



Isolated splenic metastasis from colon cancer: Case report

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Abstract

Isolated splenic metastases from colorectal cancer are very rare clinical entities and when they are present, they usually manifest widely disseminated disease. In this paper we report a case of metachronous solitary isolated splenic metastasis from colon cancer in a 64-year-old woman who was successfully treated by laparoscopic splenectomy. We discuss the pathological and clinical aspects of this condition. We furthermore comment on the diagnostic and therapeutic options of this rare entity through our observation of the case and consideration of the 31 case reports published in the literature.

Key words: Isolated splenic metastases; Colon cancer; Splenectomy

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Core tip: Isolated splenic metastases from colon cancer are very rare, reporting of such cases was encouraged and recommended in several publications of this clinical entity to improve the management and survival of patients on stronger well-founded evidence.

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INTRODUCTION

Isolated Splenic metastases from colorectal cancer are very rare clinical entity and when they are present, they are usually a manifestation of widely disseminated disease^[1]. This rareness can be explained by the anatomical, histological and functional characteristics of spleen which is usually considered an infertile soil for metastases^[2]. We report a case of isolated splenic metastasis 16 mo after right Hemicolectomy for stage I of colon adenocarcinoma which was successfully treated by Laparoscopic splenectomy. We discuss the clinical and pathological aspects of this rare entity, and consider the diagnostic and therapeutic options based on our observation of the case, and 31 cases reports published in the literature.

CASE REPORT

A healthy 64-year-old woman presented in July 2012, with abdominal pain and "heaviness". A colonoscopy was performed and demonstrated a budding tumor in the cecum that easily bleeds. A histological exam showed moderately differentiated adenocarcinoma. A computed tomography (CT) scan of the chest, abdomen and pelvis revealed a Wall-thickening of the cecum without others abnormalities. She underwent a right hemicolectomy with a histopathological finding of a moderately differentiated adenocarcinoma invading the muscularis propria. Twelve lymph nodes were removed and none showed metastases (pT2N0M0, Stage I), with no blood vessel invasion. The status of MSI proteins and BRAF were not verified. she was on regular follow-up every 3 mo with a serum carcinoembryonic antigen (CEA) and CT scan of the chest, abdomen and pelvis. Sixteen months after her colectomy, a serum CEA level was 38 ng/mL, CT Scan demonstrated a single low-density lesion in the spleen which measures 4.9 cm of diameter (Figure 1). At Laparoscopic exam, no intra-abdominal lesions and no peritoneum or liver metastases were detected. Splenectomy was performed at that time. The Histological exam demonstrated an adenocarcinoma with spread the splenic parenchyma (Figure 2). The following appointment, delayed at 6 mo post splenectomy, revealed no recurrences. CT scanning showed no recurrence in the spleen area, liver, abdomen or the chest; CEA level was 12 ng/mL, however a fluorodeoxyglucose-positron emission tomography (FDG-PET) scan revealed a high metabolic activity in the abdominal cavity, mediastinum and left inguinal lymph nodes suggesting diseases recurrences (Figure 3). Chemotherapy was therefore commenced consisting of Fluorouracil (5FU), Leucovorin, oxaliplatin and Bevacizumab. After 6 cycles, there was no evidence of progression disease.

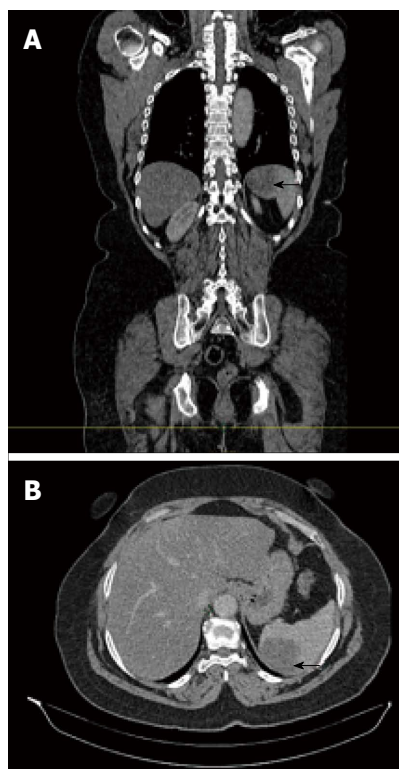


Figure 1 Abdominal computed scan demonstrating, in sagittal (A) and axial (B) views, a single low-density lesion of the spleen which measures 4.9 cm in diameter.

DISCUSSION

Splenic metastases from colorectal cancer are very rare. The incidence of this clinical entity was reported by Berge^[2] to be 4.4% in 7165 autopsy cases, but he did not mention the incidence of Isolated Splenic metastases.

We found only 31 cases of isolated solitary Splenic metastasis from colorectal cancer in the English-language literature published in PubMed. dates searched were from 1969, date of the first case reported, to October 2015 (Table 1^[3-31]). The cases consisted of 18 men and 13 Women, ranging in age from 33 to 84 years (mean, 62.7 years). The splenic metastasis was synchronous in five cases and metachronous in others 26 cases. The majority of cases were asymptomatic and the diagnosis was performed in follow-up of patients by imaging studies evaluation of increased CEA level which was elevated in 81% of cases ranging between 4.6 and 223 ng/mL, in our patient CEA level was 38 ng/mL. The interval between the primary tumor treatment and the detection of spleen metastasis varying from 3 to 144 mo (16 mo in our case). Splenic metastases were detected by Computed tomography scan, alone in 18 cases, or combined with other imaging studies such as Ultrasonography (5 cases), positron emission tomography (4 cases) and

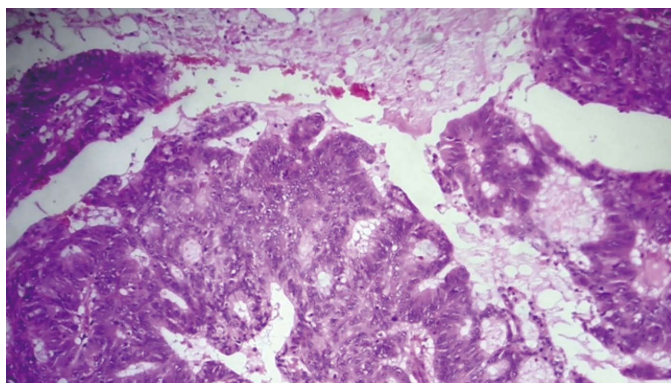


Figure 2 Adenocarcinoma spread the splenic parenchyma (hematoxylin-eosin staining, magnification $\times 20$).



Figure 3 Fluorodeoxyglucose-positron emission tomography with high metabolic activity in the abdominal cavity.

Magnetic Resonance Imagery (1 case); 2 cases were detected by Liver-spleen scintigraphy; and 1 case by fluorodeoxyglucose-positron emission tomography (FDG-PET) scan^[25]. The size of splenic lesions varied from 1.5 to 18 cm. In the cases reported the primary tumor was located in the sigmoid colon in 8 cases, in the ascending colon in 6 cases, in the descending colon in 5 cases, and in the rectum and Splenic flexure in 3 cases each; in the cecum in 2 cases as in our case, 1 case in the hepatic flexure and transverse colon each; In 2 patients the primary tumor localization was not specified. So the most frequent site of primary tumor is the left colon (61% of cases). Metastases are classically spread through either hematological or lymphatic pathways, however there is no lymphatic afferent in the spleen^[1] and therefore the spread is *via* the blood vessels. In the cases of splenic metastasis, the regional lymph nodes were involved in 17 cases of primary tumor (16 cases with Stage III, 1 case with Stage IV); in 9 cases the regional lymph nodes were negatives (7 cases with stage II, 2 cases with stage IV), in 5 patients the regional lymph nodes was not specified; in our case the primary tumor was stage I with no blood vessels invasion, it is the first in the literature. The diagnosis of spleen metastasis was confirmed by fine-needle aspiration in two cases^[14,27] and in others cases by splenectomy.

Therapeutics options of metastatic colorectal cancer include surgery, chemotherapy with or without target therapy and radiotherapy. In all cases reported of Isolated Splenic metastases from colon cancer, splenectomy was performed, with Laparoscopic approach in only one case^[25] as in our patient. This surgical technique remains controversial in Splenic malignancies because the risk of peritoneal dissemination and the few data in the literature. Lopez Monclova *et al.*^[31] reports 6 cases of Laparoscopic splenectomy for splenic metastasis from melanoma, ovarian cancer, colorectal cancer and malignant fibrous histiocytoma without surgical complications with a survival ranged from 2 mo to 11 years. Moreover, studies have demonstrated that laparoscopic techniques used in surgery of colorectal and gynecological cancer were not associated with a greater risk of intraperitoneal dissemination than conventional techniques^[32]. Despite the fact that Chemotherapy is the most appropriate options of metastatic colon cancer by improving symptoms and survival, it was given in only 5 cases, as neoadjuvant in 2 cases and adjuvant in 3 cases. Target therapy was given only for 1 patient^[23]. Interval survival after splenectomy ranging from 3 to 84 mo (mean, 22.5 mo). In patients with metachronous splenic metastasis only 2 cases were relapsed between 9 and 11 mo, in contrast 3 of 5 cases of synchronous splenic metastases were relapsed. Our patient was relapsed 6 mo post splenectomy, we suggest that this early relapse could be explained by lack of adjuvant chemotherapy post splenectomy rather than the surgical technique.

In conclusion, isolated splenic metastases from colorectal cancer are very rare clinical entity. A strict monitoring of patients with colon cancer after primary treatment should lead to early diagnosis of such metastasis. Splenectomy followed by adjuvant chemotherapy seems the optimal approach that can improve survival, despite small number of cases in the literature.

This is the first case in our institution and the first case of metachronous isolated splenic metastasis from colon cancer of which the primary tumor was stage I.

Table 1 Characteristic of patients, their primary tumors, therapeutics and outcomes in the cases reports of isolated splenic metastasis from colorectal carcinoma

Case No.	Ref.	Age, sex	Primary tumor	Stage (LN)	Size (cm)	CEA (ng/mL)	Imaging	Treatment ¹	1 st DFI (mo)	2 nd DFI (mo)
1	Dunbar <i>et al</i> ^[3] , 1969	F, 78	Rectum	III(+)	18	64.0	CT	S	48	84
2	Waller <i>et al</i> ^[4] , 1982	M, 72	Sigmoid	III(+)	9	106.0	LSS	S	48	6
3	Slavin <i>et al</i> ^[5] , 1986	M, 81	Cecum	III(+)	NL	7.5	LSS	S	30	12
4	Capizzi <i>et al</i> ^[6] , 1992	F, 51	Rectum	II(-)	NL	13.5	CT	S	51	14
5	Thomas <i>et al</i> ^[7] , 1993	F, 72	Descending	II(-)	3	223.0	CT	S	144	12
6	Mainprize <i>et al</i> ^[8] , 1997	F, 62	Descending	III(+)	4	High	CT	S	42	12
7	Indudhara <i>et al</i> ^[9] , 1997	M, 74	Sigmoid	II(-)	9.5	23.4	CT	S	24	24
8-11	Ishida <i>et al</i> ^[10] , 199	F, 73	Ascending	IV(NL)	1.5-7.5	NL	CT	S	Syn	72
			(3 cases)		(all cases)					
		M, 62	Splenic flexure	IV(NL)		NL	CT	S	Syn	24
			(1 case)							
		M, 52		NL		NL	US and CT	S	12	6
		M, 48		NL		NL	US and CT	S	24	3
12	Weathers <i>et al</i> ^[11] , 1999	F, 33	Sigmoid	III(+)	3.5	9.0	CT and MRI	S	3	12
13	Kim <i>et al</i> ^[12] , 2000	M, 65	Ascending	III(+)	5	14.9	CT	S	36	18
14	Lee <i>et al</i> ^[13] , 2000	F, 60	NL	NL	NL	High	CT	S	108	5
15	Place ^[14] , 2001	M, 51	Sigmoid	III(+)	13	5.0	CT	S	72	6
16	Okuyama <i>et al</i> ^[15] , 2001	M, 62	Sigmoid	III(+)	3	N	US and CT	S	24	23
17	Avesani <i>et al</i> ^[16] , 2001	F, 52	Descending	IV(-)	5	High	CT	S	Syn	12 relapse
18	Cavallaro <i>et al</i> ^[17] , 2004	F, 55	Sigmoid	III(+)	3	N	CT and PET	S	21	12
19	Hiraiwa <i>et al</i> ^[18] , 2006	F, 49	Ascending	IV(+)	NL	36.7	CT	S	Syn	24 relapse
20	Avninder <i>et al</i> ^[19] , 2006	M, 52	Sigmoid	II A(-)	13	7.2	US and CT	Cmt, S	108	22
21	Gencosmanoglu <i>et al</i> ^[20] , 2006	M, 76	Descending	III(+)	6.5	High	CT and PET	S, Cmt	17	12
22	Pisanu <i>et al</i> ^[21] , 2007	F, 54	Splenic flexure	IV(-)	4.5	High	CT	S, Cmt	Syn	6 relapse
23	Popović <i>et al</i> ^[22] , 2008	M, 72	Rectum	III(+)	NL	High	CT	S	18	NL
24	Bigot <i>et al</i> ^[24] , 2008	F, 69	Sigmoid	II(-)	4	High	CT	S	24	60
25	Gasent Blesa <i>et al</i> ^[25] , 2008	F, 52	Descending	III(+)	4.5	High	PET	S	36	NL
26	Montemurro <i>et al</i> ^[23] , 2008	F, 80	Transverse	III(+)	8	52.0	CT	S, TT	9	6
27	Sileri <i>et al</i> ^[26] , 2009	M, 73	Hepatic flexure	II(-)	1.5	High	CT-PET	S	60	40
28	Busić <i>et al</i> ^[27] , 2010	M, 70	Splenic flexure	III(+)	8	High	CT US	S	24	12
29	Genç <i>et al</i> ^[28] , 2010	M, 59	Ascending	III(+)	4	37.0	CT	S	15	24
30	Dogan <i>et al</i> ^[29] , 2010	M, 58	NL	II(-)	3.5	4.62	CT	S, Cmt	20	11 relapse
31	Pavlović <i>et al</i> ^[30] , 2011	M, 78	Cecum	III(+)	7	38.6	CT, PET	Cmt, S	37	9 relapse
32	Our case, 2015	F, 64	Cecum	I(-)	4.9	38.0	CT	S	16	6 relapse

¹Spleen metastases; 1st DFI disease-free interval between treatment of primary tumor and diagnosis of the spleen metastasis; 2nd DFI disease-free interval after splenectomy. CEA: Carcinoembryonic antigen; N: Normal; LN: Lymph node; NL: Not listed; CT: Computed tomography; US: Ultrasonography; LSS: Liver splenic scintigraphy; PET: Positron emission tomography; MRI: Magnetic resonance imagery; S: Surgery; Cmt: Chemotherapy; TT: Target therapy.

We report this case for enrich the database of this rare clinical entity and to improve the management and survival of patients with isolated splenic metastases from colorectal cancer as was recommended and encouraged in similar publications.

COMMENTS

Case characteristics

A 64-years-old woman was on regular follow-up post right hemicolectomy for stage I adenocarcinoma of the cecum. Computed tomography (CT) scan demonstrated a single low-density lesion in the spleen sixteen months post her hemicolectomy.

Clinical diagnosis

The patient was no symptoms; the spleen metastasis was detected after routine monitoring.

Differential diagnosis

Splenic infraction or abscess, lymphoma.

Laboratory diagnosis

A serum carcinoembryonic antigen level was 38 ng/mL.

Imaging diagnosis

CT scan demonstrated a single low-density lesion in the spleen which measures 4.9 cm of diameter.

Pathological diagnosis

An adenocarcinoma with spread the splenic parenchyma.

Treatment

Laparoscopic splenectomy.

Term explanation

Microsatellite instability (MSI) result in a defect of DNA mismatch repair, MSI/ BRAF testing had a prognostic factor in colon cancer.

Experiences and lessons

A strict monitoring of patients with colon cancer after primary treatment should lead to early diagnosis of such metastasis and the properly treatment.

Peer-review

This paper is informative and is suitable for publishing.

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