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Transverse Colorectal Carcinoma Imaging: A Case Report

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Abstract

BACKGROUND: Colorectal cancer (CRC) is a type of malignancy in the digestive system. Colorectal cancer can be found anywhere along the large intestine from the cecum to the rectum. However, transverse colorectal cancer is a rare case and is only found in 6.8% of total colorectal cancers.

CASE PRESENTATION: A 64-year-old male patient complaints of weakness, changes in the pattern of defecation, namely, dark brown bowel movements for approximately ±8 months, anemia, and an increase in serum carcinoembryonic antigen (CEA) test. The results of the initial examination with plain abdominal radiographs did not reveal any abnormalities, only normal gas shadows mixed with fecal material were found that were prominent in the right to left hypochondrium region. After further examination, the patient was found to have Stage 4 transverse colorectal cancer. The diagnosis of transverse colorectal carcinoma (CRC) was established based on fluoroscopy findings which showed filling abnormalities and colonic lumen irregularities in the medial 1/3 of the transverse colon forming an apple core image with the narrowest diameter ±3 mm along ±6 cm, shouldering sign (+), and on computerized tomography (CT) abdomen with contrast, an intraluminal malignant mass was found (Staging AJCC 8th ed 2018 T4aN2aM0).

CONCLUSION: The diagnosis of CRC was confirmed by the results of resection and histopathological examination which found well-differentiated adenocarcinoma of the colon.

Introduction

Colorectal cancer (CRC) is cancer of the digestive tract which is a type of malignancy in adults and ranks as the third deadliest and fourth most frequently diagnosed in the world [1]. Colorectal cancer can be found anywhere along the large intestine from the cecum to the rectum. Cancer of the sigmoid colon was the most common type 77.9%, followed by transverse colon cancer 6.8%, ascending colon cancer 6.5%, caecum cancer 6.2%, and descending colon cancer 2.6% [2].

Colorectal cancer is one of the leading causes of death and is expected to continue to increase in 2035 [3]. Colorectal carcinoma (CRC) tends to increase from year to year both in terms of morbidity and mortality. Increased morbidity and mortality are associated with economic development and social life, lifestyle changes, obesity, unhealthy eating patterns, lack of physical activity, the habit of consuming red and processed meat, and consuming alcoholic beverages [3].

Case Report

A 64-year-old man came to the emergency department with weakness and a history of dark brown stools for approximately ±8 months. Medical history: Hemorrhoids. History of diabetes mellitus, hypertension, and history of cancer in the family was denied. The results of laboratory tests showed a decrease in hemoglobin: 5.5 mg/dl (normal range: 13.5–18 g/dL), white blood count 9 × 10/μL (normal range: 4–10/μL), an increase in CEA: 9.36 ng/ml (normal range: <5 ng/ml). Patients undergo radiological imaging examinations to confirm further disease diagnosis.

Radiological findings

On plain radiography examination of the abdomen in the radiology emergency department, only bowel gas was found which was normally distributed to the pelvic cavity with prominent fecal material in the right to the left upper quadrant (Figure 1). Then a follow-up was carried out from the inpatient room while correcting the anemia. The patient was sent to the radiology department for fluoroscopy colon in-loop examination. It was found that there was a filling defect and irregularity in the lumen of the colon in the medial 1/3 of the transverse colon forming an apple core with the narrowest diameter ±3 mm along ±6 cm, shoulder sign (+), supports the image of an intraluminal mass in the transverse colon (Figure 2). Then a follow-up examination was performed with computed tomography (CT) of the

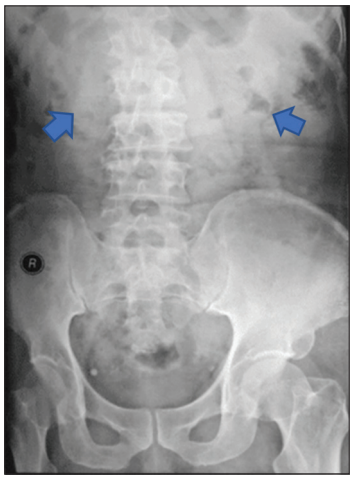

Figure 1: Abdominal plain photo. There is a normal distribution of bowel gas shadows to the pelvic cavity with prominent fecal material in the right to the left upper quadrant

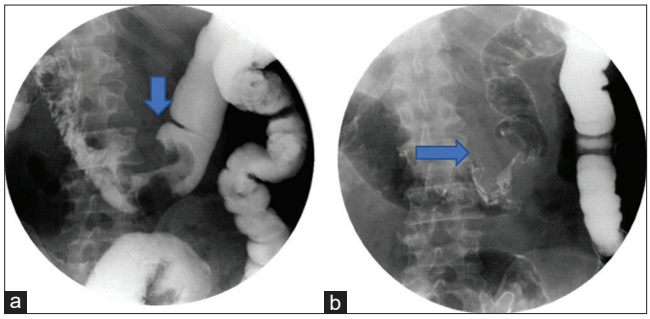

Figure 2: Fluoroscopy. Barium contrast that has been diluted as much as ±850 ccs is inserted into the anus through the catheter (a), double contrast with air contrast (b). A filling defect and irregularity of the lumen of the colon are seen in the medial 1/3 of the transverse colon, forming an apple core appearance with the narrowest diameter ±3 mm along ±6 cm, shouldering sign (+)

abdomen with contrast for staging and to determine the characteristics of the mass, it was found to be a malignant mass with asymmetrical thickening of ±5.9 cm in the medial transverse colon with fat stranding and multiple subcentimeter lymph nodes in the peritumoral >4, para aorta, aortocaval and mesentery and no distant metastases can be seen as an intraluminal malignant mass (AJCC Stage 8th ed. 2017 T4aN2aM0) (Figure 3).

Colonoscopic findings and anatomical pathology

The patient then underwent a colonoscopy biopsy, which revealed a bulging, brittle, easy-to-bleed mass in the transverse colon, almost covering the entire lumen (Figure 4). The anatomical pathological findings are well-differentiated adenocarcinoma with a well-formed glandular appearance or simple tubules with uniformly oriented nuclei (Figures 5 and 6).

Discussion

Cancer is a malignant disease characterized by abnormal uncontrolled cell division [4]. Cancer that occurs in the colon or rectum is called colorectal cancer (CRC). The large intestine is a muscular tube about 1.5 m (5 ft) long and 5 cm (2 in) in diameter that absorbs water and electrolytes from food and expels feces. The large intestine is divided into 4 parts, namely: The ascending colon which begins with the cecum and extends upward on the right side of the abdomen, the transverse colon across the body from right to left, the descending colon descends on the left side, and the sigmoid colon which is the final part of the colon [4].

Transverse colorectal carcinoma is a rare type of colorectal cancer. The distribution of colorectal cancer is in the recto-sigmoid colon which is the most common around 77.9%, followed by cancer in the transverse colon 6.8%, ascending colon cancer 6.5%, caecum cancer 6.2%, and descending colon cancer 2.6% [2]. Colorectal cancer (CRC) is generally found

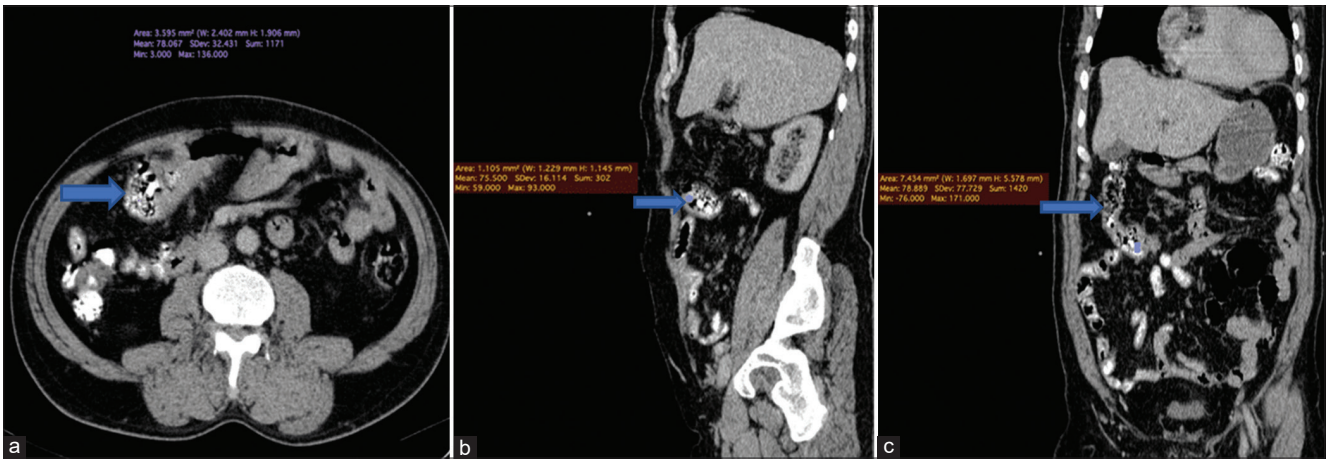

Figure 3: CT of the abdomen in axial (a), sagittal (b), and coronal (c) venous phases showing enhancing asymmetrical thickening along ±5.9 cm in the medial transverse colon with fat stranding and multiple subcentimeter lymph nodes peritumoral >4, para aorta, aortocaval and mesentery, and no distant metastases were found and it was concluded as an intraluminal malignant mass (Staging AJCC 8th Edition 2018: T4aN2aM0)

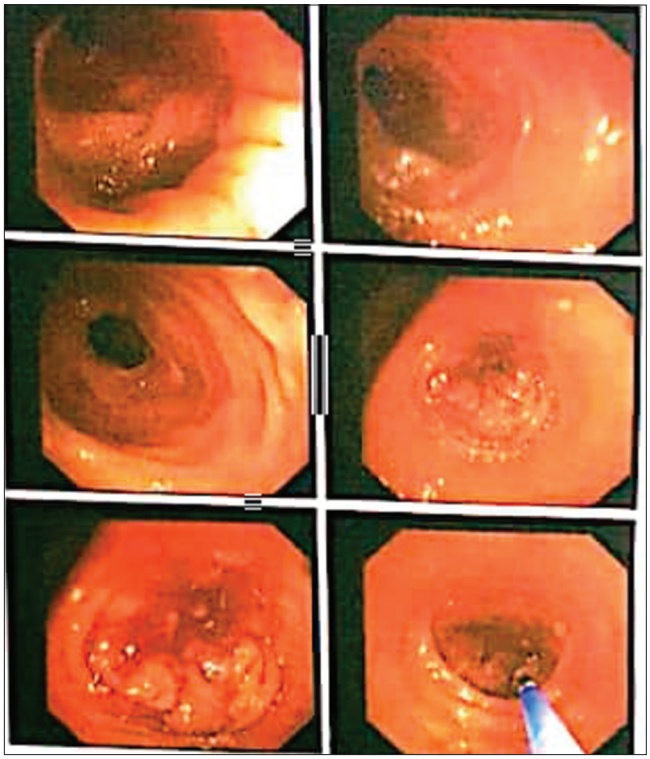

Figure 4: Colonoscopy biopsy of the transverse colon showed a mass that almost covered the entire lumen, was bumpy, fragile, and bleeds easily

in patients aged >50 years [3]. This patient was a male of the age of 64 years, according to the literature. Approximately 90% of all new cases of colorectal cancer occur in patients over 50 years of age. The mean age of patients at diagnosis was 68 and 72 years in male and female, respectively [3]. Male have about a 30% higher risk of colorectal cancer compared to female [4]. Male diagnosed with colorectal cancer have a poorer prognosis and an approximately 40% higher risk of death compared to female. The reasons for the gender disparity are not fully understood. It is thought that male may be associated with different exposures to risk factors such as alcohol, tobacco, and dietary patterns [3].

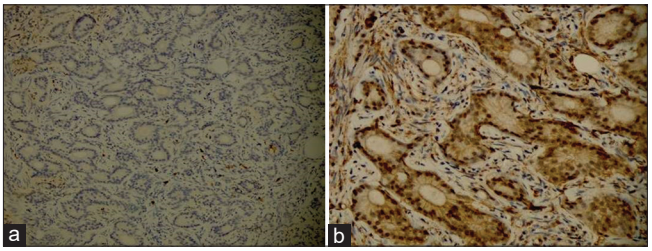

Figure 5: Adenocarcinoma is well-differentiated with well-formed glands or simple tubules with uniformly oriented nuclei. Before zoomed-in (a), after zoomed-in (b)

The patient comes with a complaint weakness and a history of dark brown bowel movements for approximately ±8 months. Colorectal cancer has several symptoms in the form of complaints of bleeding from the rectum, blood in the stool, dark or black stools, changes in bowel habits or changes in stool shape, cramps, pain in the lower abdomen, the urge to defecate when defecating. empty bowel movements, constipation, or diarrhea that lasts more than a few days [4]. CRC can be suspected and can be used as a reference for future diagnosis of rectal bleeding, abdominal masses, abdominal pain, changes in bowel habits, unexplained weight loss, and iron deficiency anemia. Some additional symptoms such as unexplained loss of appetite are important to note [3].

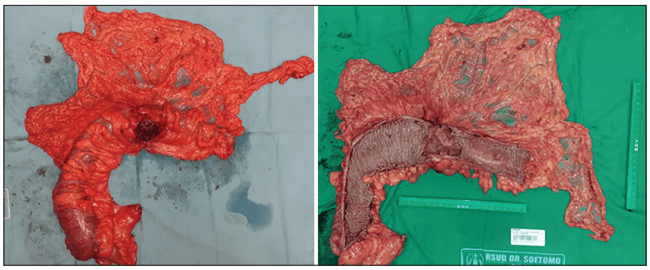

Figure 6: Overview of the intraluminal mass in the transverse colon after laparotomy extended hemicolectomy extra and end to end ileocolic anastomoses

On initial examination, plain abdominal radiographs revealed only normal bowel gas shadows mixed with prominent fecal material in the right to left hypochondrium region. Patients may be diagnosed with hemorrhoids or other diseases. However, the clinician suspected that there was a colorectal mass and after further radiological examination, the cause of the patient's complaint was found. Fluoroscopy can be one of the initial radiological imaging tests to find colorectal cancer. The fluoroscopy findings reflect a macroscopic appearance with the lesion appearing as a filling defect. Colorectal cancer will appear as an exophytic or sessile mass or it may be circular or shouldered margin forming a bitten apple slice (apple core appearance). The apple-core lesion on colon imaging results in a stenotic appearance revealing colorectal adenocarcinoma [5], [6].

Computerized tomography (CT) is the most widely used modality for staging CRC and is capable of assessing nodes and metastases. Although fluoroscopy and colonoscopy are accurate in detecting colon cancer, they are not possible to evaluate extraluminal disease. CT is of great value in surgical planning because it can demonstrate a regional extension of the tumor as well as adenopathy and distant metastases, as well as staging colorectal cancer which is required for preoperative assessment and postoperative surveillance [7]. Computed tomography (CT) examination of the abdomen has improved the diagnostic parameters for the location of pre-colectomy masses and stage T of colon tumors [8]. Computerized tomography (CT) has the sensitivity and accuracy of the results to detect the location of colon tumors reaching 100% and 92.58% [8]. Colorectal cancer on CT findings usually presents as a discrete soft tissue mass that narrows the colonic lumen and may also manifest as focal colonic wall thickening and luminal narrowing [7]. The sensitivity of CT to detect colorectal cancer in patients aged > 65 years is 93% [9].

The workup of follow-up of this patient was colonoscopy biopsy, where colonoscopy could detect 98% of tumors but did not detect 2% of tumors because of tumor stenosis which did not allow the passage of endoscopes (synchronous tumors). Colonoscopy was reported to provide a 72% correct location of the tumor and 20% misplacement of the tumor by one adjacent segment and 6% misplacement of the tumor by more than one adjacent segment. Colonoscopy examination has a sensitivity and detection of colonic tumor location about 96.63% and 71.79%, respectively [8]. Colonoscopy examination allows sampling of biopsy for definitive diagnosis, but patients with tumor-associated stenosis and older patients tend to have incomplete or difficult optical colonoscopy results [10].

More than 90% of CRCs are adenocarcinomas originating from colorectal mucosal epithelial cells. Adenocarcinoma has characteristic glandular formation which forms the basis for histological grading of tumors. Adenocarcinoma is divided into three grades based on the results of histological examination, namely, well-differentiated adenocarcinoma, that is, the tumor is glandular >95%, moderately differentiated adenocarcinoma 50–95% glandular tumor, and poorly differentiated adenocarcinoma which is mostly solid with <50% glands [11].

Conclusion

Transverse colorectal carcinoma is a rare type of colorectal cancer. The diagnosis of transverse colorectal carcinoma was established based on fluoroscopy imaging findings which showed filling abnormalities and colonic lumen irregularities of the transverse colon forming an apple core image. Computerized tomography (CT) abdomen with contrast can show an intraluminal malignant mass. The diagnosis of CRC was confirmed by the results of resection and histopathological examination which show adenocarcinoma of the colon.

Conflict of Interest

The authors declare that there is no conflict of interest in this paper. Written consent was obtained from the patient and the authors did not include patient identity data in this case report

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