Choroidal metastasis from gastric carcinoma:a case report

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Case Report

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Abstract

Background

Choroidal metastasis in patients with gastric cancer is extremely rare. Furthermore, orbital and intraocular metastasis are generally associated with a bad prognosis. Here, we retrospectively report a patient with gastric carcinoma and choroidal metastasis.

Case presentation

A 59-year-old man with a history of gastric cancer was admitted to the Ophthalmology Department of our hospital due to a one-week history of eye pain; It was only eight months since the gastric cancer was diagnosed. The patient was diagnosed with gastric cancer at a local hospital two years previously, but had then spread to the left femur. The patient then received systemic chemotherapy at the local hospital. However, scans of his eyes in our hospital revealed a choroidal tumor in his left eye. The histopathological and immunohistochemical features of the removed eyeball suggested metastatic carcinoma, most likely originating in the gastrointestinal tract, and were consistent with a moderately well-differentiated gastric cancer.

Conclusions

Choroidal metastasis can masquerade as glaucoma. Consequently, choroid metastasis of gastric cancer should be a consideration when a patient with a history of gastric cancer presents with eye pain, impaired vision, or high intraocular pressure.

Background

Gastric cancer is one of the most common malignant tumors of the digestive tract and more than half of the world's cases of gastric adenocarcinoma in Asia[1–2]. However, with the popularization of routine gastroscopy, and the progression of radical gastrectomy, the prognosis of these patients is gradually improving. However, gastric cancer is generally discovered in the mid- to late-stages, and the prognosis of treatment is therefore poor. Progression of this condition usually results in multiple sites of metastasis and the vast majority of patients die within months[3]. Advanced gastric cancer is often associated with distant metastasis to the liver, lung, bone, and peritoneum. Choroid metastasis from gastric cancer is rare and only a few cases have ever been reported in the literature [3–5]. The uvea consists of the iris, ciliary body, and the choroid. The most common site of metastasis is the choroid; this is because this structure has a rich vascular supply. Previous literature reported that 9% of metastases are found in the iris, 2% in the ciliary body, and 88% in the choroid[6]. The mechanism of choroidal metastasis in gastric cancer has yet to be elucidated. The most common treatment is surgical resection of the eyeball, although the prognosis is poor. Here, we report a patient with gastric cancer who presented with a visual disorder, eye pain, and ocular hypertension, in his left eye. We focus particularly on analysis of the clinical

characteristics and the pathological features of our case of gastric cancer with choroidal metastasis, so as to promote early diagnosis and treatment in the future.

Case Presentation

A 59-year-old man with gastric cancer was referred to the Department of Ophthalmology in Hang Zhou Red Cross Hospital because of a 1-week history of visual disorders and pain in his left eye. he had been diagnosed with stage IV gastric cancer and femoral metastasis one year previously, Instead of surgery, he underwent systemic chemotherapy. In our hospital the specialized physical examination showed the following results. The intraocular pressure of oculus sinister was 50.0 mmHg and the oculus dextrus was 14 mmHg. there was no difference when compared to the right eye. However, the left eye showed ptosis, conjunctival edema and hyperemia, combined with subretinal hemorrhage, temporal rupture, corneal edema, temporal corneal scleral edge rupture. Examinations assisted by B-scan ultrasound revealed a mass in the ball of the left eye, vitreous hemorrhage, and exudative retinal detachment. Tumor markers were as follows: the carbohydrate antigen 125 is 103.00kU/L, the carcino-embryonic antigen is 162.40 ug/L, the carbohydrate antigen 153 is 101.10 kU/L, the alpha fetal protein is 692.10 ug/L and the cytokeratin 19 is 169.30 ug/L. all of which is much higher than the reference range.

A computed tomography scan of the orbits showed an enhanced mass at the nasal and posterior side of the choroid of the left eyeball (Fig. 1). Magnetic resonance imaging (MRI) of the orbits is also known to be useful in the differential diagnosis of choroidal mass. MRI reveaied the same lesion of the nasal and posterior side of the choroid of the left eyeball. The T1-weighted image showed iso-intensity with enhancement, while the T2-weighted image (Fig. 2) showed hypo-intensity. The right eye was unremarkable. The diagnostic impression was a metastatic lesion rather than a melanoma.

Pathological examination of the removed left eyeball revealed a massive hematocele (3 cm × 2.2 cm × 2.5 cm) with corneal turbidity at the front of the eyeball accompanied by bleeding. The optic nerve at the back of the eyeball was 1 cm in length and 0.4 cm in diameter. Sectioning revealed a large gray mass at the back of the eyeball, measuring 1.5 cm × 1 cm × 0.8 cm (Fig. 3A). Microscopic observation showed that tumor tissue had infiltrated into the choroid, retina, and the optic nerve. The tumor tissue had also infiltrated into the outer fibrous tissue; the optic nerve resection margin was negative. The eyeball also showed corneal erosion, ulcer formation with inflammatory exudation; the entire eyeball was bleeding. Pathological examination suggested metastatic and moderately differentiated (papillary) adenocarcinoma with extensive necrosis (Fig. 3B). Periodic-acid Schiff staining revealed positive mucinous secretory material within the gland-like structures (Fig. 3C). Immunostaining for CK19, Ki67, and CDX2, were positive; and CK20 and CEA were positive but with very weak signals. Immunostaining for CK7 and CK20 was negative (Fig. 4). These features were suggestive of a metastatic adenocarcinoma. Based on the patient's history, pathological examinations, and immunohistochemistry, we diagnosed a left choroidal metastasis originating from gastric cancer. Unfortunately, the patient died two months after choroidal metastasis was diagnosed.

Discussion

The most common forms of metastasis for gastric cancer are direct infiltration,hematogenous metastasis, lymphatic metastasis, and implantation metastasis. Theinvasion of cancerous tissue damages local blood vessels, and allows cancer cells into the blood flow. Consequently, cancer cells can be readily transported to other parts of the body to form a distant metastasis. The most common metastatic sites from gastric cancer are the liver, peritoneum, and distant lymphnodes. Very few studies have reported cases involving the transfer of gastric cancer to the skin, brain and eye[3]. The ocular metastasis of gastric cancer is most often located on the choroid[6], followed by the optic nerve[7], eyelid, conjunctiva[8], and iris[6]. The present case demonstrates that gastric cancer can metastasize in multiple ways.

Intraocular malignancy is a rare disease and is most commonly caused bymetastatic tumors[3]. Choroidal metastatic tumors from malignancies in the gastrointestinal tract are extremely rare compared with the more common metastatic breast and pulmonary carcinomas[9]. Nevertheless, metastatic tumors in the orbit account for only 2–3% of all systemic cancers. A choroidal metastatic tumor needs to be differentiated from melanoma at the initial diagnosis[10]. Patients with choroidal metastasis have a poor prognosis[11,12]. Ourpatient died 8 months after the first diagnosis of choroidal metastasis.

However, cases of choroidal metastasis have been rising; it is believed that this is due to improvements in ophthalmic diagnosis techniques. The typical symptoms of choroidal metastasis are ocular pain, exophthalmos, reduced vision, mass lesion, retinal detachment, uveitis, and secondary glaucoma[6]. In our case, we were able to make a diagnosis based on prior medical history, computed tomography and MRI of the orbits, and histopathological findings. Based on these data, it would be appropriate to diagnose this choroidal tumor as a metastatic tumor that originated from the gastric cancer. The recognition of metastatic disease and early treatment are important in maximizing the quality of life in these patients. The main therapeutic options are chemotherapy, hormonal therapy, or plaque radiotherapy.Enucleation can relieve the pain in blind eyes as a palliative form of therapy[6].Since the nature of metastatic cancer cells is equivalent to in situ foci, the treatment of gastric cancer metastasis is carried out on the basis of the primary foci.

In summary, choroidal metastasis of gastric cancer is rare. We report a patient with gastric cancer who presented with choroidal metastasis. Despite surgery, the patient died soon after diagnosis.

Conclusions

When patients with a history of gastric cancer present with visual symptoms, such as an iris mass, uveitis, and a high intraocular pressure during treatment for gastric cancer, it is necessary to consider choroidal metastasis from gastric cancer. The mechanisms responsible for choroidal metastasis from gastric cancer have yet to be elucidated.

Abbreviations

MRI: Magnetic resonance imaging

Declarations

Competing interests

The authors declare that they have no competing interests.

Ethical statement

The study was approved by the ethics committee of Hangzhou Red-Cross Hospital and written informed consent to publish the material was obtained from the patient.

Authors' contributions

Yan-Ying Huang wrote the manuscript and collected the patient's clinical data. Yan-Ying Huang and Yue Zhang collected and analyzed the data. Li-Yan Zhu and Yan-Hua Geng acquired images and carried out the literature review. Ai-Hua Sun modified the manuscript. All authors have read and approved the manuscript.

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Figures

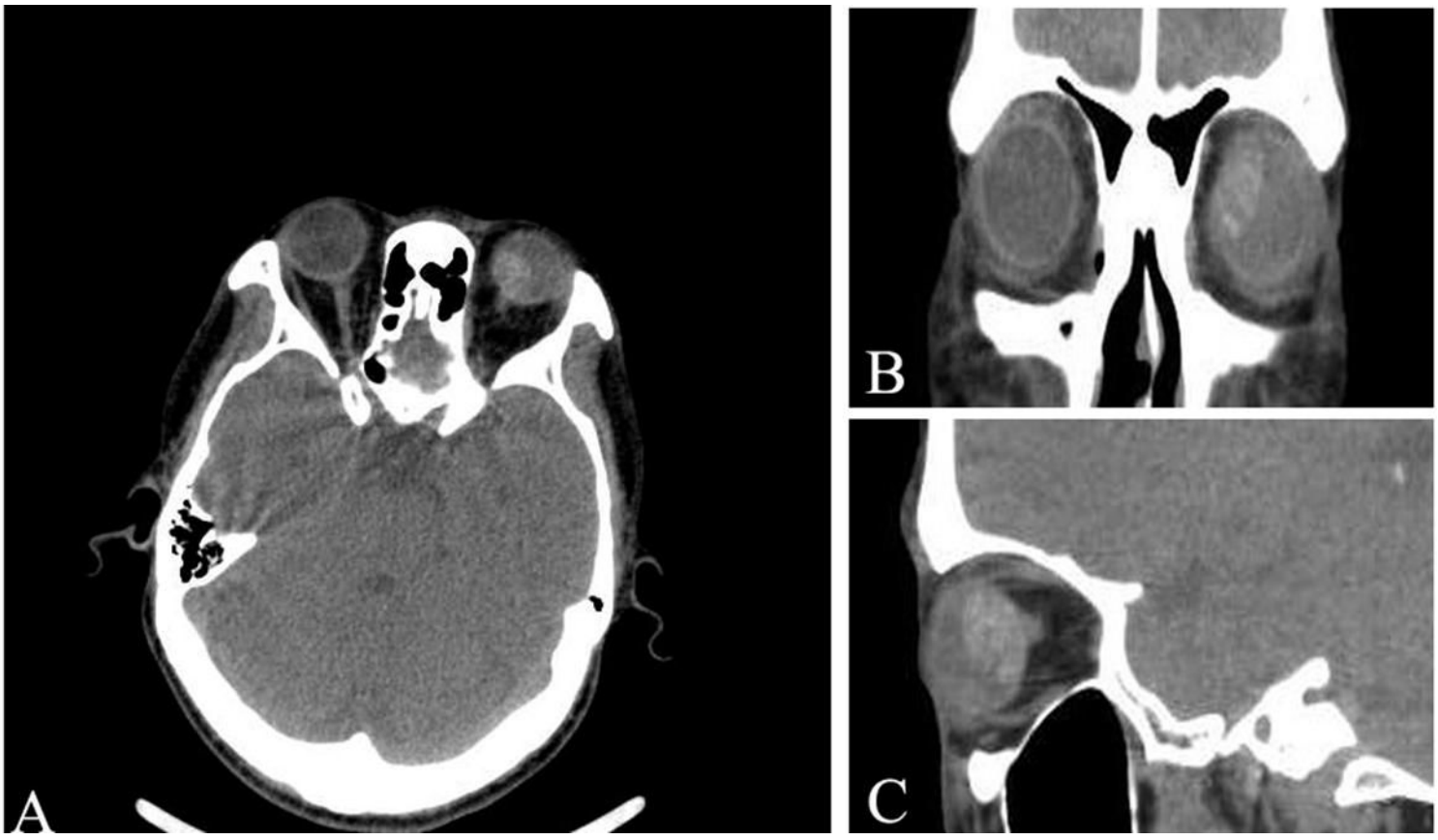

Figure 1

Computed tomography scan showing an enhanced mass at the nasal and posterior side of the left eye (A, B, C).

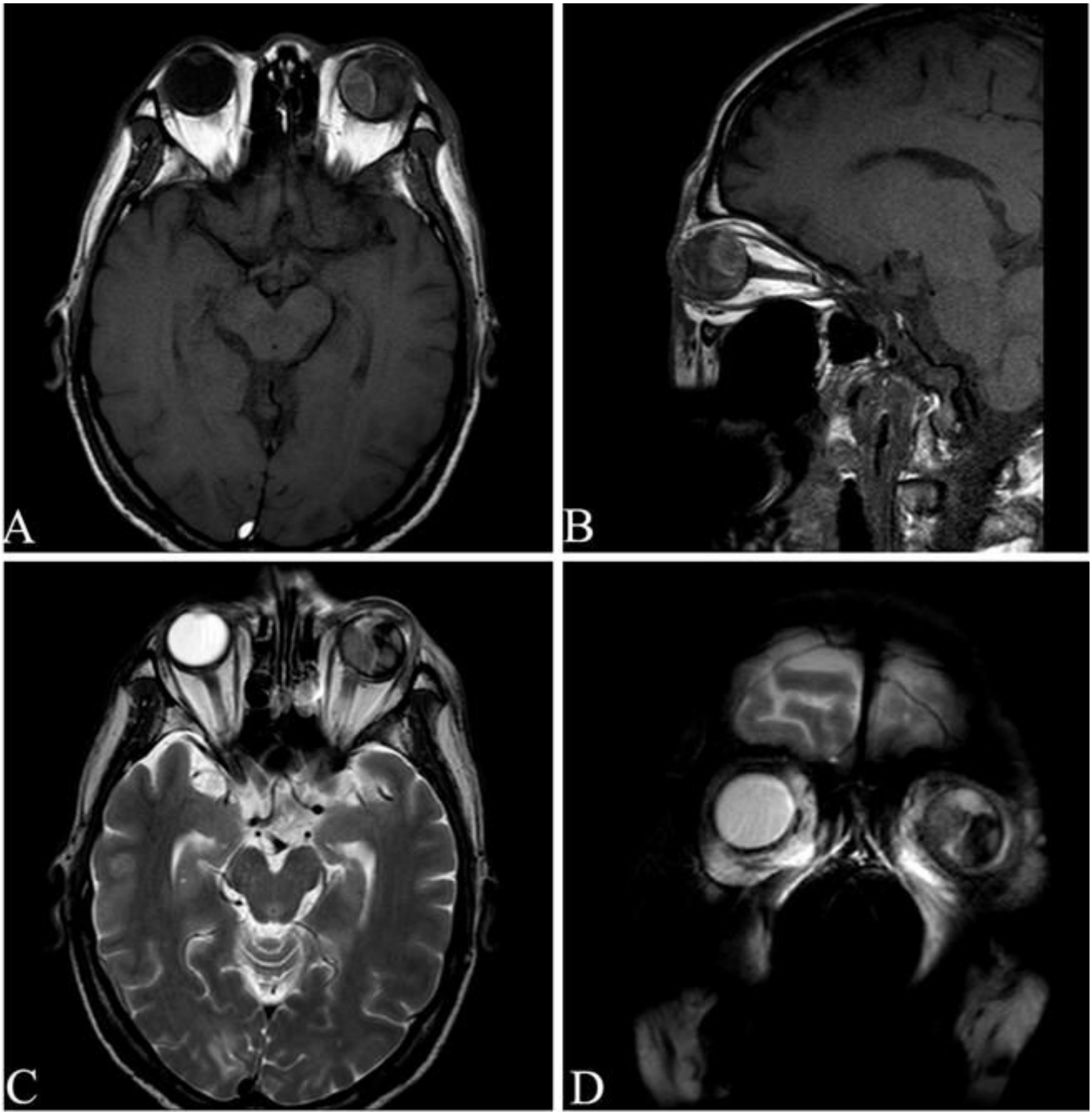

Figure 2

Magnetic resonance imaging（MRI）scan showing an enhanced mass in the left eye. The T1-weighted image shows iso-intensity with enhancement, while the T2-weighted image shows hypointensity. (A) T1-weighted image of the horizontal axis figure. (B) T1-weighted image in the sagittal position. (C) T2-weighted image of the horizontal axis figure. (D) The T2-weighted image in the coronary position.

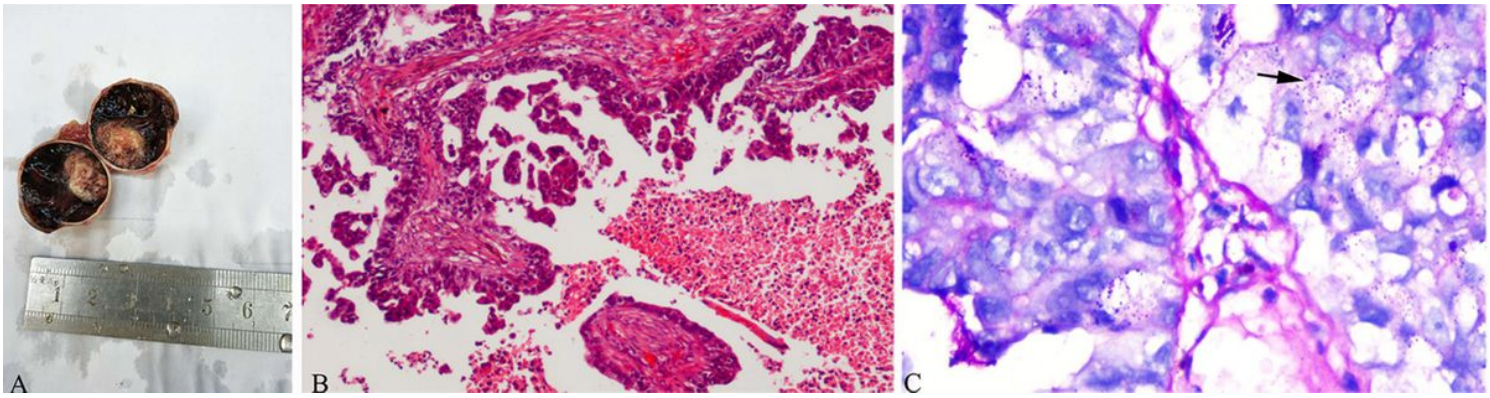

Figure 3

(A). Nasal-posterior solid neoplasm was detected in the enucleated eyeball, along with a massive hematocele. (B). The removed eyeball showing a poorly differentiated tubular adenocarcinoma (hematoxylin and eosin staining; original magnification ×100). (C). Periodic acid-Schiff stained section showing tumor cells containing a large amount of mucin (original magnification ×400).

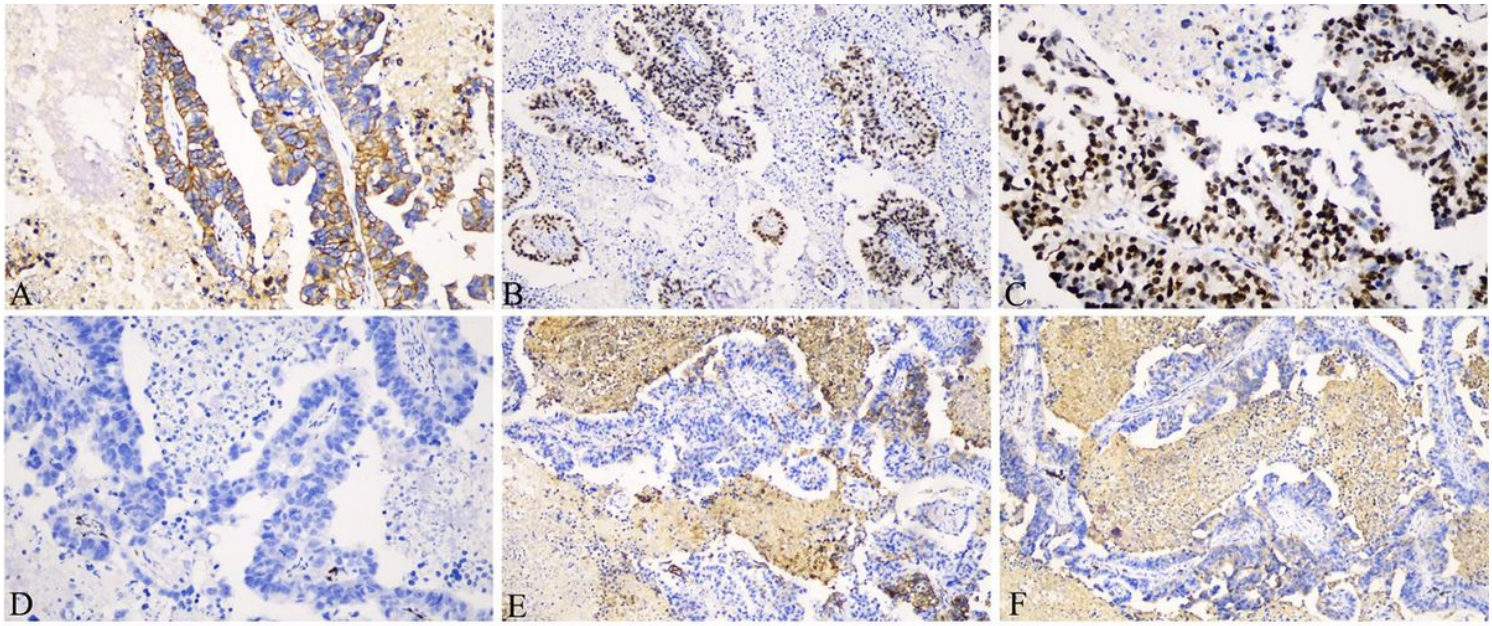

Figure 4

(A, B, C). Immunostaining for CK19, CDX2, and Ki67, was positive. (D). Immunostaining for CK7 was negative. (E and F). Images showing weak but positive immunostaining for CK20 and CEA.

Supplementary Files

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