



## COLORECTAL CANCER IN ADOLESCENTS AND YOUNG ADULTS AS COMPARED TO ADULTS WITH REVIEW OF LITERATURE

### Pathology

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### ABSTRACT

**INTRODUCTION:** Colorectal cancers are relatively uncommon malignancies in India as compared to the western world as here there is less consumption of red and processed meat. According to recent cancer data in India, incidence of colorectal cancer is 4th in men and 3rd in women. Rectal cancers are more common in India [1]. Considering such a low incidence in adults, it would be rare to find colorectal cancers in pediatric age group. We present a study on total 46 cases of colorectal cancers, among which 6 cases were in age below 25 years including two cases of adolescents.

**MATERIALS AND METHODS:** A two year retrospective study from June 2016 to May 2018 was done. We came across total 46 cases of colorectal cancers, among which 18 cases were of females and 28 of males. Maximum number of cases were in age group 41- 50 i.e 14 cases. Two very rare cases of age 10 and 14 years were encountered which had very dismal prognosis at diagnosis itself. Other four cases were below 25 years of age and were also in advanced stage.

**CONCLUSION:** Colorectal cancers are generally cancers of 5th to 6th decades. They are less commonly encountered before 30 years of age; being extremely rare in pediatric age group i.e 1 case/ million. If they do so, they usually present in advanced stage and have poor histological stage and grade thus making them inoperable. A high level of suspicion coupled with a digital rectal examination followed by sigmoidoscopy and/or colonoscopy if required can result in early diagnosis which will go a long way in providing effective therapy [2].

### KEYWORDS

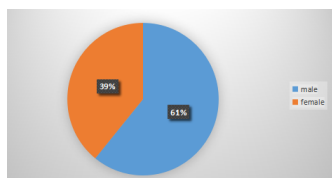
Colorectal, Adenocarcinoma, Adolescents, Digital Rectal Examination.

Colorectal cancers are one of the most common malignancies in adults which is rare in adolescents. It rarely presents at age below 30 and when it does, it is of advanced stage, as there is lack of awareness of occurrence especially in pediatric age group [4]. This low incidence coupled with non specific symptoms and aggressive natural history leads to poor prognosis [3]. Presenting signs and symptoms similar to more common conditions found in childhood, but because of rarity often leads to delayed diagnosis and hence presents as an advanced and incurable stage [3].

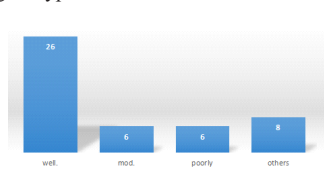
### MATERIALS AND METHODS

A retrospective study on colorectal cancers was done for 2 years from June 2016 to May 2018. Total number of cases taken were 46 among which 18 cases (39.13%) were females and 28 cases (60.86%) were males. Most common age group was 41-50 with total number of cases being 14 (30.43%) among 46 cases. Number of cases below 25 years of age was 6 among which 2 were of adolescent age group. Among these 6 cases histological type were as follows – 1 well differentiated, 1 moderately differentiated, 2 poorly differentiated and 2 cases of mucinous carcinoma.

The following pie chart shows male to female ratio of colorectal cancers i.e males 61% and females 39%.



Overall histological types were as follows:

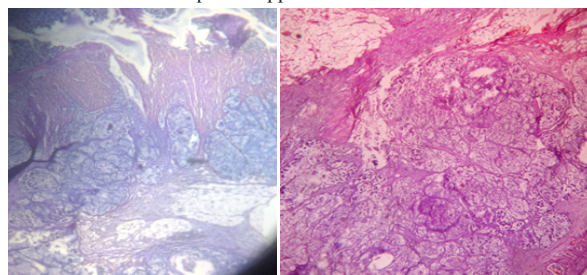


HISTOLOGICAL TYPES	NUMBER OF CASES
Well differentiated	26
Moderately differentiated	6
Poorly differentiated	6
Other special types-	8
a.Papillary adenocarcinoma	2
b.Mucinous adenocarcinoma	5
c.Signet ring adenocarcinoma	1

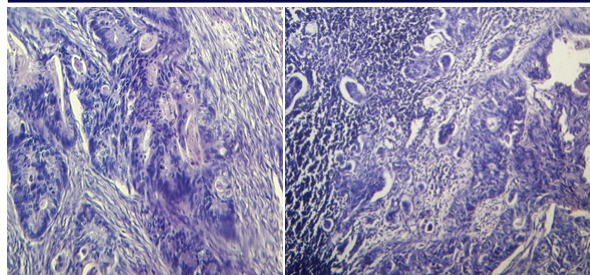
9 out of 46 cases showed lymph node metastases. In this study we came across two rare cases which needs a special mention.

First, a case of a 10 year old girl child who presented with bleeding per rectum since 6 months and a palpable iliac mass. On doing an exploratory laparotomy she had a sigmoid colon mass with adherence to ureter, appendix and peritoneal surface. Histopathologically it was a case of mucinous adenocarcinoma with signet ring cells.

Second, a case of 15 year old boy who had vague abdominal symptoms and weight loss since 4 months. He presented with cervical lymph node metastases. On thorough examination a colonic mass was found in the CT Scan. He was operated and histopathologically it was diagnosed as moderately differentiated adenocarcinoma which had already metastasized when the patient approached medical aid.



**CASE 1:** Mucinous adenocarcinoma with signet ring cells. Low and high power view.



**CASE 2:** moderately differentiated adenocarcinoma with lymph node metastasis.

## RESULTS

Colorectal cancer is most commonly found in adults. Below 25 years of age it is rare and if present are mostly of unfavourable prognosis with poor histologic grade. In our study 6 out of 46 cases had unfavourable prognosis whereas adults had better differentiation of cancer cells.

## DISCUSSION

Colorectal cancers are malignant epithelial tumors originating in large bowel. More than 90% of colorectal carcinoma are adenocarcinoma [4]. They are most common malignant neoplasms in industrialized countries. It peaks at 60- 70 years of age and is rare before 40 years of age. Less than 20% occur below 50 years of age and it has slight male preponderance. Sigmoid colon and ileum are the most common sites.

**ETIOLOGY AND PATHOGENESIS:** Low intake of unabsorbable vegetable fibre and high intake of refined carbohydrate and fat. It is theorized that reduced fibre content leads to decreased stool bulk and altered composition of intestinal microbiota which leads to production of potentially toxic oxidative by-products. This etiology is generally implicated in older adults. Molecular events that leads to colonic cancer is heterogenous and it includes genetic and epigenetic abnormalities[5].

### The two genetic pathways involved are

- Adenomatous polyposis coli/beta catenin pathway which activates the classic adenoma carcinoma sequence.
  - Microsatellite instability which is associated with defects in DNA mismatch repair and accumulation of mutations in micro satellite regions of genome [5].
- In epigenetic abnormalities most common is methylation induced gene silencing.
- The tumor suppressor gene TP53 is mutated in 70% to 80% of colon carcinoma.
  - Genetic factor manifests itself in a variety of ways. High preponderance of colorectal carcinomas in patients with Familial adenomatous polyposis as compared to Lynch syndrome and other non polyposis hereditary condition.
  - Patients with inflammatory bowel disease have a definite predisposition to colorectal cancer but only in a small percentage of patients.
  - Hereditary non polyposis colon cancer is due to germline mutation in one of the genes responsible for repairs of DNA mismatches. Colorectal carcinomas that arises in HNPCC tends to show several of the following features i.e young patient age, right side, mucinous variant and are usually poorly differentiated.
  - The existence of predisposing conditions which increase the risk of colorectal cancer in adolescents and young adults are –

Familial polyposis coli, Gardner syndrome, Turcot syndrome, Peutz-Jeghers syndrome, Juvenile polyposis of colon, Ulcerative colitis, Familial cancer syndromes [6].

## MODE OF PRESENTATION

IN adults it presents with fatigue and weakness due to iron deficiency anemia which is in right side and caecal. Left sided colorectal cancer presents with occult bleeding, changes in bowel habit and cramping abdominal pain. But these present generally late. So endoscopic biopsy for both females and males above 40 years of age is advised along with stool examination. Carcino embryonic antigen level estimation is however, non specific [5].

In younger individuals the symptoms are similar to common childhood problems such as intussusception, appendicitis, gastroenteritis and

simple constipation. The most common symptoms being of abdominal pain, constipation, diarrhoea and weight loss. Rectal bleed is less commonly seen in children [7].

**TYPE OF TUMOR** As compared to the adults, in younger individuals we have majorly poorly differentiated carcinoma either of mucinous or signet ring type with an incidence of only 5% in adults in a series [9].

**STAGE** As there is delayed presentation and aggressive nature in young ones, they are of advanced stage. Signet ring variant shows early bowel wall penetration hence commonly involves peritoneal surfaces [10].

**TREATMENT** Surgery is the best modality as it poorly responds to chemotherapy as well as radiotherapy. Preoperative radiotherapy is used to convert unresectable cancers to resectable ones.

Colorectal carcinomas are extremely rare in pediatric age group. The youngest recorded case was a 9 month old child [11]. The reported incidence is 1.3/million [6]. These tumors are beyond the scope of operative correction. The main reason for delay in diagnosis is advanced stage at presentation, poor histological differentiation. Mucin absorbs water, swells and invades local tissue, thereby promotes spread of malignant cells. It also interferes with the immune recognition of carcinoma cells due to mucopolysaccharide coating. Histopathologically more aggressive with predisposition to early metastases.

The various microscopic types encountered are mucinous carcinoma, signet ring carcinoma, mucopapillary pattern, serrated adenocarcinoma, basaloid carcinoma, clear cell carcinoma, hepatoid adenocarcinoma, medullary adenocarcinoma, sarcomatoid carcinoma, squamous differentiation, trophoblastic differentiation, glassy cell carcinoma, neuroendocrine differentiation and oncocytic adenocarcinoma.

## CONCLUSION

The overall prognosis of carcinoma of colon and rectum in children will improve with increase in awareness leading to early diagnosis of the condition. A high level of suspicion coupled with a digital rectal examination followed by sigmoidoscopy and/or colonoscopy if required can result in early diagnosis which will go a long way in providing effective therapy [2]. This should be done in children presenting with persistent abdominal pain of unknown etiology, especially if that is associated with any warning signs [8].

## REFERENCES

- www.timesnow news.com.
- Bhatia MS, Chandra R, Shah R, Patel DD. Colorectal carcinoma in Indian children. Indian Pediatr 2000; 37: 1355-8
- Shih Hsiang-Hung, Luchung-Ching, TiaoMao-Ming et al. Adenocarcinoma of the colon in children presenting as abdominal pain: Report of two cases. Chang Gung Med J Vol 25 No. 5; May 2002: 348-53
- Sarda Dinesh K, Kamble Ashok T, Mungate Gayatri S, Goswami Amol. Mucinous carcinoma of rectum in 11 year old child 2004. Indian journal of surgery; vol 66; issue 4; 236-238. [5] WHO 2010 data.
- Kumar Vinay, Abbas Abul K, Aster Jon C, Robbins and cotran, Pathological basis of disease 9th edition; 17: 810-14.
- Vincenti O, Lowrence C, Josefina C, George SC, Pratt CB. The natural history of colorectal carcinoma in adolescent cancers 1982; 49: 1716-20.
- Goldblum John R, Lamps Laura W, Mckenae Jesse K, Myers Jeffrey. Rosai and Ackerman's surgical pathology, 11th edition 17: 676-83.
- Recalde M, Holyoke ED, Elias EG. Carcinoma of the colon, ileum and anal canal in young patients. Surg Gynecol Obstet 1974; 139: 909-13.
- Buchanan JA, Carlhomr JD. Colloid carcinoma of colon in children. Am Surg 1958; 24: 280-86. Gallagher EG, Ziegler MG. Rectal carcinoma in patients in the second and third decade of life. Am F Surg 1972; 124: 655-9.
- Kerm WH, White WC. Adenocarcinoma of the colon in a nine months old infant. Cancer 1958; 11: 855-7.