Journal of BUON **14:** 131-134, 2009

Gastric metastasis of malignant fibrous histiocytoma presenting as gastrointestinal bleeding

H. Karanlik[1], O. Mete[2], Y. Kapran[2], I. Kilicaslan[2], M. Demiryont[2], O. Asoglu[3], M. Kecer[3]

[1]University of Istanbul, Institute of Oncology, Department of Surgery; [2]Istanbul Medical Faculty, Department of Pathology; [3]Istanbul Medical Faculty, Department of General Surgery, Istanbul, Turkey

Summary

Malignant fibrous histiocytoma (MFH) is a soft-tissue sarcoma originating from fibroblast cells, characterized by a high rate of metastasis or recurrence. With only 4 cases described in the available English literature up to now, gastric metastasis of MFH is extremely rare. Among them only one case has been reported to lead to gastrointestinal bleeding. We report the case of a 55-year-old woman who underwent total gastrectomy, 14 months after resection of an MFH from the right side of retroperitoneum. The neoplasm was detected at the time of diagnostic workup for upper gastrointestinal bleeding. The resected specimen contained multiple polypoid nodular lesions which were located in the greater curvature. The clinical and pathological characteristics of gastric metastasis of MFH are presented herein with review of literature.

Key words: gastrectomy, gastric metastasis, malignant fibrous histiocytoma

Introduction

MFH firstly described as "malignant fibrous xanthoma" by O'Brien and Stout in 1964, represents a predominantly pleomorphic sarcoma usually occurring in the deep soft tissues of adults [1]. Several studies indicated that the majority of tumors occurred on the extremities or less frequently the retroperitoneum or abdomen [2,3]. Although approximately 20% of all adult soft tissue sarcomas are MFH, gastric metastasis is very rare, and only 4 cases of metastatic MFH in the stomach have been reported in English literature [4-7]. Considering its rarity, a further accumulation of case reports is necessary to elucidate this entity. A unusual case of gastric metastasis of MFH is presented herein with review of the literature.

Case presentation

A 55-year-old lady was admitted to hospital with a flank abdominal mass, pain and weight loss in 2001. Computed tomography scan (CT) revealed a mass, giving the impression of a kidney tumor. A right radical nephrectomy was performed. Grossly, there was a tumor adjacent to the kidney, measuring 14 cm in greatest diameter. On cut section, the lesion was gray to white. Many representative sections (more than 50% of the tumor volume were sampled) were prepared for identifying the origin of spindle-shaped pleomorphic tumor cells with marked nuclear pleomorphism (Figure 1). The tumor cells showed positive immunostaining for vimentin (Novocastra, Newcastle, UK, 1/800, 60 min), CD68 (Neomarkers, Fremont, CA, USA, 1/200, 60 min) and negative immunostaining for S-100 protein (Neomarkers, 1/100, 60 min), smooth muscle actin (Neomarkers, 1/200, 30 min), desmin (Neomarkers, 1/100, 60 min) and CD34 (Neomarkers, 1/50, 60 min). The diagnosis was pleomorphic-storiform variant of MFH.

Fourteen months later the patient complained of recurrent attacks of nausea, vomiting and upper

Correspondence to: Hasan Karanlik, MD. Mesrutiyet M. Elhan S., Meric Konak Ap 50/18 Nisantasi, Istanbul, Turkey. Tel: +90 532 402 5354, Fax: +90 212 351 7033, E-mail: hasankaranlik@yahoo.com

Received 11-01-2008; Accepted 07-02-2008

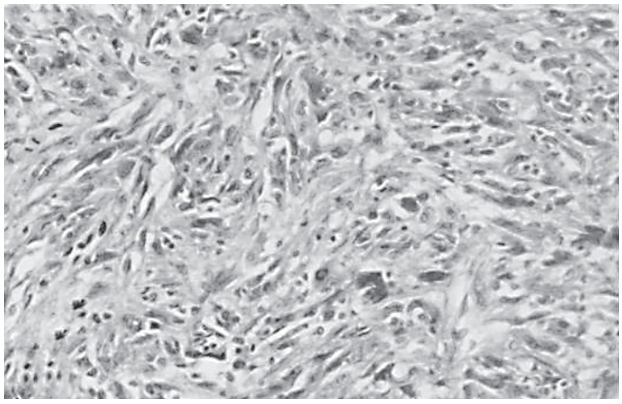


Figure 1. Spindle-shaped tumor cells with marked pleomorphism and storiform pattern in the retroperitoneum (H&E ×310).

gastrointestinal bleeding. Physical examination on admission was unremarkable and routine laboratory findings showed hemoglobin 8.1 g/dl and hematocrit 24.2%; all other laboratory findings were within normal limits. Endoscopic examination revealed multiple polypoid-nodular lesions in the stomach (Figure 2). Histopathologically endoscopic biopsies revealed a spindle-shaped malignant tumor. The patient's condition gradually worsened due to gastrointestinal bleeding and total gastrectomy was performed urgently. Grossly, there were 6 polypoid-nodular lesions, ranging from 0.6 to 2 cm. The largest lesion had 2 cm diameter, was located in the antrum along the greater curvature, with a central ulcerous surface. Another lesion with similar gross features, was situated in the cardia and the others were more polypoid with size ranging from 0.6 to 0.8 cm. On cut section the lesions were gray to white and located in the submucosa and tunica muscularis.

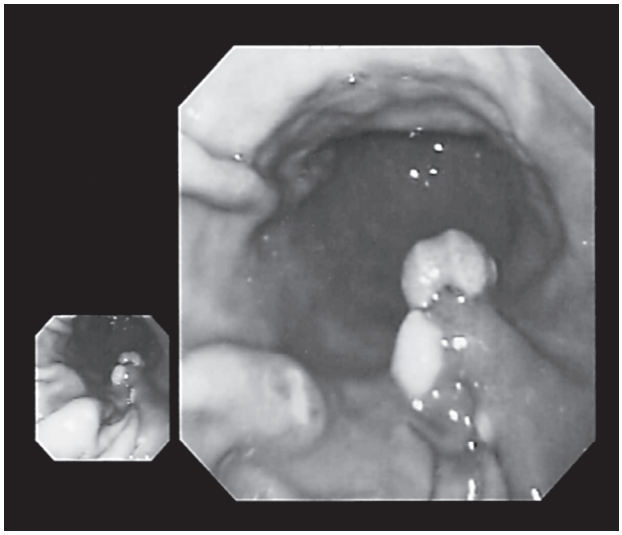
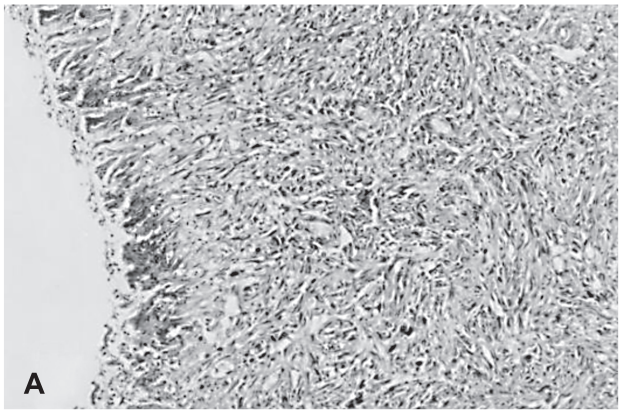


Figure 2. Gastroscopic examination showing multiple nodular lesions.

Histopathologically, spindle-shaped cells with marked nuclear pleomorphism, arranged in storiform and fascicular architecture were observed. Neoplastic cells showed mucosal invasion only in some areas (Figure 3A). Immunostaining was negative for smooth muscle actin, desmin, S-100 protein, CD34, pancytokeratin and CD117 (c-kit protein) (DakoCytomation, Glostrup, Denmark, 1/50, 60 min) and positive for CD68 and vimentin (Figure 3B). These findings justified the diagnosis of MFH metastatic to the stomach. The patient died after one month following gastrectomy due to renal failure. Autopsy was not carried out because of family refusal.

Discussion

MFH is a soft tissue sarcoma, most commonly found in the extremities, the trunk, or the retroperitoneum [2,8]. Rarely this tumor is encountered in organs such as the brain, lung, heart, breast, pancreas,



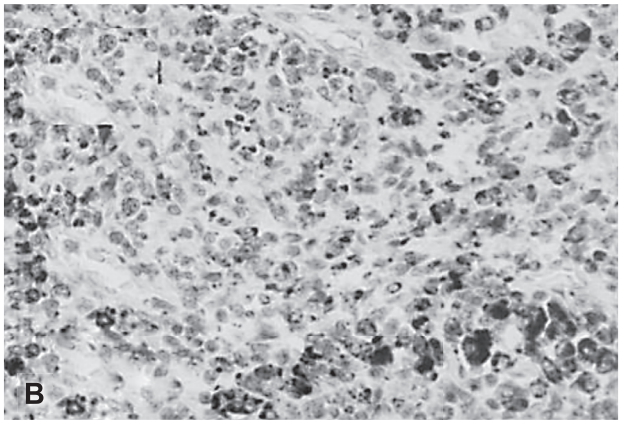


Figure 3. A: An ulcerative lesion composed of spindle-shaped pleomorphic cells in the gastrectomy specimen (H&E ×125), **B:** Positive immunoreaction for CD 68 in gastric tumor cells (CD68 immunostain ×310).

gallbladder, or the alimentary tract [3,9]. All reported visceral MFHs are presented as case reports. A review of the literature revealed 38 reported cases of MFH in the alimentary tract, only 4 of which were metastatic gastric MFH [4-7]. The rate of metastatic MFH is reported to range from 20 to 42%, with the most frequent metastatic sites being the lung (72-82%) and lymph nodes (32%), whereas gastrointestinal tract involvement is rare [4,7,8]. Based on an analysis of the 5 reported cases including the present case, the mean age of the patients was 62 years (range 39-76) and the male-to-female ratio was 3:2. The size of the tumors was 3.5-5 cm in maximum diameter. In addition, the presented case is the second one of a metastatic gastric MFH that presented with gastrointestinal bleeding. The other case was published in 1983 by Adams and coworkers [5].

MFH is pathologically defined as a spindle-cell sarcoma with no distinct line of differentiation. Currently, 5 main histologic subtypes of MFH are described: storiform-pleomorphic, myxoid, giant cell, inflammatory, and angiomatoid [10]. Among the described subtypes the prototypic and most common type is storiform-pleomorphic and the next most common is myxoid MFH. The rest are less common types. Some studies reported that the prognosis of patients with storiform and myxoid MFH is better than that of patients with other types [7,8]. However, this finding is not supported by other studies, which show no difference in prognosis according to histological subtype [2,11,12].

According to autopsy reports, the incidence of gastric involvement among all cancers metastases ranges from 0.3 to 1.7%. Melanoma, breast and lung cancer are the most common primary tumors to metastasize to the stomach [13]. Metastatic gastric tumors tend to be found as submucosal tumors covered by normal mucosa. Endoscopic differentiation from another type of submucosal tumor seems to be difficult. Therefore, they can be difficult to diagnose accurately without referring to patient history, even after a tumor biopsy.

MFH-like pattern can be observed in many tumors [14]. So, the differential diagnosis of MFH in the alimentary tract needs to be excluded from high grade gastrointestinal stromal tumor (GIST), pleomorphic leiomyosarcoma, sarcomatoid carcinoma, large cell anaplastic lymphoma and metastatic melanoma [15]. Melanoma metastasis can be excluded by a negative immunoreactivity for S-100 protein and other melanocytic antigens (HBM 45, Melan A, Tyrosinase, Mitf). Pleomorphic carcinoma can be excluded by epithelial markers such as keratins and EMA. Large cell anaplastic lymphoma can be excluded by a more uniform cellularity that is always positive for CD30. Pleomorphic leiomyosarcoma can be distinguished by the expression of both smooth muscle actin and desmin.

GISTs are most commonly found in the stomach. Grossly, most gastric GISTs are solitary and rounded lesions and are mainly gray to white serosal nodules. However, they can primarily involve the muscularis propria, submucosa and larger tumors may also grow through the gastric lumen [15]. According to the review of Kanoh et al. [16], nodular-polypoid gross appearance is a common finding for MFH involving the gastrointestinal tract, which was present in our case. In a recent study of 1765 gastric GISTs by Miettinen et al., mucosal invasion is a rare feature of GISTs (3%) which is associated with a poor prognosis [17]. Primary gastric GISTs are solitary lesions except von Recklinghausen's disease (neurofibromatosis type 1), Carney complex (malignant epithelioid gastric GISTs, pulmonary chondroma and extra-adrenal paragangliomas) and familial cases. Grossly, it is unusual for GISTs to present with multiple lesions [15]. So we think that a multiple sarcomatous tumor in the stomach with mucosal invasion, like our case, should raise the possibility of metastatic disease.

Histologically, MFH-like pattern and cytomorphological features can be seen in spindle cell type GISTs. Recently, Yamaguchi et al. have investigated CD117 expression in GISTs and other mesenchymal tumors arising from the gastrointestinal tract [15]. They did not find positive immunostaining with CD117 in MFH. In our case, spindle-shaped cells with marked nuclear pleomorphism were observed and there were no immunostaining for smooth muscle actin, desmin, S-100 protein, CD 34 pancytokeratin and CD 117.

The treatment options for gastrointestinal metastatic MFH are questionable. The treatment of choice, when possible, is based on early and complete surgical excision of the tumor. Postoperative radiotherapy and chemotherapy do not seem to add much in terms of survival, as it has been noticed in some cases of the review of the world medical literature [3]. Advantage or benefit in overall or disease-free survival has not been clearly shown for adjuvant chemotherapy, which remains controversial [18].

In conclusion, our patient suffered from uncontrollable tumor bleeding, which led to severe anemia and hypovolemia, and for this reason she underwent urgent resection. It may be that examination of a larger number of patients with MFH of the stomach should translate to more specific and effective management, by a more precise evaluation of biological and clinical behavior of this infrequent tumor.

References

1. O'Brien JE, Stout AP. Malignant fibrous xanthomas. Cancer 1964; 17: 1445-1455.
2. Pantidou A, Kiziridou A, Pazaitou K, Economou S, Toliou T, Destouni Ch. Malignant fibrous histiocytoma metastatic to adrenal gland: a case report. J BUON 2004; 9: 95-97.
3. Farinon AM, Bock E, Federico F, Rulli F, D'Antini P. Primary malignant fibrous histiocytoma of the duodenum. Dig Surg 1999; 16: 425-430.
4. Sonobe H, Taguchi K, Motoi M, Ogawa K, Matsumura M, Ohsaki K. Malignant fibrous histiocytoma of the maxillary sinus. Acta Pathol Jpn 1980; 30: 79-89.
5. Adams HW, Adkins JR, Rehak EM. Malignant fibrous histiocytoma presenting as a bleeding gastric ulcer. Am J Gastroenterol 1983; 78: 212-213.
6. Kato T, Kojima T, Shimizu T et al. Inflammatory malignant fibrous histiocytoma of the gallbladder: report of a case. Surg Today 2002; 32: 81-85. PMID: 11871825.
7. Akatsu Y, Saikawa Y, Kubota T et al. Metastatic gastric cancer from malignant fibrous histiocytoma: report of a case. Surg Today 2006; 36: 385-389.
8. Enjoji M, Hashimoto H, Tsuneyoshi M, Iwasaki H. Malignant fibrous histiocytoma. A clinicopathologic study of 130 cases. Acta Pathol Jpn 1980; 30: 727-741.
9. Kotan C, Kosem M, Alici S, Ilhan M, Tuncer I, Harman M. Primary malignant fibrous histiocytoma of the small intestine presenting as an intussusception: report of a case. Surg Today 2002; 32: 1091-1095.
10. Daw NC, Billups CA, Pappo AS et al. Malignant fibrous histiocytoma and other fibrohistiocytic tumors in pediatric patients: the St. Jude Children's Research Hospital experience. Cancer 2003; 97: 2839-2847.
11. Wada Y, Matsushita T, Sarumaru S et al. Malignant fibrous histiocytoma of the stomach: report of two cases. Surg Today 1998; 28: 296-300.
12. Okubo H, Ozeki K, Tanaka T, Matsuo T, Mochinaga N. Primary malignant fibrous histiocytoma of the ascending colon: report of a case. Surg Today 2005; 35: 323-327.
13. Kobayashi O, Murakami H, Yoshida T et al. Clinical diagnosis of metastatic gastric tumors: clinicopathologic findings and prognosis of nine patients in a single cancer center. World J Surg 2004; 28: 548-551.
14. Oda Y, Tamiya S, Oshiro Y et al. Reassessment and clinicopathological prognostic factors of MFH of soft parts. Pathol Int 2002; 52: 595-606.
15. Yamaguchi U, Hasegawa T Masuda T et al. Differential diagnosis of gastrointestinal stromal tumor and other spindle cell tumors in the gastrointestinal tract based on immunohistochemical analysis. Virchows Arch 2004; 445: 142-150.
16. Kanoh T, Shirai, Wakai T, Hatakeyama K. Malignant fibrous histiocytoma metastases to the small intestine and colon presenting as an intussusception. Am J Gastroenterol 1998; 93: 2594-2595.
17. Miettinen M, Sobin LH, Lasota J. Gastrointestinal stromal tumors of the stomach. A clinicopathologic, immunohistochemical, and molecular genetic study of 1765 cases with long-term follow-up. Am J Surg Pathol 2005; 29: 52-68.
18. Pezzi CM, Rawlings MS Jr, Esgro JJ, Pollock RE, Romsdahl MM. Prognostic factors in 227 patients with malignant fibrous histiocytoma. Cancer 1992; 69: 2098-2103.