CASE REPORT

Rare metastasis to the iris from renal cell carcinoma responds to an anti-angiogenic therapy – a case report

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Abstract

A 73-year-old Afro-Caribbean man with pulmonary metastatic renal cell carcinoma presented to the ophthalmological department for decreased visual acuity, blurry vision and photophobia. Initial ocular examination revealed a 5 mm mass located to the iris. Cerebral magnetic resonance imaging (MRI) revealed a contrast enhancing lesion in the cerebellum measuring 5 mm, without surrounding edema. The iris mass was excised during cataract surgery. Histological examination of the mass revealed a clear cell proliferation and immunohistochemical analyses revealed a typical phenotype of clear cell renal cell carcinoma with expression of vimentin, CD10 and p504s. The final diagnosis was a metastatic clear cell renal cell carcinoma. A systemic treatment with sunitinib, a tyrosine kinase inhibitor of vascular endothelial growth factor receptor (VEGF) receptor pathway, was introduced with a good safety profile and six months follow up revealed no ophthalmic recurrence and stabilization of the pulmonary and cerebellum metastasis.

Key words

Kidney neoplasms, Neoplasms metastasis

1 Introduction

Renal cell carcinoma represents 3% of all adult cancers [1]. The peak incidence is in the sixth decade, more frequently in men [1]. Clear cell renal cell carcinoma accounts for approximately 80% of renal cell carcinoma [1, 2]. Ocular metastases from renal cell carcinoma are rare and typically involve in the iris, ciliary body, choroids, eyelid, lacrimal sac and the orbit [3-7]. Herein, we presented a case of iris metastasis from renal cell carcinoma, rare site of metastasis.

2 Case report

To evaluate the extension of a prostatic cancer on a patient, a computed tomography (CT) was performed and incidentally revealed an enlarging left renal lesion with multiple pulmonary masses for which he refused any treatment. One year later, he presented to our hospital and complained of neurologic disorders such as headaches, decreased visual acuity, blurry vision and photophobia. Initial ocular examination revealed a 5 mm tumor located to the iris. Cerebral magnetic resonance

imaging (MRI) detected a contrast enhancing lesion in the cerebellum measuring 5 mm, without surrounding edema. Cataract surgery and excision of the lesion were performed (see Figure 1). Histological examination revealed a clear cell proliferation (see Figure 2), and immunohistochemical analyses revealed a typical phenotype of clear cell renal cell carcinoma with expression of vimentin, CD10 and p504s (see Figure 3, 4). The final diagnosis was an iris clear cell renal cell carcinoma metastasis. A systemic treatment with sunitinib, a tyrosine kinase inhibitor of vascular endothelial growth factor receptor (VEGF) receptor pathway, was introduced with a good safety profile and six months follow up revealed no ophthalmic recurrence and stabilization of the pulmonary and cerebellum metastasis.

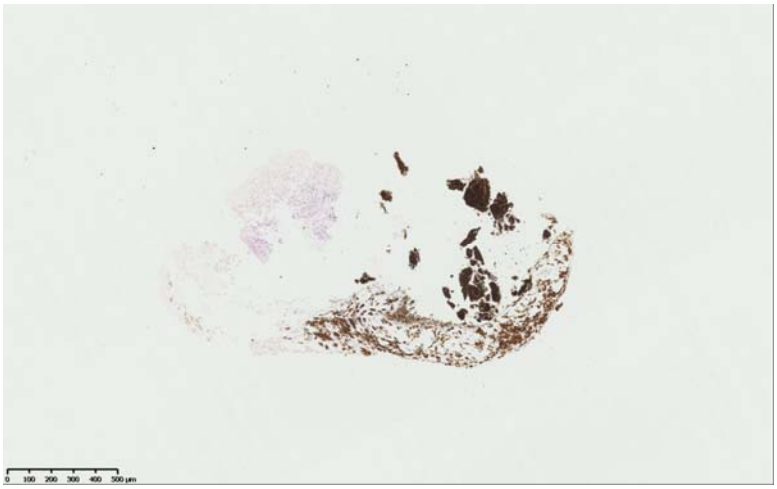

Figure 1. Hematoxylin and eosin stain. Iris cells are hyper pigmented. Neoplastic proliferation is characterized by the proliferation of clear cells. Original magnification ×40

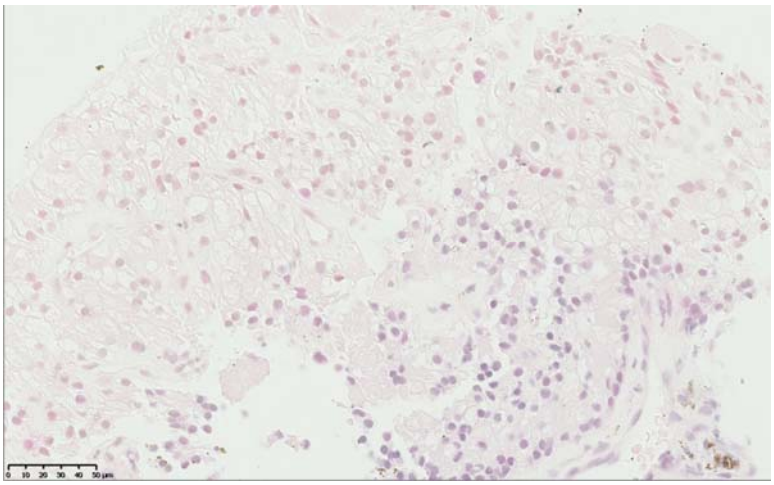

Figure 2. Hematoxylin and eosin staining demonstrates clear cells with abundant clear cytoplasm and atypical basophilic nuclear. Magnification ×200

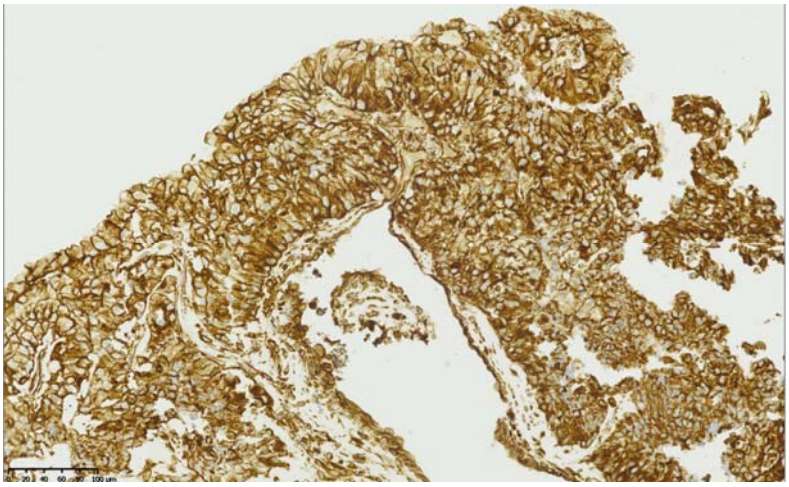

Figure 3. Immunohistochemical stain. Vimentin is positive in the membrane and cytoplasm of neoplastic renal cells. Magnification ×400

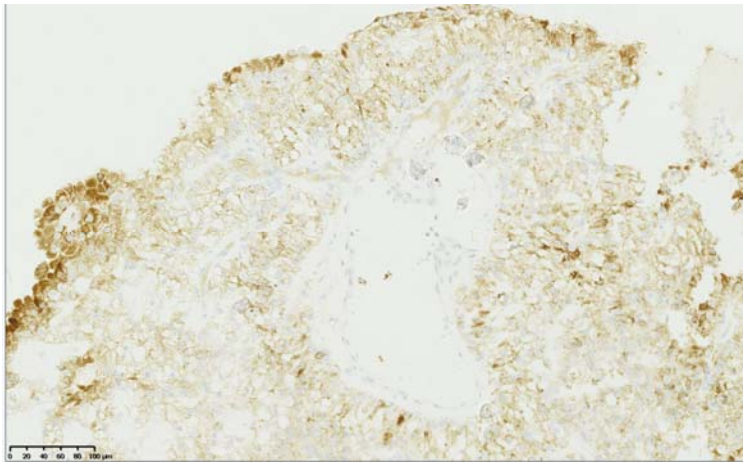

Figure 4. Immunohistochemical stain. P504S is positive in the membrane of neoplastic renal cells. Magnification ×200

3 Discussion

Ocular metastases from renal cell carcinomas are rare, less than 25 reports have been published [3-8]. Sountoulides *et al.* presented a review of 19 cases with orbital metastasis from renal cell carcinomas [6]. The ophthalmological symptomatology depends on the localization of the metastasis. Most of the patients complained of proptosis, diplopia, eye vision difficulties, cataract, upper lid tumor or epiphora. In most of the cases, there was a history of renal cell carcinoma. In only seven cases, the ocular metastasis was the first manifestation of a previously unknown renal cell carcinoma.

The clinical diagnosis of ocular metastasis is usually suspected in the context of metastatic renal cell carcinoma. Most of the patients have been treated by surgery and adjuvant therapy such as alpha-interferon systemic immunotherapy or external beam radiation therapy; intravitreal injections of bevacizumab or proton beam radiotherapy [4, 5, 8].

Our case is the first case reported with anti-angiogenic treatment sunitinib, an anti-VEGFR tyrosine kinase. VEGF-targeted therapies with humanized anti-VEGF monoclonal antibody (bevacizumab) combined with interferon (IFN)-α2a [9] or anti-VEGFR tyrosine kinases (sunitinib [10], pazopanib [11]) are recommended in first line treatment for good and intermediate prognosis patients with metastatic renal cell carcinomas [12]. In second line, in case of resistance with first line anti-VEGFR, an inhibitor of mammalian target of rapamycin (mTOR) is usually proposed.

Receptor tyrosine kinases like VEGFR play a role in the pathogenesis of clear cell renal cell carcinomas though involvement of the von Hippel-Lindau (VHL) gene [10]. In normal cells, VHL prevents the formation of HIF, hypoxia inducible factor, which normally activates angiogenic factors. Mutations in VHL if found in 80% of renal cell carcinomas. The accumulation of HIF overexpresses VEGF which contributes to the tumor's angiogenesis and growth. Antiangiogenic therapies are effective in renal cell carcinoma and our case is the first showing good result of use of antiangiogenic therapy in renal cell carcinoma with iris metastasis.

Author contributions

LM had full access to the patient data and wrote the first draft. VM helped to gather the data and reviewed the final draft. JML was the ophthalmologist resident who examined the patient. HM was the ophthalmologist who did the surgical excision of the lesion. All authors have read and approved the final manuscript.

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