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Medicine

Case Report: Early-Onset Colorectal Cancer in a Young Bangladeshi Male with Type 1 Diabetes Mellitus

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Abstract	Case Report

This case report describes a 39-year-old Bangladeshi male with a background of type 1 diabetes mellitus and dyslipidemia who was diagnosed with colorectal cancer. This case highlights the importance of considering colorectal cancer in young patients presenting with atypical gastrointestinal symptoms and underscores the need for vigilance in patients with chronic diseases such as diabetes.
Keywords: Colorectal cancer, Young adult, Type 1 diabetes mellitus, Dyslipidemia, Adenocarcinoma, Robotic colectomy.

INTRODUCTION

Colorectal cancer (CRC) is predominantly a disease of the elderly, but recent trends show an increasing incidence in younger populations [1]. Early-onset colorectal cancer often presents with more advanced disease at diagnosis and carries a distinct molecular profile compared to late-onset CRC [2]. CRC incidence and mortality rates vary markedly around the world. Globally, CRC is the third most diagnosed cancer in males and the second in females, according to the World Health Organization GLOBOCAN database. Rates of both incidence and mortality are higher in males than in females [3]. This case report presents a young Bangladeshi male with a significant medical history who was diagnosed with CRC, illustrating the diagnostic challenges and the importance of early detection. Importantly, this case emphasizes the role of chronic conditions such as type 1 diabetes mellitus in predisposing young individuals to malignancies, necessitating a heightened level of clinical vigilance [4].

Patient Information

A 39-year-old Bangladeshi male presented with a three-month history of burning right-sided abdominal pain and an unexplained weight loss of approximately 3 kg. He had a history of type 1 diabetes mellitus and dyslipidemia and was on a regular regimen of insulin, dapagliflozin, atorvastatin, sitagliptin, and metformin. The patient denied smoking and alcohol consumption. Notably, the patient did not report any change in his bowel habits, and there was no history of per-rectal bleeding or melena.

Clinical Findings

Physical examination, including a per rectum examination, was unremarkable. Initial laboratory tests revealed normocytic anemia with a hemoglobin level of 95 g/L and a mean corpuscular volume (MCV) of 74 fL. A fecal immunochemical test (FIT) was positive.

Diagnostic Assessment

An abdominal ultrasound scan was performed and returned normal results. Due to the concerning clinical picture and positive FIT, the patient was referred to the gastroenterology team under the Urgent Suspected Cancer Pathway. An upper and lower bowel endoscopy revealed a circumferential growth with ulceration in the proximal transverse colon. Biopsy of the lesion confirmed adenocarcinoma of the bowel.

A computed tomography (CT) scan was subsequently performed for staging purposes, revealing a tumor staged as pT3 N0, indicating a locally advanced tumor without regional lymph node involvement.

Therapeutic Intervention

The patient underwent a robotic right colectomy with intracorporeal anastomosis. Histopathological examination of the resected specimen confirmed the diagnosis of adenocarcinoma with mucinous features. Surgical margins were clear of cancerous cells.

Follow-Up and Outcomes

The patient's postoperative recovery was smooth, with no complications reported. He was scheduled for regular follow-up visits to monitor his progress and ensure early detection of any potential recurrence or complications.

Risk Factors for Colorectal Cancer in Young Age

While increasing age is a well-known risk factor for colorectal cancer, the rising incidence of early-onset colorectal cancer (EOCRC) in individuals under 50 years of age highlights the importance of identifying additional risk factors that contribute to this trend. Several factors have been associated with an increased risk of EOCRC, including:

1. **Genetic Predisposition:**

A significant proportion of EOCRC cases are linked to inherited genetic mutations, such as those associated with Lynch syndrome, familial adenomatous polyposis (FAP), and other hereditary cancer syndromes. Individuals with a family history of CRC or other related cancers are at a higher risk [5].

2. **Diet and Lifestyle:**

Poor dietary habits, such as a diet high in red and processed meats, low in fiber, and high in fat, are known to increase CRC risk. Additionally, physical inactivity, obesity, and smoking have been identified as modifiable risk factors that contribute to EOCRC [6].

3. **Chronic Inflammatory Conditions:**

Chronic inflammatory diseases, such as inflammatory bowel disease (IBD), including Crohn's disease and ulcerative colitis, are associated with an increased risk of developing CRC at a younger age [7].

4. **Diabetes Mellitus:**

Type 1 and type 2 diabetes mellitus have been linked to an increased risk of CRC. The mechanisms are thought to involve insulin resistance, hyperinsulinemia, and chronic inflammation, which may promote tumorigenesis [4].

5. **Microbial Dysbiosis:**

Emerging evidence suggests that an imbalance in gut microbiota (dysbiosis) may play a role in CRC development. Certain pathogenic bacteria and a decrease in protective commensal bacteria may contribute to colorectal carcinogenesis, particularly in younger individuals [8].

6. **Environmental Exposures:**

Exposure to certain environmental toxins and pollutants, including those found in processed foods, industrial chemicals, and pollutants, may contribute to the risk of CRC, particularly when combined with genetic susceptibility [9].

Understanding these risk factors is crucial for developing targeted prevention strategies and early detection programs to reduce the incidence and mortality of EOCRC.

Age-Related Risk of Colorectal Cancer

The incidence of colorectal cancer varies with age. Here is a table showing the approximate risk of colorectal cancer by age group based on population data:

Tab 1

Age Group (Years)	Approximate Risk of Colorectal Cancer (%)
20-29	0.1%
30-39	0.2%
40-49	0.5%
50-59	1.0%
60-69	2.0%
70-79	3.0%
80+	4.0%

Data sources: Siegel RL *et al.*, CA Cancer J Clin. 2020; 70(1):7-30 (10); Murphy CC *et al.*, Gastroenterology. 2017; 153(3):692-700.e9 (11)

DISCUSSION

This case underscores the importance of considering CRC in young patients, especially those with chronic conditions such as diabetes, which can predispose individuals to various malignancies [4]. The normal initial physical examination and ultrasound findings in this case highlight the limitations of these diagnostic modalities in detecting early-stage CRC. The positive FIT was a crucial factor in prompting further investigation, leading to the timely diagnosis and treatment of the patient.

A retrospective cohort study of over 29,000 patients referred to an outpatient colorectal surgery clinic over 22 years identified the following symptoms in the 1,626 patients eventually diagnosed with bowel cancer:
- Change in bowel habits was the most common symptom (74 percent).
- Rectal bleeding in combination with a change in bowel habits was the most common symptom combination (51 percent of all cancers and 71 percent of those presenting with rectal bleeding).

- Rectal mass (24.5 percent) or abdominal mass (12.5 percent).
- Iron deficiency anemia (9.6 percent).
- Abdominal pain as a single symptom was the least common symptom presentation (3.8 percent) [12].

Given the limitations to timely colonoscopy in many healthcare settings and the nonspecific nature of most colorectal cancer symptoms, there is emerging interest in using fecal immunochemical tests (FIT) for occult blood to triage symptomatic patients. Using a low threshold of fecal hemoglobin to maximize sensitivity, FIT can help stratify patients who need more urgent diagnostic colonoscopy. A meta-analysis concluded that at the lower limit of detection of fecal hemoglobin (≥2 microg/g feces), the summary sensitivity was 97 percent, and the negative predictive value was no lower than 98 percent, regardless of the CRC prevalence. These data suggest that a single quantitative FIT test can adequately exclude CRC in symptomatic patients and allow prioritization of colonoscopy resources or at least stratification for relative urgency on waiting lists [13].

The use of robotic surgery in this case provided the benefits of minimally invasive surgery, including reduced recovery time and fewer complications, which are particularly advantageous in young, active patients.

CONCLUSION

This case illustrates the necessity of maintaining a high index of suspicion for colorectal cancer in younger patients presenting with gastrointestinal symptoms, even in the absence of classic risk factors. Early diagnosis and intervention are critical in improving outcomes for patients with early-onset colorectal cancer. Although increasing age is a major risk factor for CRC, there is a global epidemiologic trend towards early-onset colorectal cancer (EOCRC), or the diagnosis of CRC in people under the age of 50 years. Efforts to reduce the incidence and mortality of EOCRC include assessing for potential modifiable risk factors, identifying individuals eligible for earlier CRC surveillance, and promoting both clinician and patient awareness of the potential symptoms associated with CRC (e.g., persistent rectal bleeding at any age) [14].

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