fever, abdominal distension, constipation and vomiting. On examination, she was cachectic, severely dehydrated, anemic and had gross abdominal distension. No mass could be felt and bowel sounds were exaggerated. The rectum was empty. X-ray abdomen revealed multi-

pie air-fluid level and massively distended colon just beyond the splenic flexure (*Fig. 1*). A possibility of sigmoid volvulus was kept in mind and after adequate fluid and electrolyte resuscitation, she was taken up for laparotomy. Operative findings included grossly distended small bowel and large bowel upto the middle of descending colon. Beyond this, there was a circumferential colonic growth measuring 15 cm in length occluding the entire bowel lumen. There were few enlarged lymph nodes locally; liver and other viscera including ovaries were normal. Left hemicolectomy and divided colostomy were done. On retrospective questioning, the child did not have any history suggestive of colonic malignancy prior to this acute episode.

Histopathologic study revealed it to be mucinous (signet ring) adenocarcinoma of colon (*Fig. 1*). The tumor had infiltrated the entire thickness of the wall. The proximal surgical margin and mesenteric lymph nodes showed infiltration by the tumor.

Laboratory studies performed subsequently revealed total protein-3.1 g/dl, albumin-2.9 g/dl, alkaline phosphatase-81 U/L, aspartate transaminase-65 U/L, alkaline transaminase-17 U/L and carcinoembryonic antigen-6.7 ng/ml (normal 2.5 ng/ml). Chest X-ray and abdominal sonography ruled out any lung or liver metastasis.

A second surgery was undertaken after a week and total colectomy with ileorectal anastomosis was performed. On histopathological examination, foci of malignant cells were noted in the ascending colon; surgical margins this time were free of tumor. The child had unremarkable recovery and was discharged after 3 weeks of admission. We plan to administer 6 cycles of chemotherapy comprising of 5FU and folinic acid.

From the Pediatric Surgery Unit, Department of Surgery and Department of Pathology, Christian Medical College, Ludhiana 141 008.

Reprint requests: Dr. Yogesh Kumar Sarin, Incharge, Pediatric Surgery Unit, Department of Surgery, Christian Medical College, Ludhiana 141 008.

*Manuscript Received: August 2, 1996;
Initial review completed: September 20, 1996;
Revision Accepted: October 23, 1996*

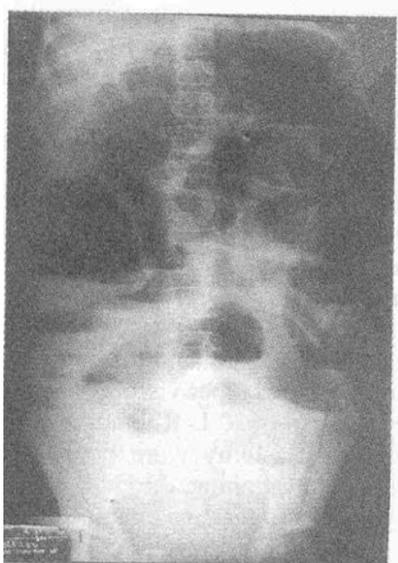


Fig. 1. Abdominal X-ray suggestive of left sided colonic obstruction.

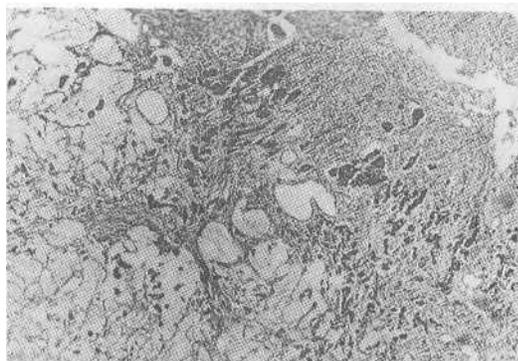


Fig. 2. Photomicrograph showing groups of neoplastic cells and abundant pools of mucin (H&Ex40).

Discussion

Carcinoma of the colorectum has been reported in patients of all age groups; the youngest known living patient was nine months old at the time of diagnosis(3). Although ulcerative colitis, familial

polyposis, Gardner's syndrome, Crohn's disease, Peutz Jegher's syndrome and Turcot's syndrome have been known to be predisposing causes in colonic cancer(4), carcinoma of the colon arising *de novo* is the most common cancer in the lower gastrointestinal tract(5,6).

The differences in duration of symptoms, primary site, pathologic findings, stage and prognosis between adults and children are striking (Table I). The clinical

TABLE I-Adenocarcinoma Colorectum: Differences Between Adults and Children

Parameter	Adults	Children
1. Incidences (2)	Common	Rare
2. Presentation (7)	Intestinal obstruction in 16-35%	Intestinal obstruction in 70%
3. M:F ratio(8)	1:1	2:1
4. Stage at presentation (9)	50-60% in Duke Stage C & D	60-80% in Duke Stage C & D
5. Primary site (8,10)	70-75% in rectosigmoid region	30-35% in rectosigmoid region 40-60% in Rt. colon
6. Histopathology (10)	5% signet ring variant	40-50% signet ring variant
7. Surgical resectability (10)	90-95%	40%
8. Ovarian metastasis (11)	4%	22%
9. Prognosis	Better	Poor (5 year survival < 20%)
10. CEA levels (6)	Important tumor marker	Not reliable.

features in childhood colorectal carcinoma are nonspecific and therefore tend to be ignored or misinterpreted early. They include vague abdominal discomfort, mild changes in bowel habits and anemia. These vague symptoms and decreased awareness among clinicians contribute to a delay in diagnosis(12). This coupled with increased frequency of the mucinous (signet ring) histologic variant known for poorer prognosis and the preponderance of right sided lesions contribute to the advanced stage of disease at diagnosis(12). Another reason for concern is that surgery is the only modality known to be effective in producing cures. Adjuvant chemotherapy has not been reported to result in cure in metastatic disease. Similarly, radiation has little to offer except when the tumor involves the rectosigmoid and anal area(9). Another distressing fact is the absence of any reliable tumor marker for colorectal carcinoma in the pediatric age group. Carcino-embryonic antigen (CEA) level does not correlate with the presence of either residual disease or progression of disease in as many as 40% of the patients(10).

We conclude that cancer of the colon should not be excluded as a clinical diagnosis only on the basis of age. Early identification using colonoscopy and other diagnostic modalities is important as this may result in more successful surgical therapy. Surgery should be radical, as non surgical modalities are not very useful.

REFERENCES

1. Steinberg JB, Tuggle DW, Postier RG. Adenocarcinoma of the colon in adolescents. *Am J Surg* 1988; 156: 460-462.
2. Third National Cancer Survey: Incidence data (Table 19B). Average annual age-specific incidence rates per 100,000 population, by primary site, males plus females, all races, all areas combined, 1969-1971. *In: Monograph No. 41, National Cancer Institute, Bethesda. Eds. Cutler SJ, Young JL. March 1975; p 102.*
3. Kern WH, White WC. Adenocarcinoma of the colon in 9 month old infant. *Cancer* 1958; 11: 855-857.
4. O'Neill JA. Colorectal tumours. *In: Paediatric Surgery, 4th edn. Eds. Welch KJ, Randolph JG, Ravitch MM, O'Neill JA Jr, Rowe MJ. Chicago, Year Book Medical Publishers, 1986; pp 1020-1022.*
5. Sherlock P, Liping M, Winawar SJ. Predisposing factors in carcinoma of colon. *Adv Intern Med* 1975; 20:121-150.
6. Chopra R, Masih K. Adenocarcinoma of the colon in children and adolescents-Report of three cases. *Indian J Pathol Microbiol* 1992; 35: 370-374.
7. Sesscons RT, Riddell DH, Kaplan HJ, Foster JH. Carcinoma of the colon in the first two decades of life. *Ann Surg* 1965; 162: 279-284.
8. Odone V, Chang L, Caces J, George SL, Pratt CB. The natural history of colorectal carcinoma in adolescents. *Cancer* 1982; 49:1716-1720.
9. Sugarbaker PH, Gunderson LL, Wittes RE. Colorectal cancer. *In: Cancer: Principles and Practice of Oncology, 2nd edn. Eds. Devita VT, Hellman S, Rosenberg SA Philadelphia, J.B. Lippincott, 1985; pp 795-884.*
10. Rao BN, Pratt CB, Fleming MD, Dilawari RA, Green AA, Austn BA. Colon carcinoma in children and adolescents. *Cancer* 1985; 55:1322-1326.
11. Reclade M, Holyoke ED, Elias EG. Carcinoma of the colon, rectum and anal canal in young patients. *Surg Gynecol Obstet* 1974; 139: 909-912.
12. Goldthorn JF, Powars D, Hays DM. Adenocarcinoma of the colon and rectum in the adolescent. *Surgery* 1983; 93: 409-414.