

Case Report

Isolated splenic metastasis from right-sided colon adenocarcinoma: a case report

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ABSTRACT

Isolated splenic metastasis from colorectal carcinoma is an exceptionally rare finding, with fewer than one hundred cases reported. Despite its rich vascularization, the spleen is considered an unfavorable site for metastatic spread due to its anatomical configuration, rhythmic contractility, and strong immunologic function. When present, splenic metastases usually occur in the context of disseminated disease and typically originate from left-sided colorectal tumors. We present a case of metachronous isolated splenic metastasis from a right-sided colon adenocarcinoma. A 73-year-old man underwent right hemicolectomy in 2019 for a moderately differentiated cecal adenocarcinoma (pT3N0M0, G2), followed by adjuvant chemotherapy with capecitabine and oxaliplatin. After three years of disease-free follow-up, routine surveillance revealed rising carcinoembryonic antigen (CEA). Abdominal computed tomography demonstrated a 63-mm hypodense splenic lesion consistent with metastasis. The patient underwent laparoscopic splenectomy without complications. Histopathological examination confirmed metastatic well-differentiated intestinal-type adenocarcinoma consistent with colorectal origin. Although extremely rare, splenic metastasis should be considered in patients with a history of colorectal cancer presenting with a solitary splenic lesion. Early identification through regular surveillance allows potentially curative surgery. Splenectomy provides both diagnostic confirmation and therapeutic benefit in selected cases. This report emphasizes the importance of long-term follow-up in colorectal cancer survivors, as early detection of uncommon metastatic sites, such as the spleen, may improve prognosis.

Keywords: Splenic metastasis, Colorectal cancer, Splenectomy, Metachronous metastasis

INTRODUCTION

Colorectal cancer (CRC) is the third most common malignancy in men and the second in women worldwide, representing one of the leading causes of cancer-related mortality.¹ Approximately 20% of patients present with metastatic colorectal cancer (mCRC) at diagnosis, and up to 50% of those with initially localized disease will eventually develop distant metastases during follow-up.^{2,3} The most frequent metastatic sites include the liver, lungs, peritoneum, and distant lymph nodes, whereas splenic involvement remains exceedingly uncommon.⁴ The spleen, despite being the largest lymphoid organ in the human body and highly vascularized, is rarely affected by secondary tumors. Several hypotheses have been proposed

to explain this rarity, including its anatomical position, sharp angulation of the splenic artery, rhythmic contractility, and potent immunologic environment, which together may prevent tumor cell implantation.⁵⁻⁷ When metastases do occur, the most common primary sites are the breast, lung, ovary, melanoma, and gastrointestinal tract, particularly the colon and rectum.^{1,2}

Splenic metastases from colorectal carcinoma are rare and typically arise from left-sided primaries. Reports of right colon tumors leading to isolated splenic metastasis are exceedingly rare.²⁻⁴ Most patients remain asymptomatic, and diagnosis is usually made incidentally during routine follow-up imaging or prompted by elevated CEA levels.¹

In patients with a history of colorectal malignancy, the detection of a splenic lesion should raise the suspicion of metastatic disease until proven otherwise.

CASE REPORT

A 73-year-old man, with a medical history of hypertension under pharmacological control, non-insulin-dependent type II diabetes mellitus, and schizophrenia with an ECOG performance status 1, underwent right hemicolectomy in 2019 for a moderately differentiated adenocarcinoma of the cecum (pT3N0M0). He subsequently received adjuvant chemotherapy with capecitabine and oxaliplatin for five cycles. Preoperative CEA was 2.65 ng/ml (reference <5 ng/ml), and postoperative levels remained below this threshold during three years of surveillance. The follow-up protocol included CEA level assessment every six months, annual CT imaging of the abdomen and colonoscopy.

At a routine follow-up visit three years after surgery, the patient was asymptomatic but presented with a marked rise in CEA to 238.6 ng/ml. Abdominal computed tomography (CT) (Figures 1 and 2) demonstrated a solitary, hypodense, nodular lesion in the spleen, measuring 63 mm with thickened and heterogeneous walls, consistent with a neof ormation. No other metastatic lesions were identified. Colonoscopy revealed no evidence of recurrent or metachronous disease. The case was reviewed in a multidisciplinary tumor board, which recommended splenectomy followed by adjuvant chemotherapy.



Figure 1: Axial contrast-enhanced CT showing a well-defined hypodense lesion (green arrow) in the upper pole of the spleen, measuring 63 mm.

Intraoperatively, the spleen showed a well-circumscribed yellowish tumour located in the upper pole and adherent to the diaphragm. No other intra-abdominal or anastomotic lesions were identified. A laparoscopic splenectomy with en bloc resection of the adherent diaphragmatic peritoneum was performed. Macroscopic examination showed a splenic mass measuring 8 cm (Figures 3 and 4), while histopathological analysis (Figure 5) revealed a metastatic well-differentiated intestinal-type adenocarcinoma with extensive necrosis. The diaphragmatic

specimen showed similar features, consistent with an R1 resection. Post-operative recovery was uneventful, and the patient was discharged on post-operative day nine due to social factors unrelated to the clinical condition.

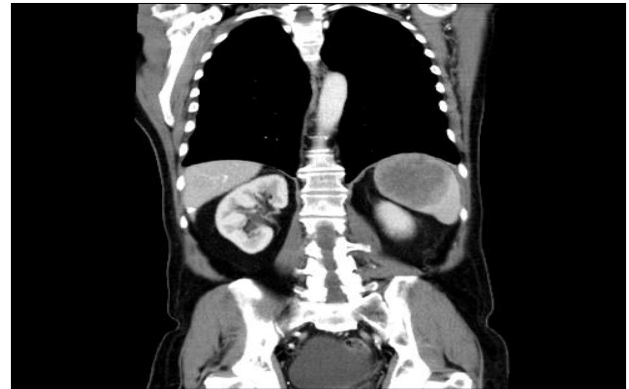


Figure 2: Coronal CT confirming the isolated splenic lesion with no other intra-abdominal disease.



Figure 3: Gross photograph of the anterior surface of the spleen showing a nodular mass at the upper pole (white arrow). The capsular laceration (orange arrow) reflects an extraction-related tear that occurred while removing the spleen within the retrieval bag.



Figure 4: Gross photograph of the posterior surface of the spleen showing a heterogeneous mass with necrotic and hemorrhagic areas at the upper pole (white circle).

Two months later, follow-up imaging revealed persistence of a residual diaphragmatic lesion without other intra-abdominal recurrence. CEA decreased to 16 ng/ml; however, positron emission tomography (FDG-PET) demonstrated hypermetabolic mediastinal lymph nodes suggestive of metastasis. Systemic chemotherapy with capecitabine and oxaliplatin was initiated, later transitioned to a palliative regimen of cetuximab plus irinotecan due to disease progression and clinical deterioration. The patient experienced progressive clinical deterioration over time and subsequently passed away two years after surgery.

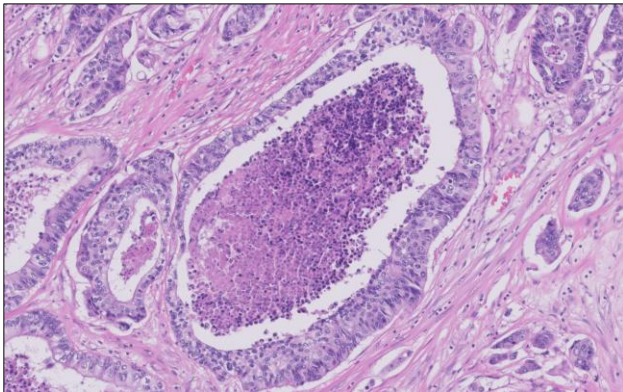


Figure 5: Histopathological section showing well-differentiated intestinal-type adenocarcinoma infiltrating splenic parenchyma (H and E stain).

DISCUSSION

Splenic metastases from non-hematologic malignancies are an uncommon finding, with a reported prevalence ranging between 3% and 7% in autopsy series.^{1,2} These lesions typically occur in the setting of advanced-stage disease, and metachronous metastases are much more frequently identified during follow-up than synchronously with the primary tumor.³ In a classical autopsy study of 7,165 cancer cases, Berge reported an incidence of splenic metastasis from colorectal carcinoma of 4.4%, although the proportion of isolated splenic involvement was not specified.³

In most reported cases, the primary tumor arises from the left colon, while right-sided colorectal primaries are exceedingly uncommon as the source of splenic metastasis.^{5,6} Abi Saad et al reviewed the literature and reported a median disease-free interval ranging from 3 to 144 months, consistent with the three-year interval observed in our case.⁷

Most patients remain asymptomatic, and splenic metastases are frequently detected during surveillance imaging or after a rise in CEA levels. Elevated CEA has been described in approximately 80% of cases, as seen in our patient.² Beyond its diagnostic role, CEA has been proposed to modulate immune responses by suppressing humoral and natural killer (NK) cell activity and

enhancing adhesion between cancer cells and macrophages, potentially contributing to the pathogenesis of isolated splenic metastases.^{1,4}

Despite the spleen's rich vascularization, metastatic involvement remains rare. Several hypotheses have been proposed to explain this phenomenon, focusing on the organ's unique anatomical, histological, and immunologic features. Anatomically, the sharp angulation of the splenic artery at its origin from the celiac trunk may hinder the passage of tumor emboli.³ Histologically, the rhythmic contraction of splenic sinusoids and the dense reticuloendothelial network may mechanically impede tumor cell implantation.² Immunologically, the spleen is a major component of the reticuloendothelial system, characterized by abundant mononuclear phagocytes and high immunoglobulin and opsonin production, which enhance tumor cell clearance.¹ Moreover, the absence of afferent lymphatic vessels limits lymphogenous tumor spread to the splenic parenchyma, explaining the rarity of this metastatic route.⁴

Surgical resection remains the cornerstone of management in isolated splenic metastasis. Splenectomy provides both diagnostic and therapeutic benefits, preventing potential complications such as splenic rupture or abscess formation.⁶ Several studies have suggested that splenectomy may improve long-term survival in selected patients with isolated splenic metastasis from colorectal cancer.²⁻⁷

CONCLUSION

Isolated splenic metastasis from colorectal carcinoma is an exceptionally rare occurrence, more often detected incidentally during routine surveillance than through clinical symptoms. Despite the spleen's rich vascularity, its anatomical, histological, and immunologic characteristics make it an uncommon site for metastatic implantation.

This case reinforces the importance of regular and long-term follow-up in colorectal cancer survivors, as early detection of unusual metastatic sites allows potentially curative surgical management. Splenectomy followed by adjuvant chemotherapy appears to be the optimal management strategy and may improve survival, although current evidence is limited to case reports and small series. Unfortunately, despite following this management pathway, our patient experienced disease progression and ultimately passed away. Further reporting of similar cases is essential to improve the current understanding of the biological mechanisms, optimal management strategies, and prognostic implications of isolated splenic metastasis from colorectal cancer.

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REFERENCES

1. Compérat E, Bardier-Dupas A, Camparo P, Capron F, Charlotte F. Splenic metastases: Clinicopathologic presentation, differential diagnosis, and pathogenesis. *Arch Pathol Lab Med.* 2007;131(6):965-9.
2. Sauer J, Sobolewski K, Dommisch K. Splenic metastases – not a frequent problem, but an underestimate location of metastases: Epidemiology and course. *Int J Colorectal Dis.* 2009;24(3):307-14.
3. Berge T. Splenic metastases: Frequencies and patterns. *Acta Pathol Microbiol Scand A.* 1974;82(4):499-506.
4. Abi Saad GS, Hussein M, El-Saghir NS, Termos S, Sharara AI, Shamseddine A. Isolated splenic metastasis from colorectal cancer. *Int J Clin Oncol.* 2011;16(4):306-13.
5. Gencosmanoglu R, Aker F, Kir G, Tozun N. Isolated metachronous splenic metastasis from sigmoid colon carcinoma: A case report and review of literature. *World J Surg Oncol.* 2006;4:38.
6. Abdou J, Omor Y, Boutayeb S, Elkhannoussi B, Errihani H. Isolated splenic metastasis from colon cancer: Case report. *World J Gastroenterol.* 2016;22(18):4610-4.

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