Hellenic Journal of Surgery (2020) **92**:5-6, 182-185

Synchronous Colon Cancer Presenting as a Different Concomitant Surgical Emergency; Case Report and Literature Review

Roi Abramov[1], Subhi Mansour[1], Kenan Hallon[1], Bishara Bishara[1,2], Safi Khuri[1,3]

Abstract

Colorectal cancer (CRC) is the third most common tumour type worldwide with approximately 1.8 million new cases diagnosed per year. Despite the high incidence of newly diagnosed cases, the majority (70%-80%) of these tumours are resectable. These tumours can present either as an incidental finding during screening colonoscopy or with anaemia symptoms such as general weakness and fatigue (for right sided-tumours) or changes in bowel habits (for left-sided tumours). In advanced cases, loss of weight and loss of appetite are also common presenting symptoms. Less common, yet emergent presentations include large bowel obstruction, severe gastrointestinal haemorrhage and free intra-abdominal perforation.

Synchronous CRC (SCRC) cancers, defined as two or more primary tumours existing independently of one another, have an incidence rate of 2.3%- 12.4% of overall CRC with male predominance. Presentation of these tumours is usually identical to presentation of solitary CRC. Emergency surgical presentation, with two different surgical indications for operation is very rare. Herein, we present a case of a 71-year-old male patient, who presented with colonic perforation, as well as colo-colic intussusception due to SCRC tumour. Subtotal colectomy, along with end-ileostomy was done. Histopathological report revealed synchronous colonic mucinous cancer and well differentiated colonic adenocarcinoma.

Key words: *Synchronous colorectal cancer; surgical emergency presentation; perforation; intussusception*

Introduction

Colorectal cancer (CRC) is the third most common malignancy worldwide, and the fourth most common in the United States, with approximately 1.8 million and 146,970 new cases annually (respectively) [1]. Death rate due to CRC is almost 4.3 / 100000 between the ages of 20 and 54 [2]. These tumours usually have a wide range of presentations, including rectal haemorrhage, abdominal pain, changes in bowel habits, and anaemia [3]. Although the aforementioned presentations are the most common, approximately 7% to 29% of these tumours can present as a surgical emergency in the form of massive gastrointestinal haemorrhage, large bowel obstruction or perforation [4]. The aforementioned surgical emergencies are mostly treated by means of resection of the involved segment along with its mesentery, followed by primary anastomosis or proximal bowel diversion in the form of stoma. Leaks from primary anastomosis during urgent colonic resection reaches 12% compared to 8% in primary anastomosis done in elective surgeries [5].

Synchronous CRC (SCRC) tumours are defined as two or more primary tumours existing independently in the same patient, or within 6 months of the initial presentation (6). The incidence rate of these tumours ranges from 2.3% to 12.4%. In most cases, synchronous tumours are comprised of two distinct growths, although various cases were described with patients presenting with four concomitant tumours. Although it can develop in variable sections of the colon, SCRC has a higher prevalence in the right colon, in comparison to solitary CRC [7]. The mean age of presentation of SCRC is 47-79 years, and it is more common in males than in females (M/F ratio: 1.8:1).

As with solitary CRC, synchronous types have a wide range of presentations, depending on several factors, such as patient's age and location of the primary tumour. They can also present as an acute surgical emergency, although such presentation is regarded as a rare entity.

[1]*Department of General Surgery, Rambam Health Care Campus, Haifa, Israel*

[2]*Advanced laparoscopy Unit, Rambam Health Care Campus, Haifa, Israel*

[3]*HPB and Surgical Oncology Unit, Rambam Health Care Campus, Haifa, Israel*

Corresponding author: Safi Khuri, MD
General Surgery, Rambam Health Care Campus,
Haa'leya Hashneya 2, Haifa, Israel, Haifa 31096
Tel.: +972502062169, Fax: +97247772872
e-mail: s_khuri@rambam.health.gov.il

Received Apr 24, 2020; Revised Jun 2, 2020; Accepted Sep 2, 2020

Large bowel obstruction caused by a tumor can be due to critical narrowing of the bowel lumen or due either intussusception. Intussusception in adults is usually pathological due to the presence of a leading point, which could be malignant in up to 66% in cases of colo-colic intussusceptions [8]. Perforation of the large bowel due to CRC may develop either the site of the primary tumour due to transmural bowel wall penetration, or more proximal due to extreme dilatation of the large bowel, which in turn causes ischaemia and leads to perforation. The coexistence of two different surgical emergencies in SCRC is very rare.

Herein, we present a case of SCRC tumour in a 71-year-old man, with two different indications for emergent surgery caused by two isolated tumors: colonic perforation with abscess formation, and colo-colic intussusception.

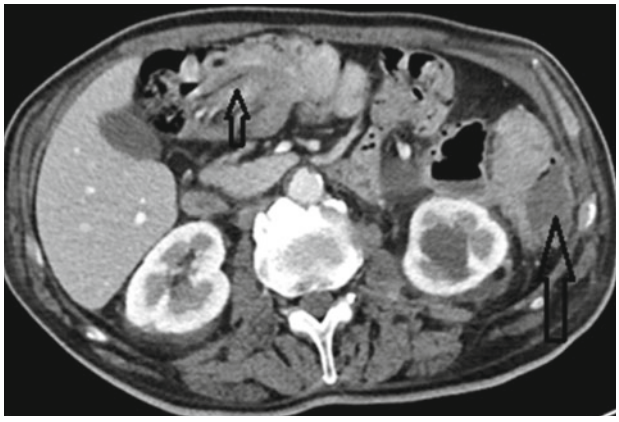

Figure 1. Coronal CT scan of the abdomen showing colo-colic intussusception (short arrow), as well as intra-abdominal abscess at the left upper abdominal quadrant (long arrow).

Case Presentation

A 71-year-old male patient with a past medical history of diabetes mellitus was admitted to our Emergency Medicine department with complaints of abdominal pain, notably in the left lower quadrant region, starting two weeks prior to his admission, with worsening complaints on the day of admission. The pain was accompanied by diarrhea, nausea, vomiting, fever and chills.

On physical examination upon his admission, his vital signs were within normal limits. Abdominal examination revealed a soft abdomen, with upper abdominal rebound tenderness. Complete blood count exhibited increased white blood cells of 18,000, with 80% neutrophils and 7% bands. His liver and kidney function tests were within normal limits. A chest x-ray was normal without free air under the diaphragm. A computed tomography (CT) scan showed colo-colic intussusception of the transverse colon in the right upper abdomen without proximal distension, a 9.1 x 5.6 x 4.7 cm collection adjacent to splenic flexure of the colon [Figure 1] and small amounts of intra-abdominal free air and fluid. The patient was admitted with a diagnosis of concomitant large bowel perforation along with colo-colic intussusception.

Due to these findings, the patient underwent an exploratory laparotomy, during which colo-colic intussusception involving the proximal part of the transverse colon section was found, along with a contained perforation of the colon at the splenic flexure, with abscess formation adherent to the spleen and tail of pancreas (Figure 2). Small amount of turbulent fluid was encountered at the pelvis. A subtotal colectomy along with splenectomy (due to involvement of the spleen in the abscess formation) with end ileostomy was performed. Multiple randomized biopsies were taken from the left gerota. Upon examining the resected specimen, a tumour was demonstrated in the left flexure with a deep ulcer that caused perforation, multiple polyps along the colon and an extensive polypoid process in the proximal transverse colon that caused the colo-colic intussusception were also noticed.

His post-operative period was long and complicated including a diagnosis of pneumonia, which was treated accordingly by intravenous antibiotics. The patient was discharged home on post-operative day 21.

The histopathologic report revealed a mucinous adenocarcinoma, causing the intussusception and a well differentiated adenocarcinoma with perforation on the distal side (splenic flexure). Postoperatively, the patient was treated by adjuvant chemotherapy (FOLFOX protocol). At six months following operation, he was admitted with severe sepsis, due to pneumonia. Eventually, he developed multiorgan failure, and died two days after his admission.

Figure 2. An intra-operative photograph showing colo-colic intussusception of the transverse colon.

Discussion

Nowadays, CRC tumours are regarded as the main gastrointestinal tumours, with SCRC tumours confounding up to 12.4% of cases. In most cases, two synchronous tumours are found, although some cases described up to seven synchronous tumours along the colon [8]. Nearly one-third of CRC tumours demand urgent surgery, usually due to a single surgical indication, even in patients with SCRC. The most common emergency surgical indication in CRC is large bowel obstruction (80%), mostly located at the sigmoid colon, followed by perforation with a rate of 20%. In our case, both tumours presented with a different concomitant indication for operation: colonic perforation and intussusception.

Colonic perforation due to CRC usually develops due to transmural penetration of the bowel wall by the tumour, which may cause localised peritoneal contamination [9]. Perforation may also develop proximal to tumour site, in which case, a diffuse peritonitis may occur following the spillage of fecal content. Diagnosis of intestinal perforation can be done by imaging studies, mainly a CT scan, which is known to have the highest sensitivity and specificity for examining the possible aetiology and extent of perforation [10]. Most cases will require operative intervention, whereas selected cases might respond to conservative treatment [11]. Sepsis and diffused peritonitis are absolute indications for surgery, while controlled or contained perforation can be managed conservatively with interventional drainage of the collection under radiological surveillance [12]. In our case, the CT scan revealed perforation of the colon at the level of the splenic flexure, with abscess formation and remote free intra-abdominal air and fluid, findings that are indicative for operative intervention.

Bowel intussusception is a common aetiology for intestinal obstruction in children, where it is mostly idiopathic in nature. On the contrary, in adults, intussusception is a rare cause of bowel obstruction, constituting up to 5% of bowel obstruction cases [5,6]. In their study, Brayton and Norris's examined 745 cases of adult intussusceptions. Of them 52% involved the small bowel and 38% the large bowel (17% ileocecal, 17% colocolic, 4% appendiceal) [13]. Most cases of large bowel intussusceptions had an underlying pathological leading point. Hirotaka et al. reported a retrospective study including 44 cases of intussusception in adults, of which 26 (16 ileocecal and 10 colon) involved the large bowel [14]. Eighty percent of ileocecal and 90% of colonic intussusceptions were associated with malignant tumours.

Malignant tumours (mainly adenocarcinoma) consist the leading cause in 66% of colon intussusception cases, whereas they only constitute 30% of the cases of small bowel intussusceptions [15,16].

The classic triad of intussusception in children (abdominal pain, currant jelly stools and palpable abdominal mass) is very rare in adults, in which the presentation usually includes intermittent chronic contractions, nonspecific intestinal obstruction signs (such as nausea), vomiting, GI bleeding, constipation, or abdominal distension [17].

The modality of choice for diagnosis of adult intussusception is abdomino-pelvic CT scan. Typical findings can be the appearance of a target sign or sausage shape, with variable degree of proximal bowel dilatation [18,19].

Due to the high prevalence of an underlying leading cause, including malignant neoplasms, intussusception in adults, especially the colonic type, are treated by means of operative interventions that include resection of the intussuscepted segment.

As has been mentioned previously, it is well known and already reported on that solitary and synchronous colon cancer can present as a surgical emergency, yet the presence of synchronous tumour presenting with dual distinct surgical emergency is extremely rare. Upon reviewing the current English literature, no similar cases were reported. Herein, we present the first case of synchronous colon cancer presenting with concomitant different surgical emergency.

Ethical Approval – Informed Consent: *The authors declare that the study has been approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki. Also all patients gave their written informed consent prior to their inclusion to the study.*

Conflict of Interest: *The authors declare that there is no conflict of interest.*

Authors contributions: *Roi Abramov contributed to the writing of the manuscript as well as for the design. Subhi Mansour and Kenan Hallon contributed to literature research and editing of the manuscript. Bishara Bishara contributed to critical review of the manuscript. Safi Khuri was the mentor and contributed to critical revision of the manuscript.*

References

1 International Agency for Research on Cancer (IARC). Global cancer incidence. In: New Global Cancer Data: GLOBOCAN 2018. The Union for International Cancer Control [Internet]. 2018 [Accessed 2018 Sep 12]. Available from: https://www.uicc.org/news/new-global-cancer-data-globocan-2018#.
2. Siegel RL, Miller KD, Jemal A. Colorectal cancer mortality

rates in adults aged 20 to 54 years in the United States, 1970-2014. JAMA 2017;318:572-4. Doi:10.1001/jama.2017.7630
3. Majumdar SR, Fletcher RH, Evans AT. How does colorectal cancer present? Symptoms, duration, and clues to location. Am J Gastroenterol 1999;94:3039-45. doi:10.1111/j.1572-0241.1999.01454.x.
4. Bhasin DK, Rana SS. Malignant colorectal obstruction: Looking for synchronous lesions with the scope through a metal stent...! Gastrointest Endosc 2006;63:820-3. Doi:10.1016/j.gie.2006.02.014
5. Kim J, Mittal R, Konyalian V, et al. Outcome analysis of patients undergoing colorectal resection for emergent and elective indications. Am Surg 2007;73:991-3.
6. Cunliffe WJ, Hasleton PS, Tweedle DE, et al. Incidence of synchronous and metachronous colorectal carcinoma. Br J Surg 1984;71:941-3.
7. Yang J, Peng JY, Chen W. Synchronous colorectal cancers: A review of clinical features, diagnosis, treatment, and prognosis. Dig Surg 2011;28:379-85. Doi:10.1159/000334073
8. Marinis A, Yiallourou A, Samanides L, et al. Intussusception of the bowel in adults: A review. World J Gastroenterol 2009;15:407-1. Doi:10.3748/wjg.15.407
9. Ko BM. Small Bowel Tumors and polyposis: How to approach and manage? Korean J Gastroenterol 2018;72:277-80. Doi:10.4166/kjg.2018.72.6.277
10 Paolantonio P, Rengo M, Ferrari R, et al. Multidetector CT in emergency radiology: Acute and generalized non-traumatic abdominal pain. Br J Radiol 2016; 89(1061):20150859. Doi:10.1259/bjr.20150859.
11. Tanner TN, Hall BR, Oran J. Pneumoperitoneum. Surg Clin North Am 2018;98:915-932. Doi:10.1016/j.suc.2018.06.004.
12. Zhao N, Li Q, Cui J, et al. CT-guided special approaches of drainage for intraabdominal and pelvic abscesses One single center's experience and review of literature. Med (United States). 2018; 97(42):e12905. Doi:10.1097/MD.0000000000012905
13. Brayton D, Norris WJ. Intussusception in adults. Am J Surg Published Online First: 1954;88(1):32-43. Doi:10.1016/0002-9610(54)90328-1.
14. Hirotaka Honjo, Makio Mike, Hiroshi Kusanagi, et al. Adult Intussusception: A Retrospective Review. World J Surg 2015;39:134-8.
15. Barussaud M, Regenet N, Briennon X, et al. Clinical spectrum and surgical approach of adult intussusceptions: A multicentric study. Int J Colorectal Dis Published Online First: 2006;21:834-9. Doi:10.1007/s00384-005-0789-3.
16. Nagorney DM, Sarr MG, McIlrath DC. Surgical management of intussusception in the adult. Ann Surg Published Online First: 1981;193:230-6. Doi:10.1097/00000658-198102000-00019.
17. Begos DG, Sandor A, Modlin IM. The diagnosis and management of adult intussusception. Am J Surg Published Online First: 1997;173:88-94. Doi:10.1016/S0002-9610(96)00419-9.
18. Gayer G, Zissin R, Apter S, et al. Pictorial review: adult intussusception--a CT diagnosis. Br J Radiol Published Online First: 2002;75:185-90. Doi:10.1259/bjr.75.890.750185
19. Azar T, Berger DL. Adult intussusception. Ann. Surg 1997;226:134-8. Doi:10.1097/00000658-199708000-00003.