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Case Series

Gastrointestinal carcinomas in young adults- Case series

Ankita Yadav^{1*}, Noorin Zaidi¹, Sumaiya Irfan¹, Nirupma Lal¹, Iqra Sheikh¹¹Dept. of Pathology, Era's Lucknow Medical College and Hospital, Lucknow, Uttar Pradesh, India

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ABSTRACT

Gastrointestinal (GI) carcinomas is a term for group of cancers that affect the digestive system. This includes oesophageal, gallbladder, liver, pancreatic, stomach, and bowel cancers. Young-onset colorectal cancer (CRC) is defined as CRC that manifests in people under the age of 50 years. The incidence of CRC in young people has increased by 2% to 8% annually. Small bowel cancer is one of the rare types of cancer as its incidence accounts for less than 1% of all other types of cancer in the United States. Most of these tumors occur in older adults; > 90% of cases occur in people older than 40 years. Here, we are presenting four cases of young onset GI carcinomas. GI carcinomas is now being reported in younger population, therefore it is important to be aware of symptoms and risk factors in them. Here, we are presenting four cases of young onset GI carcinomas in female patients aged 22 and 24 and two male patients aged 21 and 32.

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1. Introduction

Globally, GI malignancies are responsible for 1 in 4 cancer diagnoses and 1 in 3 cancer deaths. The incidence and fatality rates differ significantly from country to country. In previously low-incidence areas, colorectal cancer incidence has grown while gastric cancer incidence has declined. One of the most prevalent types of cancer in the world is colorectal cancer.

Adenocarcinoma colon is the most common cancer of the gastrointestinal tract, which contributes significantly to worldwide morbidity and mortality.¹ Adenosquamous subtype of colorectal carcinoma is a rare subtype with incidence <0.1%.² The incidence and mortality of young-onset CRC have significantly increased over the past forty years, and often patients under the age of 45 years are not adequately screened, which causes advanced stages of CRC at the time of diagnosis.³ Less than 20% of colorectal

cancer cases occur before the age of 50 years, whereas incidence of the disease rises at 60 to 70 years. Men are affected more frequently than women. The developed nations that share lifestyles and diets with the United States, Canada, Australia, New Zealand, Denmark, and Sweden have the highest rates of colorectal cancer.¹

Small bowel cancer is a rare malignancy that comprises less than 5% of all gastrointestinal malignancies. The duodenum is the part of the small intestine where adenocarcinomas occur most frequently, followed by the jejunum, then the ileum. Small bowel cancer can have several different histological subtypes, with adenocarcinoma making up roughly 36.9% of them.⁴ Carcinoid tumors (37.4%), stromal tumors (8.4%), and lymphomas (17.3%) are further subtypes. Men are more likely than women to have any given histologic subtype.⁵ It is prevalent in males between the ages of 55 and 65. Adenocarcinoma has a bad prognosis and is difficult to diagnose, and frequently manifests at an advanced stage.

* Corresponding author.

E-mail address: ankitayadav02@gmail.com (A. Yadav).

Here, we present four cases of a 22-year-old female patient with colorectal cancer and 21 year, male with mucinous adenocarcinoma of ileum and two cases of mucinous adenocarcinoma rectum in 24 ad 32 year old patient.

2. Case 1

A 22-year old, female patient, presented in the OPD with a complaint of bleeding per rectum on and off since eight months. Patient also complained of fatigue, headache, light headedness, and early satiety for eight months. No significant family history was present. On physical examination, her vitals were stable. Abdominal and respiratory examinations were within normal limits. On per rectal examination growth was felt at 6 O' clock position and bleeding spots were present. No fistula or sinuses were seen. Patient was anemic and hematological investigations showed haemoglobin levels of 4.6 g/dl.

Ultrasonography of the whole abdomen revealed ill-defined hyperechoic content in distal bowel. CECT abdomen revealed a circumferential wall thickness of length ~7 mm in rectum with luminal narrowing and maximum wall thickness measuring ~18mm showing post contrast enhancement most likely neoplastic etiology. Four to five sub centimetric lymph nodes were also present in perirectal region. The serological test for viral markers like human immunodeficiency virus, hepatitis B surface antigen and hepatitis C was negative. Stool for occult blood was negative due to intermittent bleeding. Patient underwent low anterior resection with colorectal anastomosis. The resected specimens were sent for HPE (histopathological examination) to our department of pathology.

We received a low anterior resection with colorectal anastomosis specimen comprising of rectum with attached mesentery (Figure 1 A) altogether measuring 16.0x5.0x4.0 cm. Outer surface was gray-white to gray-brown with a growth present on serosal surface. Cut surface showed normal mucosal areas along with haemorrhagic growth present at distal end (Figure 4 B) measuring 6.5x5.0 cm and 9.0 cm from proximal end. No lymph node were identified grossly. Representative sections from the specimen were subjected to routine H & E staining. On light microscopy both glandular(adeno) and squamous epithelial elements were seen. Focal areas showed malignant glands with squamous differentiation (Figure 2 A) and sheets of squamous cells had hyperchromatic nuclei, pleomorphism, high nucleo-cytoplasmic (N:C) ratio and eosinophilic granular cytoplasm (Figure 2 B). Also seen are glands lined by atypical cells showing high N:C ratio, hyperchromasia, pleomorphism and amphophilic cytoplasm (Figure 3). Invasion of visceral peritoneum was seen. No lymphovascular invasion or perineural invasion was identified. Distance from invasive carcinoma upto radial margin was involved. The histopathological report

gave impression of well-differentiated Adenosquamous carcinoma Grade I. Diagnosis was made on the basis of histopathological features and no immunohistochemistry marker study was done.

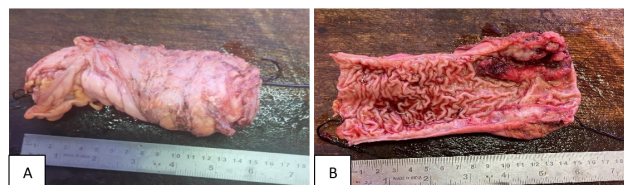


Figure 1: A): Low anterior resection specimen of rectum with attached mesentery; **B):** Grossly, cut surface shows haemorrhagic growth present at distal end

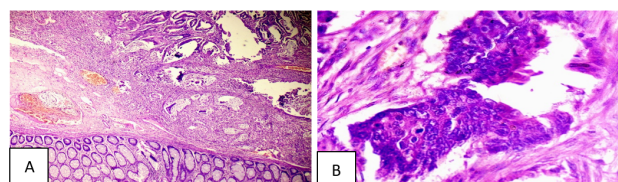


Figure 2: A): 40x view Histological examination revealed focal areas of malignant glands showing squamous differentiation; **B):** 400x magnification H&E showing sheets of squamous cells with hyperchromatic nuclei showing pleomorphism, high nucleo - cytoplasmic ratio and eosinophilic granular cytoplasm

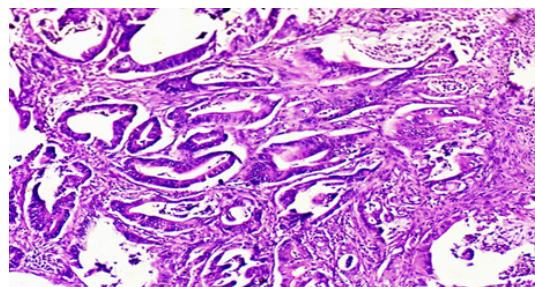


Figure 3: H&E, 100x view magnification showing glands lined by atypical cells showing high N:C ratio, hyperchromasia, pleomorphism and amphophilic cytoplasm

3. Case 2

We report another case of 21 year old, male who presented with pain in abdomen since 1 month and constipation since 1 week. There was history of loss of appetite and loss of weight. No significant family history. On per rectal examination – No bleeding, anal tag, fistula or fissures seen or fecal staining was present. Anal canal collapsed. USG abdomen was done and it showed dilated bowel loops, loaded with fecal matter showing to and fro peristalsis with minimal amount of intrabowel fluid likely to be small

bowel obstruction. Distal bowel loop appeared collapsed with transition point in iliac region. A provisional diagnosis of subacute intestinal obstruction (SAIO) was made and exploratory laparotomy was performed, a hard stricture and a growth with intussusception was found in ileum, after which resection and anastomosis was done along with ileostomy. Patient was on follow up from February, 2023 till December, 2023 and was stable. The resected specimen was sent for HPE to department of pathology.

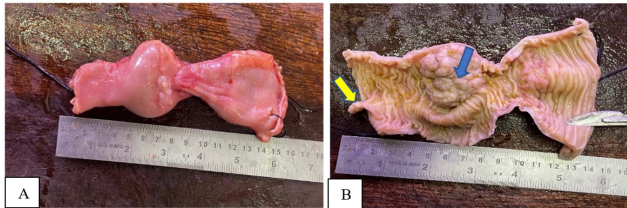


Figure 4: **A):** Ileostomy specimen comprising of ileum measuring 17.0 x 5.5 x 2.0 cm; **B):** Cut surface showed: 1. Small pedunculated growth (yellow arrow) present at proximal end which is 1.5 x 1.5 cm; 2. Large polypoidal (blue arrow) growth was present in middle of lumen

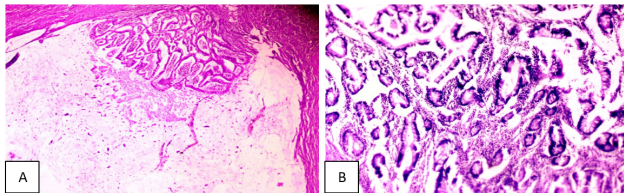


Figure 5: **A):** (H&E, 4X) magnification showing atypical glands lined by tall columnar epithelium with basally placed nuclei along with extracellular mucin; **B):** (H&E, 10X) magnification showing atypical glands lined by columnar epithelium, showing atypical cells having high N:C ratio, hyperchromasia

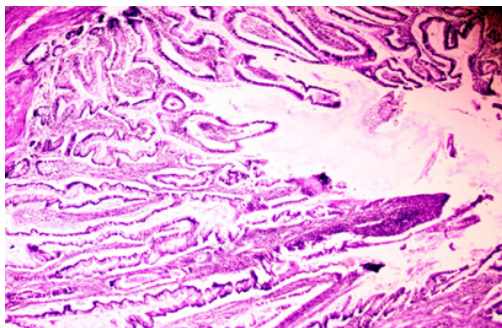


Figure 6: (H & E 4x) magnification showing well differentiated adenocarcinoma invading into muscularis propria

We received a Ileostomy specimen comprising of ileum measuring 17.0 x 5.5 x 2.0 cm (Figure 4 A). Outer surface is gray-white to gray-brown with dilated proximal end.

Cut surface showed small pedunculated growth (yellow arrow) present at proximal end which is 1.5 x 1.5 cm and is 10.5 cm away from distal end. Large polypoidal (yellow arrow) growth was present in middle of lumen, obliterating it and measured 5.0 x 5.0 cm and was 5.5 cm away from proximal end and 6.5 cm away from distal end (Figure 4 B). The larger growth was sessile gray-white to gray-brown, friable. It was 0.2 cm close to posterior wall (involved). Cut surface shows gray-white, solid areas. No lymph nodes were identified. Routine tissue processing and H&E staining as per the protocol standardized in histopathology laboratory was performed. On light microscopy section showed atypical glands lined by tall columnar epithelium with basally placed nuclei having high N:C ratio, hyperchromasia along with extracellular mucin pool. (Figure 5 A,B) The histopathological report gave impression of well-differentiated mucinous adenocarcinoma invading into muscularis propria with no macroscopic tumor perforation or lymphovascular invasion. (Figure 6) Section from small polypoidal growth showed features of villous polyp.

4. Case 3

We report another case of 24 year old, female patient with a complaint of bleeding per rectum since six months. On per rectal examination growth was felt at posterior surface approximately 1.0-1.5 cm from anal verge. No fistula or sinuses were seen. Patient was anemic and hematological investigations showed hemoglobin levels of 6.4 g/dl. No significant family history was present. CECT abdomen revealed upper margin of wall thickening extending upto 12 cm caudal to anal verge and inferior margin just extending upto anorectal junction. Patient underwent exploratory laparotomy.



Figure 7: Exploratory laparotomy specimen measuring 11.0 x 5.0 x 3.0 cm. Outer surface was gray-white to gray-brown showing haemorrhagic areas

The resected specimens were sent for HPE to our department of pathology. We received an unoriented exploratory laparotomy specimen comprising of sigmoid colon, rectum and anal canal with anal verge altogether

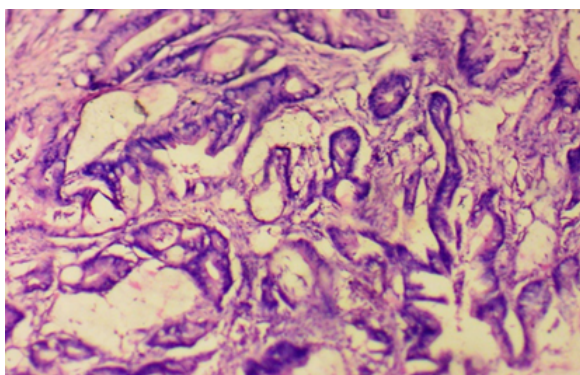


Figure 8: H&E, 100X view shows atypical cells along with mucin

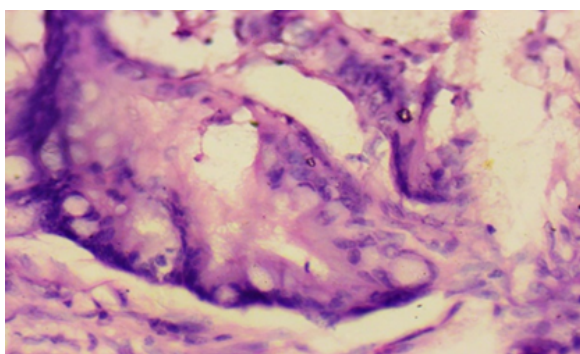


Figure 9: H&E, 400x view secretion of mucin pools

measuring 11.0x5.0x3.0 cm (Figure 7). The rectum separately measured 6.0x5.0 cm. Outer surface was gray-white to gray-brown showing haemorrhagic areas. Cut surface showed gray-white to gray brown small projections. No lymph nodes were identified grossly in pericolic fat. Light microscopy showed atypical glands lined by tall columnar epithelium with basally placed nuclei, along with extracellular mucin (Figures 8 and 9). Tumor invaded into muscularis propria but no lymphovascular invasion was seen. All margins were negative. Impression of Mucinous adenocarcinoma-Rectum was made.

5. Case 4

A 32-year-old male presented with complaint of unable to pass stools, weakness, and dyspnea. PR examination was normal. Blood tests showed normocytic and normochromic anemia. Computed tomography (CECT) of the whole abdomen revealed ~10 mm of circumferential wall thickening in a segment of ~9 cm present at recto-sigmoid junction leading to non passage of dye, most likely a neoplastic etiology was ruled out. Patient underwent exploratory laparotomy followed by sigmoidectomy. The resected specimens were sent for HPE to our department of pathology. We received an oriented exploratory laparotomy followed by sigmoidectomy specimen of sigmoid rectum

with attached mesentery altogether measuring 13.5x5.5x2.5 cm (Figure 11). Outer surface was gray-white to gray-brown with necrotic friable growth measuring 6.5x5.5 cm in size (Figure 10). No lymph node was seen grossly. Histopathology revealed malignant epithelial cells arranged in glandular structures and groups of tumor cells floating in pools of mucin (Figures 12 and 13). No lymphovascular invasion was seen. Histomorphology gave an impression of Mucinous adenocarcinoma-Rectum.



Figure 10: Necrotic friable growth measuring 6.5x5.5 cm



Figure 11: Proximal end is marked with two sutures

6. Discussion

Colorectal cancer (CRC) is the commonest malignancy in the gastrointestinal tract and the third leading cause of cancer associated death in the world. Adenoma-carcinoma sequences, which include oncogenes, the activation and inactivation of tumor suppressor genes, and gene incompatibility in repairing genes, are associated with the transition of colorectal cells from normal tissue to dysplastic epithelium to carcinoma in colon and rectum.⁶ Diagnosis in young people is frequently delayed since neoplasms are less frequent in this age group and symptoms are more frequently linked to benign pathology.⁷ Although

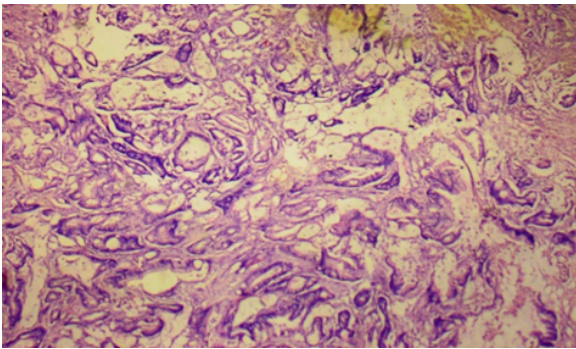


Figure 12: H&E, 40X magnification showing atypical glands along with pools of mucin

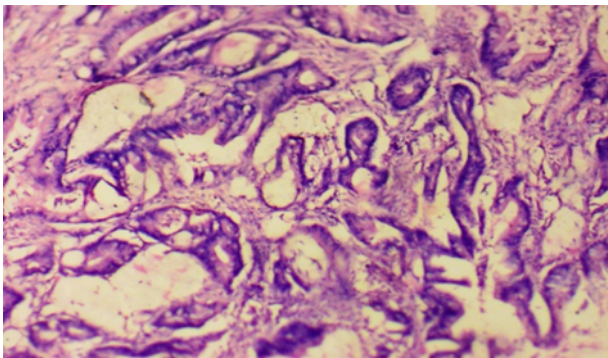


Figure 13: H&E, 100X magnification showing atypical glands lined by tall columnar epithelium with basally placed nuclei along with pools of mucin

CRC is frequently asymptomatic, it can occasionally manifest with signs such as unexplained anemia and rectal bleeding. Hematochezia, altered bowel habits, abdominal pain, anemia, and weight loss are the most common symptoms seen in patients with young-onset CRC. In our case patient presented with rectal bleeding and was anemic and there was no significant family history. Muhammad Yusuf et al. presented a similar case in a 24-year old with symptoms of abdominal pain and weight loss and in a 33 year old with bloody stools, abdominal pain and weight loss. Both of them had no chronic disease or family history of malignancy.⁸ Syed Salman Hamid Hashmi et al. also reported a case of colorectal cancer in a 34 year old with complaints of early satiety and anemia but no history of GI bleed.⁹ Young-onset CRCs are less likely to be associated with precursor adenomatous lesions. True CRC should be distinguished from hereditary illnesses like Lynch Syndrome and Familial Adenomatous Polyposis while treating young individuals. But even among CRC patients under 40 years, a positive family history of cancer is uncommon - it occurs in just 27% of cases. Ayadi Masoudi et al. reported colorectal cancer in two adolescents aged 14 year with abdominal pain and marked weight loss but no

other significant medical or family history but 16 year old patient had family history of adenocarcinoma.¹⁰ A genetic examination is therefore advised for this age group.¹¹ In presenting cases genetic cancer screening was not done at our hospital but was advised to the patients. It is usually challenging to diagnose CRC in young adults because both patients and doctors underestimate the symptoms and delay treatment.

Small bowel represents 75% of the length of the digestive tract and 90% of the absorptive mucosal surface area but small bowel carcinomas are less common than other gastrointestinal cancers. Adenocarcinoma of the small bowel (SBA) is most commonly located in the duodenum (57%), while 29% of cases are located in the jejunum and 10% in the ileum. Small bowel adenocarcinoma (SBA) the earliest symptoms are vague abdominal pain; the condition is typically diagnosed after an emergency involving occlusion (40%) or bleeding (24%).¹² Diseases such as familial adenomatous polyposis, Crohn's disease, hereditary non-polyposis cancer, other GI polyposis, and celiac disease have also shown correlation with increase incidence of small bowel adenocarcinoma. Jie Li et al. reported a case in 26 year old with abdominal pain with nausea and vomiting and incomplete bowel obstruction on X-ray finding.¹³ The site of involvement was jejunum but in our case it was reported in ileum which is less common site of involvement. Feras Mohammed Almajid et al. reported a case of adenocarcinoma in third part of duodenum in a 33-year old male patient.¹⁴ In our case patient, 21 year old presented with pain abdomen, loss of weight and loss of appetite and small bowel obstruction on USG but no significant family history was present. Though small bowel cancer occur in elderly patient, in our case it as found in ileum of 21 year old young male. Occasionally, a small bowel adenocarcinoma may be discovered while a case of small bowel bleeding is being evaluated. CT scans offer a 47% accuracy rate for SBA diagnosis.¹⁵ Small bowel adenocarcinomas are generally diagnosed at an advanced stages. In the early stages surgical resection is mode of treatment in small bowel adenocarcinomas. The prognosis of these tumours is poor.

7. Conclusion

Though bowel cancers occur in elderly patients but now they are being reported in younger population, therefore it is crucial to be aware of symptoms in them, specially when these are associated with risk factors. The diagnosis of adenocarcinoma on the basis of clinical symptoms are rare. It is an incidental finding while examining a patient presenting with abdominal pain and intestinal obstruction and sometimes diagnosed during evaluation of obscured gastrointestinal bleeding. So in cases of young adults presenting with pain in abdomen along with doubtful history of constipation and rectal bleeding should be

examined carefully with special emphasis on digital rectal examination (DRE).

8. Source of Funding

None.

9. Conflicts of Interest

None.

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Author biography

Ankita Yadav, Junior Resident  <https://orcid.org/0000-0002-4001-1623>

Noorin Zaidi, Associate Professor  <https://orcid.org/0000-0003-3182-4777>

Sumaiya Irfan, Associate Professor  <https://orcid.org/0000-0001-7994-4132>

Nirupma Lal, Professor & HOD  <https://orcid.org/0000-0001-9615-5426>

Iqra Sheikh, Junior Resident  <https://orcid.org/0009-0008-4179-0885>

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