

## Case Report

# Advanced Colorectal Carcinoma with Testicular Metastasis in an Adolescent: A Case Report

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## Abstract

**Introduction:** Colorectal carcinoma in pediatric age group is rare and tends to be very aggressive and present late, due to which it has a very poor prognosis. It may present itself with distant metastasis. But metastasis to the testes is very rare and signifies an advanced stage of the disease. Surgery is the only effective modality to cure patients with localized colorectal carcinomas. However statistics show a higher incidence of unresectable disease and a higher metastasis rate in childhood colorectal carcinomas. We are presenting a case of advanced colorectal carcinoma in an adolescent with testicular metastasis.

**Case Presentation:** A 15 year old Indian male presented to surgical emergency with signs and symptoms of intestinal obstruction. He also had a history of passing blood and mucus per rectum. On examination he was having abdominal distension. On digital rectal examination, a circumferential proliferative growth was felt 1cm above the anal verge. On scrotal examination, a small nodule was felt in the right testes. In view of intestinal obstruction, the patient was taken into the emergency operation theatre and a diverting loop sigmoid colostomy was performed to relieve the obstruction. Punch biopsy from ano-rectal growth taken which suggested signet ring cell adenocarcinoma. CECT chest, abdomen and pelvis showed advanced colorectal carcinoma with distant metastasis. Ultrasonography of testes showed a hypoechoic nodule in the right testis from which a needle aspiration biopsy was done which revealed metastatic adenocarcinoma.

**Conclusion:** Childhood colorectal carcinomas have very poor prognosis due to their aggressive nature and late presentation. In spite of all the advances in diagnosis and treatments, the overall long term survival is still dismal in these patients. Due to rarity of this disease, screening is not recommended for individuals under the age of 50. Thus, to improve outcome, early diagnosis and treatment is paramount. For that to happen, awareness needs to be created regarding pediatric colorectal carcinoma and its signs and symptoms.

**Keywords:** Adolescent; Colorectal carcinoma; Testicular metastasis; Intestinal obstruction; Signet ring cell adenocarcinoma; Poor prognosis

## Introduction

Colorectal carcinoma is the second most common alimentary tract carcinoma after liver tumors in children with an incidence of 1.3-2 cases per million population, mostly present in the second decade of life [1-4]. It tends to be very aggressive and present late, due to which it has very poor prognosis. It may present itself with distant metastasis. But metastasis to the testes is very rare and signifies advanced stage of the disease. Surgery is the only effective modality to cure patients with localized colorectal carcinomas. We are presenting a case of advanced colorectal carcinoma in an adolescent with testicular metastasis.

## Case Presentation

A 15 years old Indian male presented to Surgical emergency with complaints of difficulty in passing stool for one month, passage of blood and mucus per rectum for 15 days, abdominal distension for 1 week and obstipation for 3 days. These symptoms were associated with significant appetite and weight loss but there was no history of fever, jaundice, malena, hematemesis, hemoptysis, cough, chest pain,

shortness of breath. There was no history of similar illness in family, and any other malignancy.

On examination patient was conscious with thin built and pallor was present. Abdomen was distended with no local bulge. On digital rectal examination, a circumferential proliferative growth was felt 1cm above the anal verge, which was occluding the lumen near completely. On scrotal examination, a small nodule was felt in Right testis. Rest systemic examination was normal.

An abdominal and chest X-ray was done as preliminary investigations which revealed signs of intestinal obstruction (Figure 1).

In view of intestinal obstruction, the patient was taken into the emergency operation theatre and a diverting loop sigmoid colostomy was performed. Patient symptomatically relieved, stoma was well functioning and healthy.

Punch biopsy was taken from ano-rectal growth. HPE report suggested Signet ring cell adenocarcinoma of rectum (Figure 2).

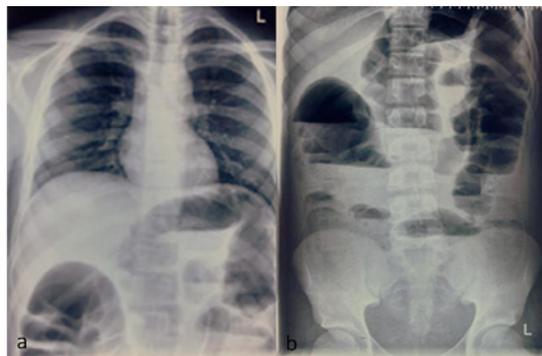


Figure 1: a: Chest X-Ray PA view; b: Abdominal X-Ray AP erect view.

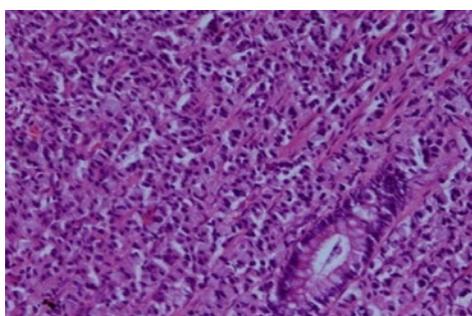


Figure 2: Histopathology: Rectal Biopsy H&E200x.



Figure 3: CECT Abdomen and Pelvis. a, b, c: Circumferential growth involving rectum and sigmoid colon. d: Colostomy site.

Tumor markers report: CEA-499.93, AFP-2.42, beta HCG-<1.2, LDH- 593.

Routine investigations including CBC, LFT, KFT were within Normal limit.

CECT Chest, Abdomen, Pelvis and Brain was done as a part of metastatic workup which showed diffuse circumferential homogenous thickening involving rectum approx 1cm from the anal verge and extending into sigmoid colon proximally upto colostomy site. Multiple enlarged lymph nodes, few showing necrosis are noted in perirectal, iliac, b/l paraortic, periportal and celiac regions. Moreover, multiple enlarged lymph nodes were seen in the mediastinum in



Figure 4: CECT Abdomen, Pelvis and Chest. a: Retroperitoneal lymphadenopathy; b: Right testicular enlargement; c: Mediastinal lymphadenopathy; d: Left pleural effusion.



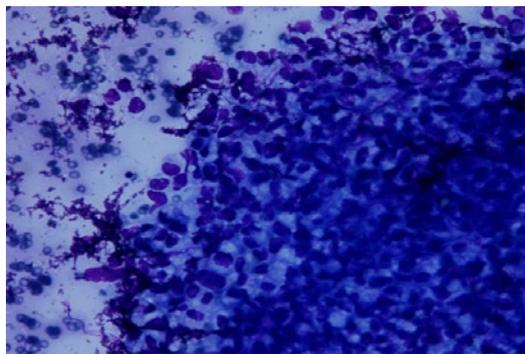
Figure 5: USG Right Testes -Showing nodule.

bilateral paratracheal, prevascular and subcarinal regions, and also in left supraclavicular region. In addition, hepatomegaly with liver measuring 17.8cm was present. However, no lesion was seen in liver parenchyma. There was mild left sided pleural effusion (Figure 3 and 4). There was no lesion in brain suggestive of metastasis. The right testis was enlarged. Ultrasonography showed a hypoechoic nodule (Figure 5) in the right testis from which a needle aspiration biopsy was done, which revealed metastatic adenocarcinoma (Figure 6).

In view of distant metastasis, it was planned to give neoadjuvant chemotherapy to the patient. But within 2 weeks of surgery the patient developed progressive respiratory distress. Chest X ray showed infiltrations and bilateral pleural effusion. Patient got intubated and was kept in ICU. But his condition deteriorated and he developed Multiple Organ Dysfunction Syndrome (MODS) in the next few days. Eventually patient died with multiple organs failure. The entire course of illness from appearance of first symptom to death was only 2 months.

### Discussion

Globally, CRC is the third most commonly diagnosed cancer in males and the second in females, with 1.4 million new cases and almost 694,000 deaths estimated to have occurred in 2012 [5]. Age is a major risk factor for sporadic CRC. It is generally considered to be



**Figure 6:** Histopathology: Fine needle biopsy right testes nodule MGG 200X.

disease of the elderly, with more than 90% of the patients of colorectal carcinoma being above 55yrs of age. It rarely occurs in teenagers and adolescents [6].

More recent data from the United States Surveillance, Epidemiology, and End Results Reporting (SEER) database and other Western cancer registries [7] suggests that CRC incidence is increasing in the under-50 age group while it is decreasing in older groups [8,9]. These increases are driven predominantly by left-sided cancers in general and rectal cancer in particular [10]. At present, screening is not recommended for individuals under the age of 50 unless they have a positive family history or a predisposing inherited syndrome.

Risk factors associated with young patients are Inflammatory Bowel Disease, HNPCC, Polyposis syndromes of gastrointestinal tract. APC gene mutation produces classic or attenuated familial polyposis coli [11]. Mutations in mismatch repair (*MMR*) genes, principally *MSH2* and *MLH1* but also *PMS1* and *PMS2*, cause HNPCC [12].

Data from the Surveillance, Epidemiology, and End Results (SEER) program [13] suggests that CRC has a similar natural history in patients age 15 to 29 years as in older patients. However, current literature suggests that over 86 percent of those diagnosed under the age of 50 are symptomatic at diagnosis, and this is associated with more advanced stage at diagnosis and poorer outcomes [11]. Approximately 60-86% of pediatric and adolescent patients have Dukes stage C or D [14]. The increased frequency of mucinous variants and preponderance of right-sided lesions contribute to the advanced stage at diagnosis [15,16].

Typical symptoms/signs associated with CRC include hematochezia or melena, abdominal pain, otherwise unexplained iron deficiency anemia, and/or a change in bowel habits [17]. Patient may sometimes present with obstruction or perforation which carry a poor prognosis, independent of stage [18].

Patients may also present with signs/symptoms of metastatic disease. CRC can spread by lymphatic and hematogenous dissemination, as well as by contiguous and transperitoneal routes. The most common metastatic sites are the regional lymph nodes, liver, lungs, and peritoneum. Patients may present with signs or symptoms referable to any of these areas. The presence of right upper quadrant pain, abdominal distension, early satiety, supraclavicular

adenopathy, or periumbilical nodules usually signals advanced, often metastatic disease.

Metastatic carcinoma to the testis is rare [19] and most often incidentally found on autopsy. The most common tumor to metastasize to the testis is prostate (35%), lung (18%), melanoma (18%), kidney (9%) [9], and colorectal less than 8% [20].

There are less than 25 reported cases of colorectal cancer presenting as metastases to testis [21]. The exact mechanism of spread is unknown but many theories have been suggested. Since most cases of testicular metastases presented as a hydrocele, it is proposed that there may be microscopic channels of communications present between the peritoneum and testes. Other theories include retrograde venous and lymphatic extension, direct invasion and arterial embolism [22]. In our case, the patient did not present primarily with testicular symptoms neither he had hydrocele. He had testicular nodule which was diagnosed to be metastatic adenocarcinoma on USG guided needle biopsy.

Surgery is the only effective modality to cure patients with localized CRCs. However, for patients with cancer staging  $\geq$ III, adjuvant chemotherapy is important to eradicate micrometastases, thereby reducing disease recurrence and increasing the cure rate [23].

Statistics show a higher incidence of unresectable, residual disease and a higher metastasis rate in childhood CRCs [24]. Patients with unresectable tumors diagnosis should undergo only biopsy and neoadjuvant chemotherapy, with or without radiation therapy.

The result of many series reported that the overall survival of the patient depends upon the complete surgical resection of the tumor and the radical resection of lymph nodes [25], thus, it is the goal of surgery. However, only 40-69% of pediatric patients are candidates for curative resection, a much lower number than in adults [26]. Debulking is of little benefit for patients with extensive metastatic disease. Occasionally, resections of bulky tumors or metastases offer palliation [26].

Predictors of poor prognosis, apart from the stage of the disease, are incomplete resection, mucinous histology, proportion of signet-ring cells  $>10\%$ , and absence of an in situ component [23,24]. In spite of all the advances in diagnosis and treatments, an overall 5-year survival is around 75% in adult patients but only around 51% in pediatric population [23].

## Conclusion

Colorectal carcinoma in pediatric age group along with testicular metastasis is rare. It tends to be very aggressive and present at a very advanced stage in pediatric patients, due to which it has very a poor prognosis. Due to its rarity, screening is not recommended for individuals under the age of 50. Thus, to improve outcome, early diagnosis and treatment is paramount. For that to happen, awareness among Pediatricians and Surgeons needs to be created regarding pediatric CRC and its signs and symptoms.

## Author's Contributions

APS and AK were the major contributors in collecting the data and materials, and writing the manuscript. AD supervised the whole work. SA did slide preparation and HPE reporting. SB did radiological

investigations and reporting. All authors have read and approved the final manuscript.

## Consent for Publication

Written informed consent was obtained from the patient's next of kin for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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