CASE REPORT

Solitary Splenic Metastasis from a Mucinous Adenocarcinoma of the Cecum. A Case Report

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Abstract Reports of cases of splenic metastasis are very rare, even more so when they are derived from a mucinous adenocarcinoma of the cecum. The most common presentation of a solitary splenic metastasis is from lung primary tumors, endometrium, ovary, cervix, stomach, colon, breast, bladder, and skin. We report the case of an 84-year-old woman with a solitary splenic metastasis from a mucinous adenocarcinoma of the cecum. Until this work, only 18 cases of solitary splenic metastases from colorectal carcinomas have been described in the literature.

Keywords Spleen · Solitary splenic metastasis · Mucinous adenocarcinoma · Cecum · Surgery

Introduction

Primary and metastatic tumors of the spleen are rare, with reports of 7–34 % of occurrence on the autopsies of patients

with history of cancer, excluding lymphoma [1]. The reported incidence of splenic secondaries caused by colorectal neoplasia is approximately 4.4 %, with only 18 reported cases so far [1–8]. Most cases are asymptomatic and are usually diagnosed as incidentalomas in subsequent monitoring after a raised carcinoembryonic antigen (CEA) level [2, 3]. Curative splenectomy prevents serious complications such as abscesses and bleeding, which may compromise a patient's life. We report the case of a solitary splenic metastasis from a mucinous adenocarcinoma of the cecum.

Case Presentation

An 84-year-old female patient, with history of a right hemicolectomy due to a tumor in the cecum, presented in September 2012. She had preoperative CEA values of 112 ng/mL (normal, <6 ng/mL), with an anatomopathological report of colon adenocarcinoma moderately differentiated infiltration to the serosa having 9 of 19 positive nodes (T3N2b). She was monitored for oncology with a complete blood count, liver function tests, abdominal ultrasound, VCC, and serum CEA in April 2013. A CEA of 205 ng/mL was detected at this time, so it was decided to perform a chest contrasted computed tomography (CT) on the abdomen and pelvis, which displayed a heterogeneous formation of rounded soft tissue with a dense foci of 50 × 50 mm in the axial plane. Magnetic resonance imaging (MRI) displayed a solid nodular lesion in the splenic parenchyma of 60 mm with internal necrotic areas that could correspond to secondaries (Fig. 1). It was decided to perform a laparoscopic splenectomy and tissue of size 11 × 9 × 5 cm was resected with a tumor lesion of 8 × 5.6 × 4.3 cm. Histological examination (Prot.B-63955) reported splenic metastasis of a differentiated mucinous adenocarcinoma (Fig. 2).

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Fig. 1 CT and MRI images which shows the solid nodular lesion in the spleen with necrotic areas inside. **a** and **c** Horizontal slices. **b** Parasagittal slice. **d** Coronal slice

Typical structures in the hilum and parenchyma with congestive-hemorrhagic phenomena were noted.

Discussion

The presentation of a solitary splenic metastasis has been presented. Such cases occur largely in relation to lung primary tumors, endometrium, ovary, cervix, stomach, colon, breast, bladder, and skin. Approximately 60 % of cases are associated with gynecological cancers, with colorectal carcinoma as the primary location representing about 11 % of the reported cases

[3]. However, cases of spleen solitary metastasis, that is, with no disease of the liver, lung, or axial skeleton, are rare [1].

We here provide the second case of splenic metastasis with a primary tumor located in the cecum, the first having been described by Slavin et al. in 1986 [4]. In other cases, primary tumors were present in the ascending colon, transverse colon [5], descending colon [5], sigmoid colon [5, 6], and rectum [5, 7]. Dunbar et al. reported the first case of solitary splenic metastasis in 1969 [7].

The low incidence of splenic metastasis may be due, firstly, to the direction of blood flow in the portal venous system, which limits access of the neoplastic cells to the spleen

Fig. 2 **a** Laparoscopic splenectomy view. **b** Splenectomy piece with tumor lesion. **c–d** Histologic studies which shows typical structures in the hilum and parenchyma with congestive-hemorrhagic phenomena, corresponding in this case to splenic metastasis of differentiated mucinous adenocarcinoma

because blood flows from the spleen to the liver. Another hypothesis includes the evident acute angulation at the emergence level of the splenic artery at its origin in the celiac trunk, which can act as an anatomical obstruction of tumor emboli to the spleen. In addition, rhythmic contractions of the spleen force the blood flow from the sinusoids to the splenic veins, which, in cases of constant blood flow, could prevent tumor fixation [3]. Furthermore, it is hypothesized that the spleen produces an angiogenesis factor (angistatine) making it immune to metastasis compared with other organs [8], although other authors argue that neoplastic cells can reach the splenic vein and thus the splenic parenchyma through the inferior mesenteric vein. Moreover, the absence of afferent lymphatic vessels of the spleen, the phagocytic activity of the spleen cells, the inhibition exerted by the reticuloendothelial system (the spleen being the second largest organ of the system), or rhythmic contractions of this body all contribute to a low possibility of metastases in the spleen [6].

In terms of disseminated diseases, possibly the least common scenario is synchronic splenic metastasis. Metachronous disease is far the most common picture (as in our case) and the one in which laparoscopic splenectomy may have the most to offer in terms of survival along with the potential benefits of minimal access surgery. Lastly, carcinomatosis may suggest a role for splenic resection as a “rescue procedure” only after a patient has shown a good response to chemotherapy [8].

A solitary splenic mass in a patient is more suggestive of a primary splenic injury, such as lymphoma, hemangioma, hematoma, or abscess. However, as described here, a single splenic condition in a patient with a prior history of colorectal cancer should be considered a metastasis of that initial tumor, that is, a mucinous adenocarcinoma of the ascending colon. It is essential that careful examination of an abdominal TAC is performed to achieve an early diagnosis of splenic involvement due to the tumor and especially when evaluating a patient after primary curative resection of colorectal cancer.

In conclusion, a solitary splenic metastasis is rare and its finding is incidental. Laparoscopic splenectomy is the preferred approach.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no competing interests.

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