Case Report

Massive Gastric Bleeding Due to Primary Gastric Malignant Fibrous Histiocytoma : Report of an Autopsy Case

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Abstract : We report an autopsy case of a 62-year-old man who died of massive gastric bleeding due to a giant gastric submucosal tumor (SMT) with multiple liver metastases. Histologically this SMT was composed of extremely pleomorphic cells that showed no differentiation towards any cell type. Hematoxylin-eosin (HE) staining as well as immunohistochemical analysis indicated that this pleomorphic sarcoma was a malignant fibrous histiocytoma (MFH). Another characteristic of this gastric SMT was that more than 90% of the tumor was necrotic and hemorrhagic. Vascular proliferation was obvious and a structure similar to hemangiopericytoma was recognized in the metastatic lesions of liver. This patient died within one month of presentation of symptoms.

Key words : stomach, malignant fibrous histiocytoma, submucosal tumor, gastric bleeding

Introduction

Malignant fibrous histiocytoma (MFH) is a pleomorphic mesenchymal tumor which commonly occurs in the soft tissue, arising especially in the extremities, chest and retroperitoneum of older individuals¹⁾. Gastric MFH is very rare. Only four cases²⁻⁴⁾ have been reported in Japan and five cases overseas (three in English⁵⁻⁷⁾).

Case Report

A 62-year-old man with the chief complaining of epigastric pain and abdominal distension presented to his local hospital nearby his house in May 2001. An ultrasonography of the liver revealed multiple space occupying lesions (SOLs). In June, massive gastric bleeding occurred and he was admitted to our hospital. An emergency endoscopy showed a giant SMT with ulceration. Due to the difficulty in hemostasis as well as hepatic failure, the patient died two weeks later. An autopsy was performed two hours post-mortem.

Pathologic Findings

An autopsy was only available for the abdominal organs. Gross examination showed a gastric SMT with a maximum diameter of 11 cm extending from the angulus to antrum. A coagulated mass of approximately 100 ml in volume was found inside the stomach and the stool was tarry. Acites (300 ml) was bloody. The tumor was ulcerated (Fig. 1A) and

Fig. 1. Macroscopic findings of the gastric submucosal tumor (SMT)
 A. An ulcerated SMT extending from the angulus to antrum of the stomach is shown (lower right side).
 B. Cut surface of the gastric SMT
 The SMT was an extramural expanding type and most of the tumor was necrotic and hemorrhagic. Gradations=5 mm.

showed an extramural expanding growth pattern (Fig. 1B). No extra-gastric invasion was seen. The cut surface of the gastric SMT showed an apparently necrotic and hemorrhagic appearance (Fig. 1B). Multiple metastases in the liver were also accompanied by necrotic and hemorrhagic foci. No malignancy or metastasis was shown in other abdominal organs or in the retroperitoneum. No peritoneal dissemination was observed. The pancreas was adherent to the tumor, but not infiltrated. Macroscopically no primary focus was found in the abdomen.

Histologically the tumor cells involving from the mucosa to subserosa were extremely undifferentiated and pleomorphic. Some cells were spindle-shaped and this gastric neoplasm showed patternless growth pattern. Venous invasion was severe. Polygonal or spindle cells with the presence of multinucleated giant cells are shown in Fig. 2. Fig. 3 shows the pleomorphic tumor cells with no characteristic growth patterns in the stomach. The mitotic rate was an average of three in a high power field. As shown in Fig. 4, undifferentiated tumor cells similar to those in the stomach were recognized in the liver, where the hemangiopericytomatous patterns were also observed. These tumor cells were extremely pleomorphic, however, typical striiform patterns were not observed in the stomach or the liver, and the gastric lesions lacked hemangiopericytomatous patterns. Histologically, no remarkable changes were observed in spleen, kidney, prostate, urinary bladder, intestine and retroperitoneum.

Immunohistochemically, tumor cells were only positive for vimentin (DAKO) and negative for smooth muscle actin (SMA, DAKO), actin (HHF-35, DAKO), desmin (DAKO), S100 (DAKO), cytokeratin (Beckman Coulter), CD34 (Beckman Coulter), CD117 (IBL Co.Ltd), HMB-45 (DAKO), CD68 (DAKO) and lysozyme (DAKO).

Fig. 2. Histology of the gastric SMT
Pleomorphic tumor cells with the multinucleated giant cells showed a patternless distribution (HE stain, $\times 100$)

Fig. 3. Histology of the gastric SMT
Extremely pleomorphic tumor cells with bizarre nuclei were shown (HE stain, $\times 200$)

Fig. 4. Histology of the liver metastases
Spindle tumor cells as well as large tumor cells with nuclear pleomorphism were shown (HE stain, $\times 400$)

Table 1. Reported cases of Japanese gastric primary MFH

Author	Age/Sex	Operation	Macroscopical findings	Histologic subtype
Shibuya et al	60/M	Total gastrectomy	4.5×4 cm, firm, polypoid	Storiform-pleomorphic
Wada et al	78/M	Partial gastrectomy	4.5×5 cm, ulcerated	Storiform-pleomorphic
Wada et al	77/M	Partial gastrectomy	4×4 cm, ulcerated	Storiform-pleomorphic
Nakai et al	57/M	Total gastrectomy	Large, size not described	Storiform-pleomorphic
Our case	62/M	No op.	11×11 cm, ulcerated SMT	Storiform-pleomorphic

Prognosis	Ref./Year
Died 3 months after op.	2/1985
Alive 2 years after op.	4/1998
Died 4 years after op.	4/1998
Died 7 months after op.	3/2000
Died 2 weeks after admission	2002

F, female ; M, male ; op., operation

Discussion

MFH is defined as pleomorphic sarcoma showing no differentiation towards any mesenchymal cell types such as muscular, neuronal or vascular cells, although there is controversy about its histogenesis and also the term MFH. Differential diagnoses from the primary gastric MFH include the malignant type of gastrointestinal stromal tumor (GIST), leiomyosarcoma, rhabdomyosarcoma, undifferentiated carcinoma, melanoma and solitary fibrous tumor (SFT). Vimentin was the only positive marker in this case. CD34 and CD117, specific markers for GIST, were negative. Furthermore, HE staining showed that the tumor cells were pleomorphic, which is incompatible with a diagnosis of GIST. Myogenic characteristics were not observed immunohistochemically, because SMA, actin (HHF35) and desmin were negative. Cytokeratin was negative in all malignant cells, indicating that this was not an epithelial malignancy. Other differential diagnoses are SFT and melanoma. SFT is characterized by a proliferation of rather uniform spindle-shaped cells with fusiform or oval nuclei and scant cytoplasm showing CD34 immunoreactivity. Malignant melanoma is often composed of epithelioid or spindle shaped tumor cells that are positive for HMB-45. However, CD34 and HMB-45 were negative, suggesting that these diagnoses did not fit our case. Finally, we diagnosed this case as gastric MFH, although immunohistochemical analysis showed that tumor cells were negative for CD68 and lysozyme.

Based on the prominent pleomorphism we diagnosed the subtype of MFH in this case as storiform-pleomorphic, although the typical storiform growth pattern was not observed. We think that the lack of the storiform pattern is probably due to severe degenerative changes of the tumor tissue after massive hemorrhage. The main features of primary gastric MFH in Japanese patients, including the case presented here, are summarized in Table 1. All cases occurred in males, with ages ranging from 57 to 78 years. A poor prognosis is also suggested by the summarized cases in Table 1. Therapy for the hemostasis was difficult in this case. Adams et al.⁸⁾ also reported that gastric bleeding from the MFH which arising

from soft tissue and metastasizing to stomach, indicates that gastric MFH is extremely aggressive.

In conclusion, we report a case of gastric MFH with massive necrosis and bleeding. Massive gastric bleeding was a cause of death and the poor prognosis for this rare malignancy was once more confirmed by this case.

References

- 1) Weiss SW and Goldblum JR: Malignant fibrohistiocytic tumor. In: Soft Tissue Tumor, 4th edn. CV Mosby, St Louis, pp. 535-570 (2001)
- 2) Shibuya H, Azumi N, Onda Y and Abe F: Multiple primary malignant fibrous histiocytoma of the stomach and small intestine. *Acta Pathol Jpn* 35 : 157-164 (1985)
- 3) Nakai S, Morita T, Uchida Y, Sasaki Y, Kamano S, Watanabe S, Nishioka M, Goda F, Okada S and Maeba T: A case of primary malignant fibrous histiocytoma of the stomach. *Jpn J Gastroenterol* 97 : 337-341 (2000) (in Japanese)
- 4) Wada Y, Matsushita T, Sarumaru S, Ryo J, Isobe H, Satoh B, Kanaya S, Katayama T and Ohtoshi M: Malignant fibrous histiocytoma of the stomach. report of two cases. *Surg Today* 28 : 296-300 (1998)
- 5) Wright JR Jr, Kyriakos M, DeSchryver and Kecskemeti K: Malignant fibrous histiocytoma of the stomach. A report and review of malignant fibrohistiocytic tumors of the alimentary tract. *Arch Pathol Lab Med* 112 : 251-258 (1988)
- 6) Wiersema AM, Wobbes T, Pruszczyński M and van der Sluis RF: Malignant fibrous histiocytoma of the stomach during pregnancy. a case report. *Eur J Obstet Gynecol Reprod Biol* 80 : 71-73 (1998)
- 7) Rathakrishnan V, Arianayagam S and Kumar G: Primary malignant fibrous histiocytoma of the stomach: (a case report). *Australas Radiol* 33 : 302-304 (1989)
- 8) Adams HW, Adakins JR and Rehak EM: Malignant fibrous histiocytoma presenting as a bleeding gastric ulcer. *Am J Gastroenterol* 78 : 212-213 (1983)

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