Clinical Case Report

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Robot-assisted laparoscopic surgery for abdominal metastatic melanoma mimicking a gastrointestinal stromal tumor

A case report and review of the literature

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Abstract

Rationale: Uveal melanoma is the most common primary intraocular malignancy, which could metastasize at an early stage of the disease and associated with poor prognoses. Liver, small bowel, stomach, and colon are the most common locations for metastatic visceral melanoma, however, solitary abdominal metastasis from uveal melanoma is extremely rare.

Patient concerns: The current study reports the case of a 33-year-old man with history of treated choroidal melanoma of the left eye that developed metastasis to the abdomen, preoperative endoscopic ultrasonography and computed tomography strongly suggested as a gastrointestinal stromal tumor (GIST).

Diagnoses: The patient was diagnosed with abdominal metastatic melanoma according to his medical history and histopathological results.

Interventions: The young adult underwent robot-assisted laparoscopic surgery.

Outcomes: The patient finally got the definite diagnosis with his medical history and histopathological results and he has been living disease free for nearly 3 years after the surgery.

Lessons: Although rare, the possibility of abdominal metastatic melanoma presenting with the clinical picture of gastrointestinal stromal tumor must be always considered by the surgeon especially the patients with a history of primary malignant melanoma.

Abbreviations: CT = computed tomography, EUS = endoscopic ultrasonography, GIST = gastrointestinal stromal tumor, UM = uveal melanoma.

Keywords: choroidal, gastrointestinal stromal tumor, metastatic, robot-assisted, uveal melanoma

1. Introduction

Primary visceral melanoma is extremely rare. The majority of visceral tumors are believed to be metastatic, originating from primary ocular or cutaneous lesions. The most commonly affected organs include the liver, small bowel, stomach, and colon. Here, we report a case of solitary abdominal metastasis from choroidal melanoma 9 years after ocular surgery. The metastatic lesion was resected completely through robot-assisted laparoscopic surgery. To our knowledge, no similar case has been reported, and the use of robot-assisted surgery for metastatic melanoma has rarely been described.

2. Case presentation

A 33-year-old man presented to the emergency department of our regional hospital with left upper quadrant pain after dinner, accompanied by distension and nausea. Computed tomography (CT) revealed a mass near the body of the stomach, which was first considered to be a gastrointestinal stromal tumor (GIST). The patient underwent further evaluation at our hospital 1 week later. The patient did not smoke or drink alcohol. Following admission, his vital signs were stable, and physical examination revealed no organomegaly or palpable lump. His abdominal pain had improved, and no tenderness or rebound phenomenon was present. The results of routine blood and liver function tests were normal, and negative results were obtained for alpha-fetoprotein, carcinoembryonic antigen, and carbohydrate antigen 19-9. The patient had no history of trauma, but he had undergone ocular surgery 9 years previously at a hospital in Shanghai; however, the results of histopathological examination conducted at that time were lost. Re-examination of the abdomen using CT showed a lesion occupying the greater curvature of the stomach; thus, GIST and gastric schwannoma were considered (Fig. 1). Endoscopic ultrasonography (EUS) showed a hypoechoic exogenous mass, 4 cm in diameter, which was in contact with the greater curvature

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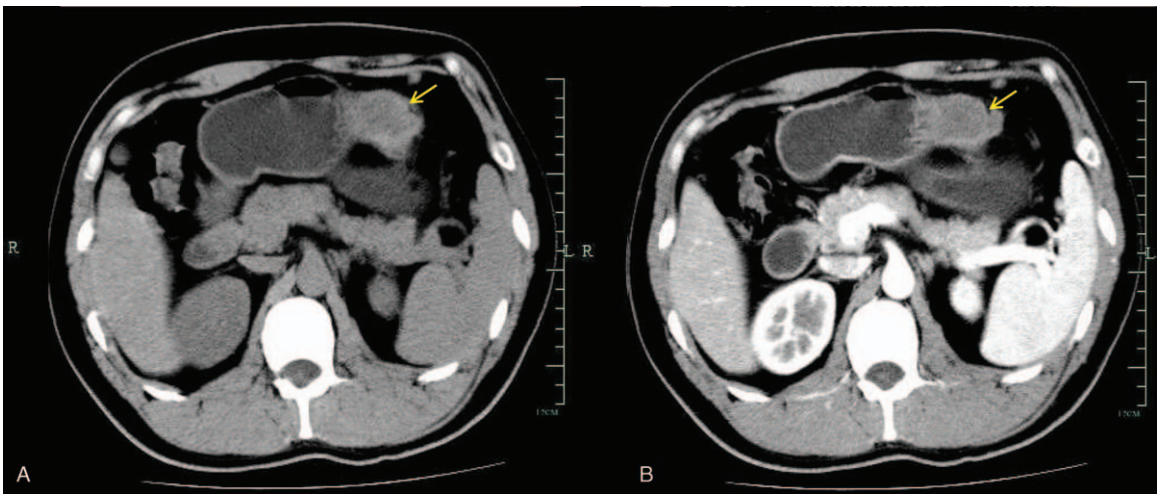

Figure 1. Computed tomography scan showed an occupying lesion in the great curvature of stomach (arrow). Plain CT scan showed a relatively well-demarcated mass and size about 4.2 × 3.6 cm in the greater curvature of stomach (A). Arterial image, the lesion was slightly enhanced (B). CT = computed tomography.

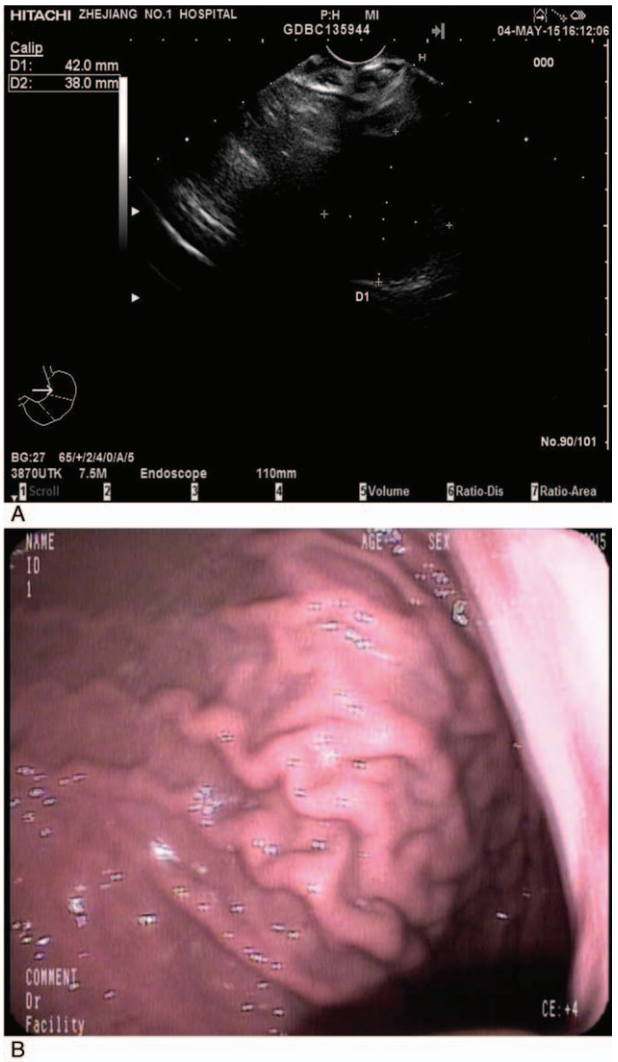

Figure 2. EUS showed a hypoechoic exogenous mass (4 cm in diameter) in contact with the great curvature of stomach (A), the gastric mucosa was smooth and no protrusive lesion was found (B). EUS = endoscopic ultrasonography.

of the stomach. No protrusive lesion was found on the gastric wall (Fig. 2). The imaging findings strongly suggested a GIST.

Subsequently, robot-assisted laparoscopic abdominal mass resection was performed; we found a 3 × 4-cm cystic mass between the posterior gastric wall and the pancreas, and removed it by radical excision (Fig. 3). Melanin pigmentation was observed in the neoplastic cells (Fig. 4A), and immunohistochemistry revealed that the tumor cells were positive for HMB-45 (Fig. 4B), S-100 protein (Fig. 4C), and the melanocyte/melanoma tumor antigen melan A (Fig. 4D), which supported the diagnosis of malignant melanoma. However, solitary primary abdominal melanoma is a rare entity, and no such case has been reported in the literature. Bearing in mind the histopathological results and the complexity of the clinical case, we carefully reviewed the patient's medical history again. As the patient had undergone ocular surgery 9 years previously, we urged his family to consult the pathological results from this surgery, which revealed primary choroidal melanoma. A definitive diagnosis of solitary abdominal metastatic melanoma from uveal melanoma (UM) was finally made. To exclude the possibility of other metastasis, the patient underwent thorough postoperative dermatologic and ophthalmologic examinations, including ophthalmoscopy and positron emission tomography/CT of the whole body; no suspicious lesion was found at any other site. The postoperative period was uneventful and the patient was discharged 6 days later. The patient was followed-up for nearly 3 years, and appeared to be in good condition. The study was approved by the Ethical Committee of the First Affiliated Hospital, College of Medicine, Zhejiang University and written informed consent was obtained from the patient prior to the publication of the present study.

3. Discussion

Uveal melanoma arises from melanocytes of the uveal tract and is the most common primary intraocular malignancy, representing approximately 3% of all melanoma diagnoses. It occurs at all ages, but particularly in those older than 65 years.[1,2] Choroidal melanoma is the most common subtype of uveal melanoma, with an annual incidence of approximately 1.6 cases per million, and it has the worst prognosis of all intraocular melanomas.[3] Although the incidence rate of these tumors is low, malignant melanomas metastasize at an early stage of disease development

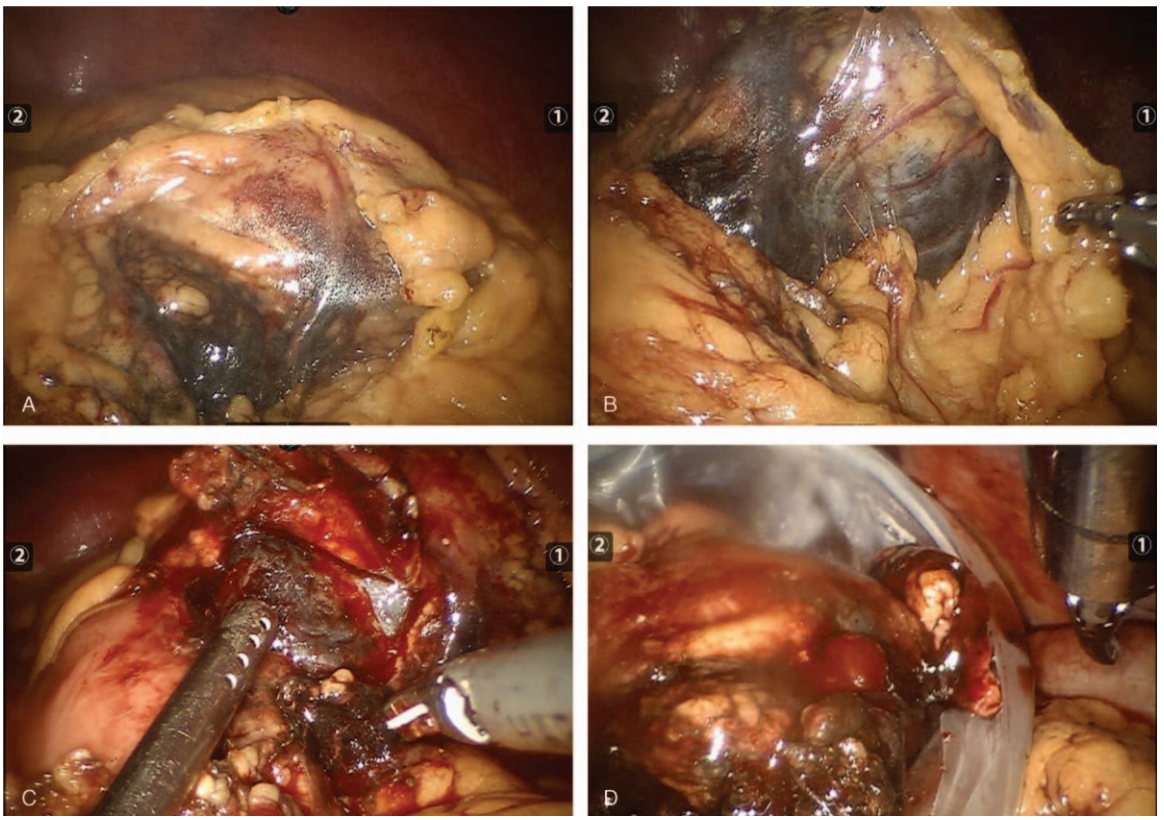

Figure 3. A 3 × 4-cm cystic mass (arrow) between the posterior gastric wall and the pancreas was found during the operation and removed it by radical excision using robot-assisted laparoscopic surgery.

and are associated with poor prognoses. Although treatment modalities are available, the prognosis of uveal melanoma is not satisfactory. The 5-year and 15-year survival rates after diagnosis of uveal melanoma are 45% and 30%, respectively.[4]

As the eye lacks lymphatic vessels, uveal melanoma spreads hematogenously, and visceral organs are predilective sites for tumor metastasis.[5] Approximately 40% to 50% of patients with primary uveal melanoma ultimately develop systemic metastases.[4] The survival of patients with metastatic uveal melanoma is related directly to the site of metastasis. The liver is the most commonly affected organ, involved in nearly 95% of metastatic disease cases; the median survival time in such cases is 6–7 months, and the 1-year survival rate is estimated to be 10% to 15%.[3,6,7] Malignant melanomas of the digestive system are usually metastatic lesions. In one case series, melanoma commonly metastasized to the small intestine (58%), colon (22%), and stomach (20%).[8] Other common metastatic sites include the lungs, bone, brain, spleen, and adrenal glands. [9,10]

The majority of patients have advanced-stage disease at the time that melanoma is confirmed, and the mortality rate is high. In our case, the patient was 24 years old when the primary choroidal melanoma was diagnosed, and the abdominal metastasis occurred 9 years later. Our patient survived disease free for nearly 10 years and had a high quality of life; thus, we believe that the effect of early ocular operative treatment for primary choroidal melanoma was excellent. In previous reports, the time interval between initial diagnosis of melanoma and detection of gastrointestinal metastasis was about 3.5 years.[11,12] Elsayed et al[13] reported time intervals of nearly 5.6 years for surgically treated patients and 2.1 years for cases that were diagnosed upon autopsy. Choroid melanoma occurs primarily in elderly patients; it rarely occurs in children or young adults, and tends to metastasize early. In a retrospective cohort study conducted by Kaliki et al,[14] children with melanoma showed slightly better systemic prognoses compared with older adults. Thus, age maybe an independent prognostic factor in patients with malignant melanoma.

Primary abdominal melanoma is extremely rare, and for massive tumors, the organ of origin is often difficult to determine. Therefore, the differential diagnosis for abdominal tumors should include abdominal metastatic melanoma, especially in patients with histories of primary uveal melanoma or cutaneous melanoma and new onset of abdominal symptoms. In our case, all imaging findings suggested a lesion occupying the greater curvature of the stomach, and GIST was first considered. We did not realize that the initial diagnosis was wrong until we performed robot-assisted laparoscopic surgery. Finally, the patient underwent radical resection of the solitary mass, and a definitive diagnosis of abdominal metastatic melanoma was confirmed.

Due to the low incidence of abdominal metastatic melanoma, a comprehensive understanding of its pathogenesis and natural history is lacking. No standardized treatment strategy has been determined. During the early stages of malignant melanoma, most patients can be treated successfully by surgical removal of the tumor. However, no curative treatment for melanoma that has progressed to the metastatic phase is currently available.[15] In a previous study, patients who underwent metastasectomy (33.6%) showed improved median and 5-year overall survival rates compared with patients who were ineligible for resection.[16] Sanki et al[17] reported that surgery may prolong

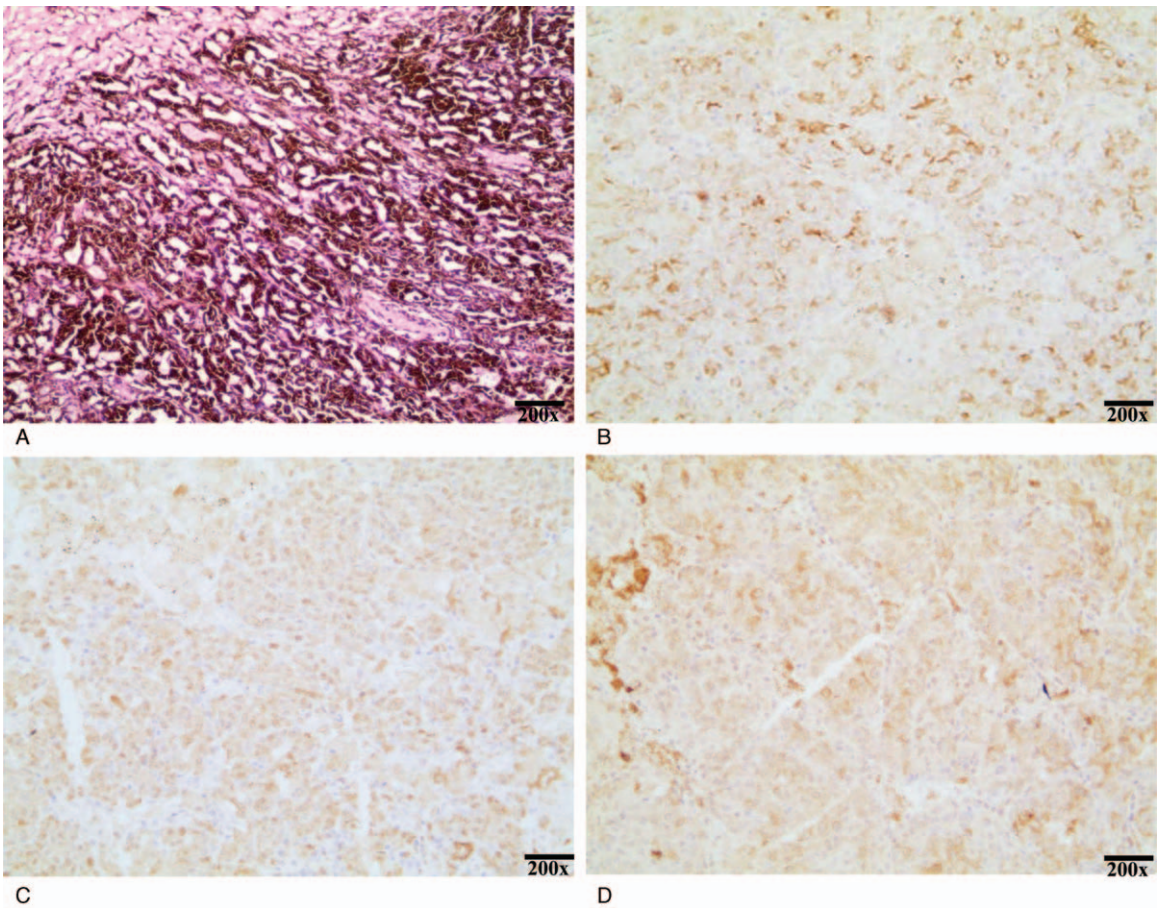

Figure 4. Microscopic examination showing tumor cells with melanin deposition in the cytoplasm (A) and immunohistochemistry stain showing positive for HMB-45 (B), S-100 protein (C) and melan A (D) (immunohistochemistry, ×100).

survival in cases of isolated intestinal malignant melanoma. In addition, Letovanec et al[18] demonstrated that postoperative adjuvant treatments, such as chemotherapy, biological therapy, radiotherapy, and biochemotherapy, may be beneficial for patients, but their role was limited. In our case, we believe that metastasectomy was an optimal choice due to the absence of a risk factor for surgical intervention and other visceral metastasis, and the ability to resect the abdominal lesion completely. Compared with standard open procedures and classic laparoscopy, robot-assisted laparoscopic surgery has benefits including three-dimensional visual capacity and dexterity to aid in the meticulous dissection of deep structures. Moreover, it decreases operative trauma, resulting in early recovery and minimal postoperative complications. Considering the current advances in robot-assisted laparoscopic technology, robot-assisted laparoscopic metastasectomy is applicable to patients with solitary abdominal metastatic melanoma lesions.

4. Conclusion

Solitary abdominal metastatic melanoma presenting as GIST is an extremely rare clinical phenomenon. We successfully resected the metastatic lesion using robot-assisted laparoscopic surgery. We share our experience of the treatment of such a rare entity with the hope that diagnostic and treatment standards will be established in the future.

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Author contributions

Data curation: Zhou Ye, Zhe Yang, Shusen Zheng.
Investigation: Zhe Yang, Shusen Zheng.
Writing – original draft: Zhou Ye.
Writing – review & editing: Weilin Wang.

References

[1] Singh AD, Turell ME, Topham AK. Uveal melanoma: trends in incidence, treatment, and survival. Ophthalmology 2011;118:1881–5.
[2] Singh AD, Bergman L, Seregard S. Uveal melanoma: epidemiologic aspects. Ophthalmology Clin of North America 2005;18:75–84.
[3] Oittinen HA, O'Shaughnessy M, Cullinane AB, et al. Malignant melanoma of the ciliary body presenting as extraocular metastasis in the temporalis muscle. J Clin Pathol 2007;60:834–5.
[4] Bedikian AY, Legha SS, Mavligit G, et al. Treatment of uveal melanoma metastatic to the liver: a review of the MD Anderson Cancer Center experience and prognostic factors. Cancer 1995;76:1665–70.
[5] Sato T, Han F, Yamamoto A. The biology and management of uveal melanoma. Curr Oncol Rep 2008;10:431–8.
[6] Kath R, Hayungs J, Bornfeld N, et al. Prognosis and treatment of disseminated uveal melanoma. Cancer 1993;72:2219–23.
[7] Gragoudas ES, Egan KM, Seddon JM, et al. Survival of patients with metastases from uveal melanoma. Ophthalmology 1991;98:383–9.

[8] Klausner JM, Skornick Y, Lelcuk S, et al. Acute complications of metastatic melanoma to the gastrointestinal tract. Br J Surg 1982;69:195–6.
[9] Richter RH, Reingruber B, Gruneis C, et al. Spontaneous splenic rupture in metastatic malignant melanoma. Zentralbl Chir 2001;126: 630–1.
[10] Wantz M, Antonicelli F, Derancourt C, et al. Long-term survival and spontaneous tumor regression in stage IV melanoma: possible role of adrenalectomy and massive tumor antigen release. Annales Dermatol Venereol 2010;137:464–7.
[11] Bender GN, Maglinte DD, Mc Lamey JH, et al. Malignant melanoma: patterns of metastasis to the small bowel, reliability of imaging studies and clinical relevance. Am J Gastroenterol 2001;96:2392–400.
[12] Wysocki WM, Komorowski AL, Darasz Z. Gastrointestinal metastases from malignant melanoma: report of a case. Surg Today 2004;34:542–6.
[13] Elsayed AM, Albahara M, Nzeako UC, et al. Malignant melanomas in the small intestine: a study of 103 patients. Am J Gastroenterol 1996;91:1001–6.
[14] Kaliki S, Shields CL, Ganesh A, et al. Influence of age on young patients with uveal melanoma: a matched retrospective cohort study. Eur J Ophthalmol 2013;23:208–16.
[15] Mort RL, Jackson IJ, Patton EE. The melanocyte lineage in development and disease. Development 2015;142:1387.
[16] Wasif N, Bagaria SP, Ray P, et al. Does metastasectomy improve survival in patients with stage IV melanoma? A cancer registry analysis of outcomes. J Surg Oncol 2011;104:111–5.
[17] Sanki A, Scolyer RA, Thompson JF. Surgery for melanoma metastases of the gastrointestinal tract: indications and results. Eur J Surg Oncol 2009;35:313–9.
[18] Letovanec I, Vionnet M, Bouzourene H. Primary appendiceal melanoma: fiction or reality? Hum Pathol 2004;35:627–9.