



COLORECTAL CANCER IN YOUNG ADULTS: A CASE SERIES

Prof. Dr. B. Santhi	MBBS, MS(General Surgery), DGO, Professor and Head Of the Department, Department of General Surgery, Government Kilpauk Medical College, Chennai-600010
Prof. Dr. S. Thirunavukkarasu	MBBS, MS(General Surgery), Professor and Chief, Department of General Surgery, Government Royapettah Hospital, Government Kilpauk Medical College, Chennai-600010
Dr. Gopinath Ramalingam*	MBBS Postgraduate in MS(General Surgery), Department of General Surgery, Government Royapettah Hospital, Government Kilpauk Medical College, Chennai 600010. *Corresponding Author

ABSTRACT

Introduction & Background: Colorectal cancer (CRC) is a frequent tumor in adults, it rarely occurs before the age of 25 years, with an annual incidence of only 1-2 cases per 10,00,000 people, accounting for only about 80 cases per year worldwide. Overall incidence of CRC involving hepatic flexure is 2%, ascending colon is 5%, sigmoid colon is 21% which is very rare in young age group. Herein we report a 3 rare cases of CRC in young adults less than 25 years of age involving hepatic flexure, ascending colon and sigmoid colon respectively.

Case Description:

Case 1: A 20 year-old male presented with complaints of abdominal distension and constipation for 1 week and loss of weight for 1 month. Patient had no comorbidities and no family history of malignancy. CECT done showed an asymmetric wall thickening involving proximal transverse colon with significant luminal narrowing. He underwent emergency laparotomy and intra operatively patient had a growth at hepatic flexure of colon with dilated ascending colon, caecum and distal ileum and multiple enlarged mesenteric lymph nodes. He was proceeded with right hemicolectomy with ileo transverse anastomosis. Post operative histopathology revealed mucinous adenocarcinoma involving hepatic flexure.

Case 2: A 25 year-old female was hospitalized due to complaints of abdominal pain for 3 months, lower abdomen mass for 1 month and melena for the past 15 days and loss of weight and appetite. Patient had no comorbidities and no family history of malignancy. CECT done showed a suspicious wall thickening involving ascending colon. The patient was taken up for laparotomy and per operative findings showed a ulceroproliferative growth involving ascending colon. Patient was proceeded with right hemicolectomy with ileo transverse anastomosis. Post operative histopathology revealed mucinous adenocarcinoma involving ascending colon. **Case 3:** A 22 year-old male was admitted for complaints of lower abdominal pain for 4 months, bleeding per rectum on and off for 1 month and abdomen distension and constipation for 5 days and loss of weight and appetite. Patient had no comorbidities and no family history of malignancy. CECT done showed a circumferential wall thickening involving sigmoid colon. Hence the patient was proceeded for emergency laparotomy and per operative findings showed a stenosing growth involving sigmoid colon. Patient was proceeded with Hartmann's procedure. Post operative histopathology revealed adenocarcinoma involving sigmoid colon.

Conclusion: Within a young group, CRC is usually diagnosed later and potentially associated with worst prognosis. Detecting CRC at an early, more treatable stage is important for cure and survival. This report suggest a greater suspicion rate and early screening that necessary when evaluating young patients with common symptoms.

KEYWORDS : Colorectal cancer, mucinous adenocarcinoma, young adults, colonoscopy.

INTRODUCTION:

Colorectal cancer (CRC) incidence patterns have been changing over the last few decades. CRC is generally thought of as a disease of older persons, with more than 90% of patients being diagnosed after the age of 55 years. However, for unclear reasons, a rise in CRC incidence has been reported in patients aged <30 years. Recent studies suggested that as many as 7% of patients who developed CRC were under 40 years of age, and this incidence keep sincreasing. In addition, the incidence of colorectal neoplasm is increasing in Asia.

Moreover, based on current trends, they predicted that in 2030, the incidences of colon and rectal cancer will increase by 90% and 124%, respectively, for persons aged 20–34 years and by 28% and 46%, respectively, for those aged 35–49 years. Because young adults aged <30 years belong to the economically active population, an increase in CRC in this demographic will lead to future socioeconomic burdens.

The mechanisms underlying the rising incidence of CRC among young patient are currently not well understood, however, this increasing trend is a population health concern. Knowledge of high CRC incidence rate in the young

population of some countries can, therefore, increase the rate of early diagnosis and improve clinical management of these patients. The finding of CRC in adolescents or young adults has always raised attention due to issues such as the emotional impact at diagnosis, the disease behavior and the possibility to be associated with genetic diseases.

In this report, we describe 3 young adult cases diagnosed with the colorectal adenocarcinoma. With our brief case reviews, we emphasize the importance of early detection of colorectal cancer in young population.

CASE DESCRIPTION:**Case 1:**

A 20 years old male presented to the emergency department with complaints of abdomen distension and constipation for the past 1 week. Patient had on and off constipation, loss of weight (5kg in 1 month) and appetite for 1 month. He had no comorbidities and no family history of colorectal cancer. On examination there was tachycardia, per abdomen was distended, guarding present, VIP present, bowel sounds were sluggish and per rectal examination revealed collapsed rectum with absent fecal staining. Routine blood investigations were sent and were within normal limits. X ray

abdomen erect showed multiple air fluid levels. CECT abdomen and pelvis showed asymmetric wall thickening involving proximal transverse colon with significant luminal narrowing with gross dilatation of ascending colon and distal ileal loops with multiple enlarged mesenteric lymph nodes with no liver metastases, suggestive of acute large bowel obstruction. He was resuscitated with intravenous fluids and continuous ryle's tube aspiration done. Hence he was proceeded for emergency laparotomy.

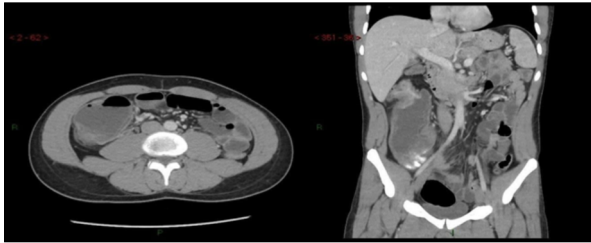


Figure 1.1 CECT Showing An Asymmetrical Wall Thickening Involving Proximal Transverse/Hepatic Flexure Of Colon

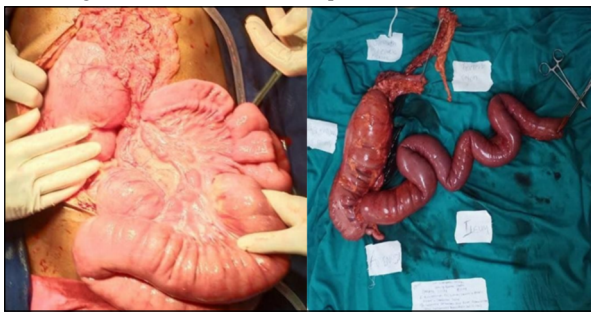


Figure 1.2 Intra Op Finding Of The Hepatic Flexure Growth



Figure 1.3 Resected Colon With Growth

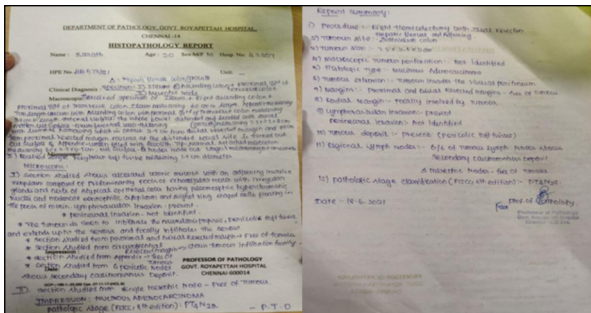


Figure 1.4 Post Operative Histopathologic Report Confirming Adenocarcinoma

Intra op findings revealed stenosing hard growth at hepatic flexure with grossly dilated ascending colon, caecum and distal ileal loops and collapsed transverse colon and descending colon with enlarged multiple mesenteric nodes. Patient was proceeded with Right hemicolectomy with end to side ileo-transverse anastomosis. Post operative period went uneventful and patient was discharged on 10th post operative day. Post op histopathologic examination revealed mucinous adenocarcinoma involving hepatic flexure with tumor size 7.5*3.5*2cm, pathologic staging pT4N2a. Patient was advised adjuvant chemotherapy and lost follow-up.

Case 2:

A 20 years old female was hospitalized with complaints of abdomen pain for the past 3 months duration which was dull aching in type more towards right lower abdomen. Patient had complaints of mass over lower abdomen and history of melena for the past 1 month. She also had anorexia and loss off weight (10 kg loss in 2 months). She had no comorbidities and no family history of colorectal cancer. On examination the

patient was thin built, pallor and bilateral supraclavicular fossa were free. Vitals were within normal limits. Per abdomen examination revealed a hard irregular fixed non tender mass of size 5*5 cm mass over right lumbar region dull on percussion with no free fluid. Per rectal examination showed feces with blood (dark red) staining. Routine blood investigations were sent and patient was having anemia, other parameters were within normal limits.

CECT abdomen and pelvis showed circumferential suspicious wall thickening involving ascending colon for a length of 7cm with maximum thickness of 2cm with luminal narrowing is also seen infiltrating parietal wall with no liver metastases . Serum CEA level was 10 ng/mL. Colonoscopy was done which showed an ulcero proliferative lesion at ascending colon with luminal narrowing and biopsy taken showed adenocarcinoma.

Hence patient was prepared for laparotomy. 2 units of packed red blood cells were transfused pre operatively.

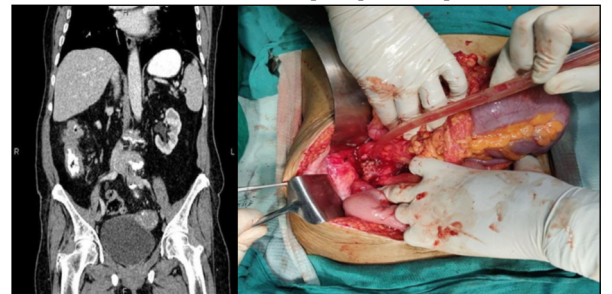


Figure 2.1 CECT Showing An Asymmetrical Wall

Figure 2.2 Intra op picture showing ulceroproliferative growth. Thickening in Ascending colon.

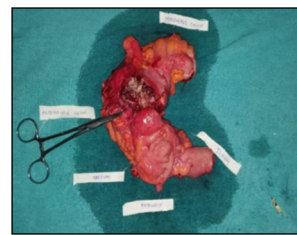


Figure 2.3 Macroscopic Appearance Of The Tumor

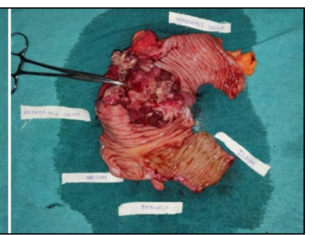


Figure 2.4 Cut Section Of The Specimen

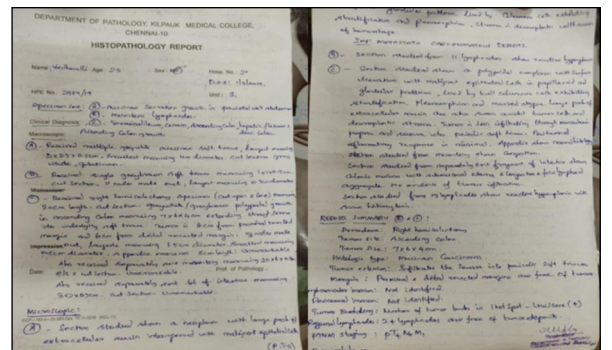


Figure 2.5 Post Operative Histopathologic Report Confirming Mucinous Adenocarcinoma

Intra op findings showed ulcero proliferative hard growth involving the ascending colon adherent to the anterior abdominal wall with no liver metastases. Patient was proceeded with Right hemicolectomy with end to side ileo-transverse anastomosis along with resection of part of rectus muscle and sheath. Post operative period went uneventful and

patient was discharged on 11th post operative day. Post op histopathologic examination revealed mucinous adenocarcinoma involving ascending colon with tumor size 7*6*4cm, pathologic staging pT4N0. Patient completed adjuvant chemotherapy with FOLFOX regimen for eight cycles and is being followed up.

Case 3:

A 22 years old male was admitted to the emergency department with complaints of lower abdomen pain for 4 months dull aching in nature, bleeding per rectum on and off for 1 month, bright red blood appearing during or after a bowel movement and associated with lower abdominal pain and constipation for the past 1 week.

Patient had loss of weight (15kg in 3 months) and. He had no comorbidities and no one in family had history of colorectal cancer. On examination patient was moderately built and pallor was present, tachycardic, per abdomen was distended, guarding present, VIP present, bowel sounds were sluggish and per rectal examination revealed collapsed rectum with blood staining (bright red). Routine blood investigations were sent and his hemoglobin was low. X ray abdomen erect showed multiple air fluid levels. CECT abdomen and pelvis taken showed asymmetric circumferential wall thickening of length 5cm involving sigmoid colon with significant luminal narrowing with gross dilatation of descending transverse and ascending colon with no liver metastases, suggestive of acute large bowel obstruction. He was resuscitated with intravenous fluids and continuous ryle's tube aspiration done. 1 unit of packed red blood cell was transfused pre operatively and then he was proceeded for emergency laparotomy.

Intra op findings showed an annular hard growth involving the sigmoid colon. Patient was proceeded with Hartmann's procedure (Sigmoidectomy with end colostomy). Post operative period went uneventful and patient was discharged on 8th post operative day. Post op histopathologic examination revealed moderately differentiated adenocarcinoma involving sigmoid colon with tumor size 4*2*1cm, pathologic staging pT4N0. Patient completed adjuvant chemotherapy with FOLFOX regimen and is being followed up.



Figure 3.1 CECT Showing Asymmetric Wall Thickening In



Figure 3.2 Intra Operative Photo Showing Annular Growth. Sigmoid Colon.

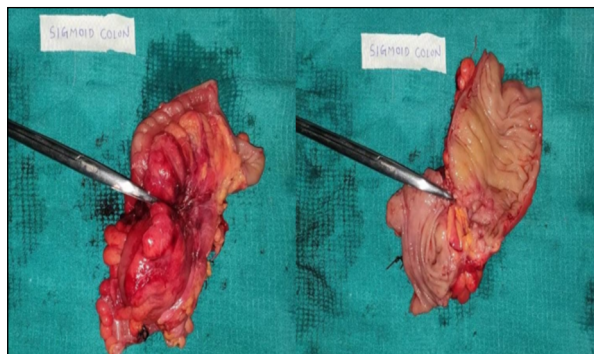


Figure 3.3 Macroscopic Appearance Of The Growth

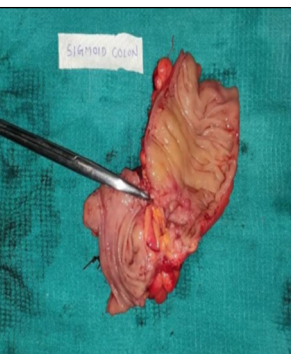


Figure 3.4 Cut Section Of The Specimen

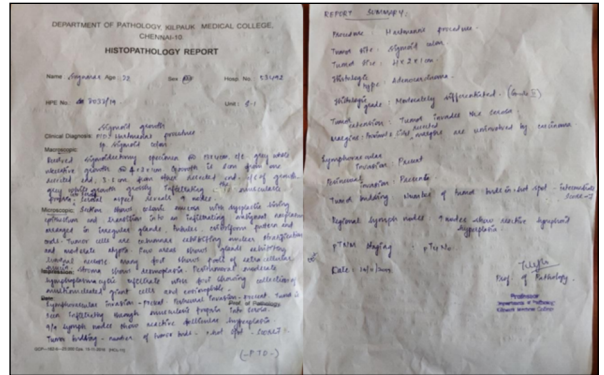


Figure 3.5 Post Operative Histopathology Report Confirming Adenocarcinoma.

After 1 year patient was followed up and done stoma reversal. Preoperative colonoscopy done via both stoma per rectally showed no recurrence nor synchronous lesions. Post operative period went uneventful and was discharged on post operative day 7. Patient is being followed up.

DISCUSSION:

Colorectal cancer (CRC) is the commonest malignancy in the gastrointestinal tract and the third leading cause of cancer associated death in the world. Colorectal cancer is a disease that can arise from various tumorigenic pathways. Adenocarcinoma of colon and rectum is a type of cancer that is often found in patient with colorectal cancer. Adenocarcinoma of colon and rectum is also a progression of colorectal cell from normal tissue to dysplastic epithelium to carcinoma - referred to as adenoma-carcinoma sequences - accompanied by several genetic changes including oncogenes, activation and inactivation of tumor suppressing genes and gene incompatibility in repairing genes.

The incidence of CRC in young individuals has increased by 2% to 8% annually over the past two decades. CRC is now one of the 10 most common causes of death among individuals between the ages of 20 and 49 years. The incidence of CRC diagnosed before 40 years of age varies from 0.8% to 15%.

Most colorectal cancers are rare cases. But in some cases, it can arise from inherited cancer syndromes, such as Lynch's syndrome (the most common syndrome), and hamartomatous, hyperplastic, recessive autosomal recessive related to MYH, and family adolescent polyposis. However, this only represents about 2-5% of all colon and rectal cancers. Inflammatory conditions in the intestine, such as ulcerative colitis and Crohn's disease, have been associated with increasing the risk of colon and rectal cancer, but only account for 1-2% of all cases that have been encountered. Other diseases which increase the risk of colon and rectal cancers of young patients are such as those with inflammatory bowel disease, hereditary non-polyposis colon cancer and polyposis syndromes of the GI tract.

Diagnosis in young people is often late because neoplasms are less common in this age group and symptoms tend to be associated with benign pathology. In addition, for young patients who develop CRC, but do not have known predisposing risk factors, late diagnosis and poor results of the prognosis can occur due to the failure of doctors to consider the possibility of malignant disease in a differential diagnosis.

The findings of CRC in young patients not only a challenge in diagnosis, but also in the management whether what the best choice for the patient is. When dealing with young patients, it is better to separate true CRC from those hereditary

syndromes such as Lynch Syndrome or Familial Adenomatous Polyposis. However, even for CRC patients under 40 years, the prevalence of a positive family history of cancer is low, under 27%. So that, in this age group, genetic evaluation is recommended.

Detecting CRC at an early stage is important for the healing and survival of patients especially in young patients. Young patients with altered bowel habits, rectal bleeding, anorexia, and weight loss should be considered to have alarming symptoms that lead to cancer and have relatively high risk of CRC. Factors that make clinician late in diagnose CRC in young adult patient are the assumption that the symptoms above are caused by hemorrhoids or irritable bowel syndrome, inadequate investigation of iron deficiency anemia, and inadequate rectal or abdominal examination.

In this case series, it is known that all the 3 patients do not have a family history of malignancy as a risk factor. However, it is possible that the patient can be diagnosed with colorectal cancer. Of these, case 1 and case 3 presented as acute large bowel obstruction. Symptoms in all the patients should be regarded as suggestive of colorectal cancer symptoms. Abdominal pain, rectal bleeding, altered bowel habits and weight loss are common symptoms of colorectal cancer. The symptoms were confirmed by the CT scan, intraoperative findings in case 1 and 3 and by colonoscopic findings in case 2. Pathological examination results in case 1 and case 2 showed an invasive mucinous adenocarcinoma and a moderately differentiated adenocarcinoma in case 3.

A previous prevalence study with young patients showed that the most common symptoms are rectal bleeding (57%), abdominal pain (31%), change in bowel habits (21%), weight loss (11%), and anemia (11%). Any symptoms indicative of colorectal cancer can be an indication for further imaging tests. Once colorectal cancer is suspected, barium enema, ultrasound abdominal examination, colonoscopy, abdominal CT, and therapeutic surgical resection can be performed. CRC diagnosis in young people is always difficult, as both patients and physicians underestimate symptoms and postpone diagnosis and management. This finding has raised questions for considering age-based colonoscopy screening beginning at age 40. This is especially true for men, because they have a higher risk of developing advanced neoplasia at any age compared to women, with a previous screening history possibly detecting more pre-neoplastic colonic lesions and asymptomatic neoplastic.

Tumor makers can also be used to suspect the presence of colorectal cancer. Many serum markers are associated with colorectal cancer, especially CEA. However, serum markers, including CEA, have a low diagnostic ability when compared with radiologic examination due to low sensitivity (only 46%) and a possibility of false-positives, including other benign tumors. However, CEA levels of over 5ng/mL predict a worse prognosis than lower levels.

Sigmoidoscopy may be recommended as an early screening to establish or rule out the onset of CRC at a young age with early symptoms of rectal bleeding (for example, bright red blood appears during or after bowel movements). Because most onset of CRC young people occur in the rectum, rectosigmoid colon, and distal colon. However, in individuals younger than 55 years, 30% of lesions can occur proximal to the splenic flexure and will be missed with sigmoidoscopy. Colonoscopy is recommended if there is no clear cause of anorectal bleeding and the bleeding is persistent, regardless of the patient's age. Cost-effectiveness data are limited, but at least one study has reported cost-effective colonoscopy in evaluating individuals aged 25 to 45 years with rectal bleeding and no other symptoms. If a patient

is diagnosed with colorectal cancer that is curable, complete resection is the ideal management. Left-sided tumors require subtotal colectomy, and right-sided tumors require extended hemicolectomy. According to TNM staging, adjuvant chemotherapy and radiotherapy are required. Although CRC screening in the average risk population is recommended starting at the age of 50 years, there are no data regarding optimal modalities for health screening programs.

Colonoscopy is undoubtedly the most sensitive and specific screening test, combining diagnostic and therapeutic procedures. However, the primary role of colonoscopy as early screening strategy for the general population remains a matter of debate.

CONCLUSION:

In adults, despite the high incidence rate, mortality of colorectal cancer is low because of early detection and management. But within a young population, CRC is usually misdiagnosed or diagnosed later and potentially associated with worst prognosis. Thus, a greater suspicion rate and early screening are necessary when evaluating young patients with abdominal pain, changes in bowel habit, bloody stool, and weight loss. Therefore, early detection of colorectal cancer in young patients by extensive evaluation will prevent late diagnosis and poor outcome. Moreover, educational, preventive programs should provide for young population at risk.

REFERENCES:

1. Myers EA, Feingold DL, Forde KA, Arnell T, Jang JH, Whelan RL. Colorectal cancer in patients under 50 years of age: A retrospective analysis of two institutions' experience. *World J Gastroenterol.* 2013;19(34):5651-7. <http://dx.doi.org/10.3748/wjg.v19.i34.5651>. PMID:24039357.
2. Régo AGS, Borges ICV, Valença RJV, Teles JBM, Pinto LSS. Câncer colorretal em pacientes jovens. *Rev Bras Cancerol.* 2012;58(2):173-80.
3. Inra JA, Syngal S. Colorectal cancer in young adults. *Dig Dis Sci.* 2015;60(3):722-33. <http://dx.doi.org/10.1007/s10620-014-3464-0>. PMID:25480403.
4. Kneuert PJ, Chang GJ, Hu CY, Rodriguez-Bigas MA, Eng C, Vilar E, et al. Overtreatment of young adults with colon cancer: more intense treatments with unmatched survival gains. *JAMA Surg.* 2015;150(5):402-9. <http://dx.doi.org/10.1001/jamasurg.2014.3572>. PMID:25806815.
5. Ciarrochi A, Amicucci G. Sporadic carcinoma of the colon-rectum in young patients: a distinct disease? A critical review. *J Gastrointest Cancer.* 2013;44(3):264-9. <http://dx.doi.org/10.1007/s12029-013-9507-5>. PMID:23712253.
6. Vatandoust S, Price TJ, Ullah S, Roy AC, Beeke C, Young JP, et al. Metastatic colorectal cancer in young adults: a study from the South Australian population-based registry. *Clin Colorectal Cancer.* 2016;15(1):32-6. <http://dx.doi.org/10.1016/j.clcc.2015.07.005>. PMID:26341410.
7. Mork ME, You YN, Ying J, Bannon SA, Lynch PM, Rodriguez-Bigas MA, et al. High prevalence of hereditary cancer syndromes in adolescents and young adults with colorectal cancer. *J Clin Oncol.* 2015;33(31):3544-9. <http://dx.doi.org/10.1200/JCO.2015.61.4503>. PMID:26195711.
8. Umar A, Boland CR, Terdiman JP, Syngal S, Chapelle A, Rüschoff J, et al. Revised Bethesda Guidelines for hereditary nonpolyposis colorectal cancer (Lynch syndrome) and microsatellite instability. *J Natl Cancer Inst.* 2004;96(4):261-8. <http://dx.doi.org/10.1093/jnci/djh034>. PMID:14970275.
9. Moreira L, Balaguer F, Lindor N, de la Chapelle A, Hampel H, Aaltonen LA, et al. EPICOLON Consortium. Identification of Lynch syndrome among patients with colorectal cancer. *JAMA.* 2012;308(15):1555-65. <http://dx.doi.org/10.1001/jama.2012.13088>. PMID:23073952.
10. Liang J, Kalady MF, Church J. Young age of onset colorectal cancers. *Int J Colorectal Dis.* 2015;30(12):1653-7. <http://dx.doi.org/10.1007/s00384-015-2341-4>. PMID:26358068.
11. Davis DM, Marcet JE, Frattini JC, Prather AD, Mateka JJ, Nfonam VN. Is it time to lower the recommended screening age for colorectal cancer? *J Am Coll Surg.* 2011;213(3):352-61. <http://dx.doi.org/10.1016/j.jamcollsurg.2011.04.033>. PMID:21737316.