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Carcinosarcoma of the stomach: A rare tumor for an unusual localization. Review of the literature

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Dear Editor,

Carcinosarcoma of the stomach is an extremely rare, biphasic, malignant mixed tumor most often having an unclear etiology and pathogenesis (1). It typically occurs in the uterus, breast, thyroid and lung (1). The clinical presentation is often challenging to identify. The definitive diagnosis is based on immuno-histochemical analysis of endoscopic biopsy or surgical samples but mainly depends on the knowledge and consideration that this tumor can arise at this unusual site.

A 69-year-old Caucasian woman presented at the emergency room with melena and severe anemia (Hemoglobin level = 6.2 g/dL). She was immediately transfused. Upper gastrointestinal endoscopy identified a bleeding polypoid lesion in the posterior wall of the great gastric curvature (Figure 1a). A biopsy was performed and the histological examination revealed a vimentin-positive spindle cell malignant tumor with necrosis and severe nuclear pleomorphism. CD117, S100 protein, LCA, desmin, alpha-smooth muscle actine, EMA, and pancytokeratins were negative. A provisional diagnosis of "high-grade spindle cell undifferentiated sarcoma" was proposed. Computed tomography of the thorax and abdomen revealed focal thickness of the gastric posterior wall (Figure 1b), diffuse pulmonary nodules, and bilateral suprarenal solid lesions. The patient underwent emergency surgery due to her deteriorating general condition and worsening anemia. During explorative laparotomy, a protruding and mobile polypoid mass involving the gastric posterior wall was identified. Tumorectomy was performed in the emergency room itself, with the intention of resolving the gastric bleeding. The post-operative outcomes of the procedure were regular with no complications.

Macroscopically, the surgical specimen revealed a polypoid, ulcerated tumor mass, measuring 7.5 cm at the

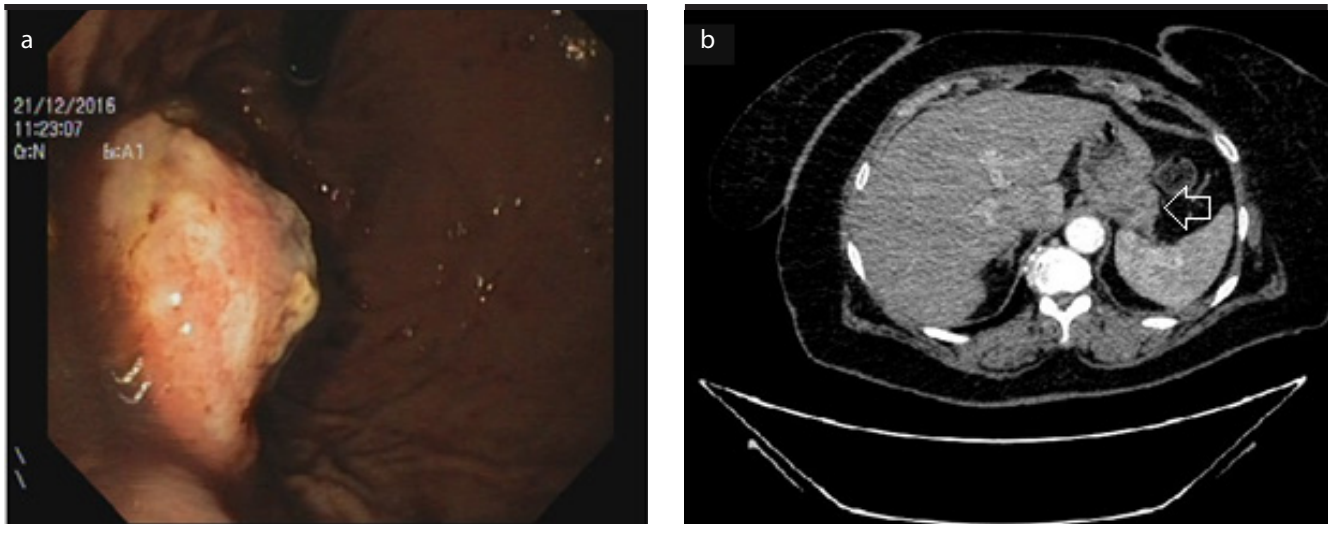

Figure 1. a, b. Endoscopic view showing a bleeding polypoid lesion of the stomach (a); abdominal computed tomography scan revealed a focal thickness of the gastric posterior wall (b) (white arrow).

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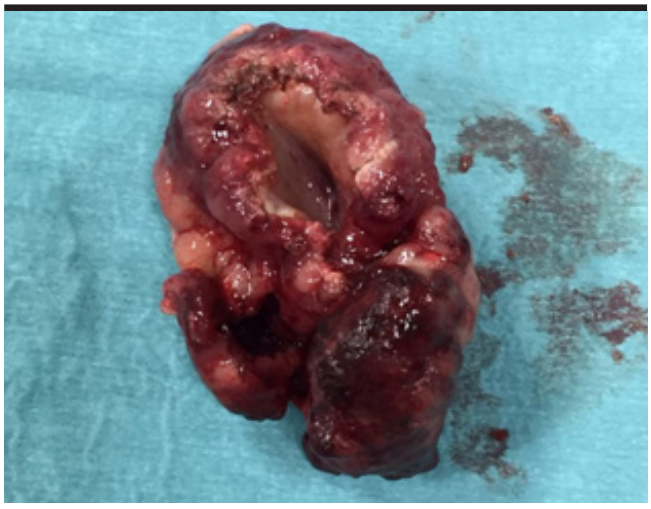

Figure 2. Surgical specimen showing necrotic and ulcerated areas.

maximum diameter, as shown in Figure 2. The cut surface showed a solid lesion with a white-brownish color and soft consistency. Histologically, a malignant spindle cell tumor was seen involving the gastric wall. Neoplastic cells were seen to be frequently arranged in a fascicular growth pattern, while exhibiting a fibrosarcomatous growth pattern focally. Severe nuclear pleomorphism and extensive necrotic areas were seen. Numerous mitoses, including atypical types, were also present. Notably, a minor component (5% of the entire tumor) of poorly differentiated adenocarcinoma was detected close to the sarcomatous component (Figure 3). The latter was diffusely stained with vimentin and focally with pancytokeratins and EMA; the carcinomatous component showed a strong positivity with cytokeratin-19. Based on both morphological and immunohistochemical features, the diagnosis of "carcinosarcoma" was rendered. A positron emission tomogra-

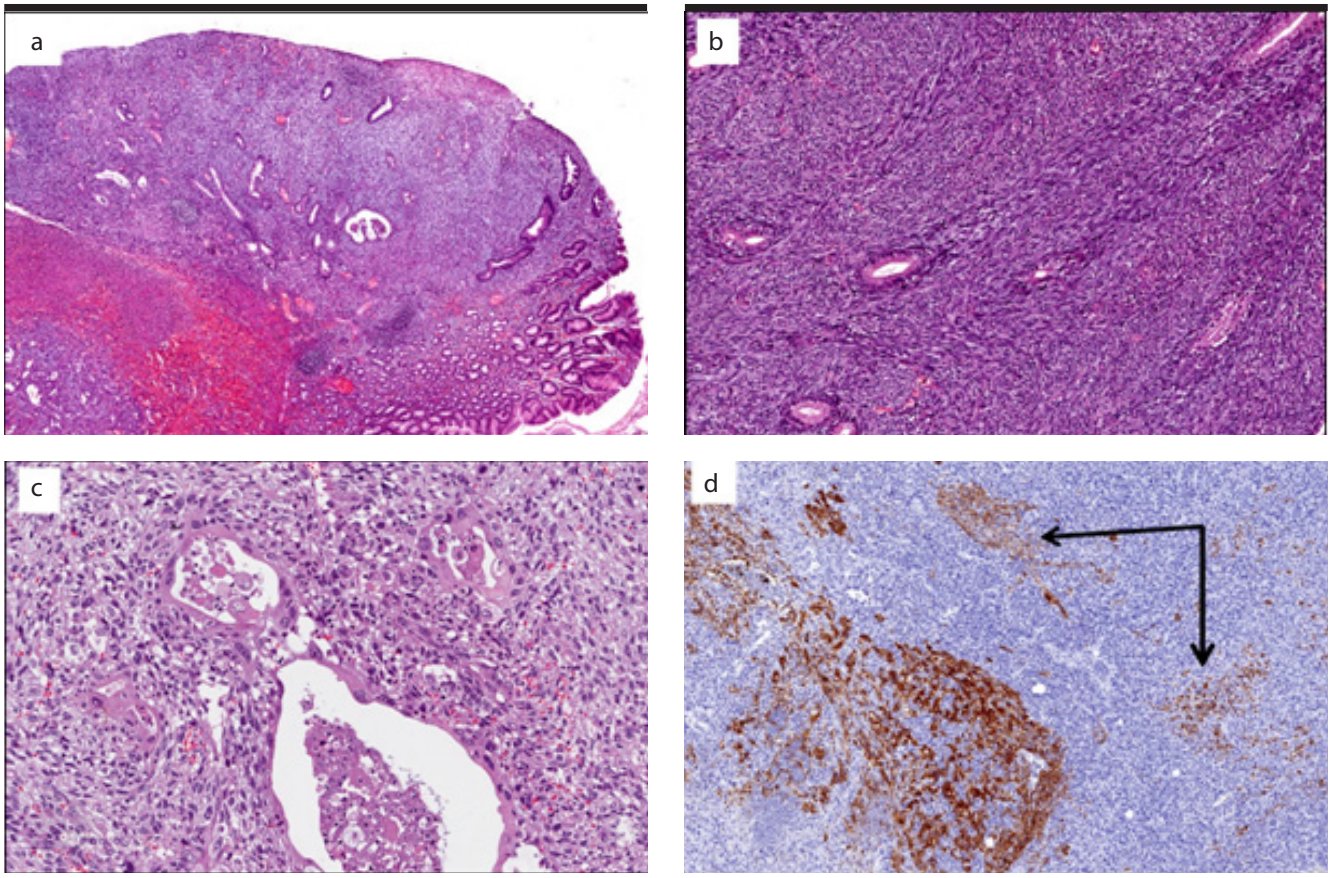

Figure 3. a-d. Microscopic features of gastric carcinosarcoma. (a) Low-power magnification showing mucosa and submucosa involved by the tumor. Mucosal glands are reduced in number and lamina propria is occupied by tumor cells. (b) Higher magnification showing a malignant spindle cell tumor with fascicular growth pattern, growing among normal gastric glands. (c) Foci of neoplastic glands (adenocarcinomatous component) are intermingled with the spindle cell sarcomatous component. (d) Immunohistochemical analysis showing the expression of pancytokeratins in both adenocarcinomatous and sarcomatous (arrows) components. (a-c: hematoxylin and eosin (H&E) staining; d: immunoperoxidase staining).

phy (PET) scan was performed for complete staging of the disease, which confirmed the presence of diffuse pulmonary and bilateral suprarenal metastases. The patient started adjuvant chemotherapy but succumbed to the disease approximately 8 months later.

Carcinosarcoma is a rare variant of gastric malignancies, a biphasic mixed tumor comprising both epithelial and mesenchymal components, with a poor clinical outcome even after curative treatment. This tumor usually tends to be localized in the esophagus, where it represents approximately 3% of all esophageal tumors (1,2). In 1904, Queckenstedt described the first case of carcinosarcoma of the stomach (3). Since then, less than 60 cases of gastric carcinosarcoma have been reported in the world and the majority of them have been identified in Japan (4-7). In most cases, surgical resection with curative intent has been performed. In other rare cases, palliative surgery is usually carried out or debulking surgery is performed to remove the necrosed mass and treat difficult gastric bleedings (1, 8, 9).

Clinically, carcinosarcoma is indistinguishable from adenocarcinoma. No specific symptoms of carcinosarcoma have been reported to date, such as asthenia, epigastric pain, dysphagia, and vomiting being the most common signs (1,9), while hematemesis and melena are infrequent signs (1,9). Endoscopic examination represents the gold standard for the diagnosis. However, it may result in excessive thickening of the gastric wall, a polypoid, exophytic, or endophytic lesion with generally ulcerated surfaces, and can frequently infiltrate the gastric wall or form large tumor masses (4-10). In the specific case described herein, the gastric tumor presented as an endophytic bleeding polypoid mass with ulcerated and necrotic areas. However, the first clinical sign was melena, which is not so frequent in gastric carcinosarcoma. Enhanced computed tomography represents a very useful diagnostic tool for staging the disease. ^{18}F-FDG PET/CT also has an important diagnostic role (11). Despite the improvement of the diagnostic methods, histopathogenesis still remains controversial and unknown. Over the years, two hypotheses have been proposed; the first is represented by the bi-clonal origin hypothesis, which supports the collision tumor theory (two different tumor cell clones). The second is the monoclonal origin hypothesis, whereby the carcinosarcoma originates from a stem cell with the capability to differentiate along both epithelial and mesenchymal cell lines (12). The latter is widely accepted. The histological diagnosis of carcinosarcoma is usually challenging, especially if tumor occurs at an unusual site, including the stomach. Differential diagnosis includes a wide variety of malignant spindle cell tumors, such as GIST, leiomyosarcoma, melanoma, mesothelioma, a malignant peripheral nerve sheath tumor with a heterologous component, and a biphasic synovial sarcoma.

The only curative treatment for gastric carcinosarcoma is represented by radical gastrectomy. Nevertheless, this tumor is characterized by a worse prognosis as compared to other types of gastric carcinoma, mainly due to the delayed diagnosis at an advanced clinical stage. According to the current scientific evidence, the overall survival is estimated to be about 7-10 months, even after curative treatment. Radio-chemotherapy may play important roles in the therapeutic management, despite the poor prognosis of the tumor (13, 14).

We suggest that an extensive sampling and a meticulous search for any epithelial malignant component should be mandatory when pathologists are dealing with a primary sarcoma of the stomach.

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