Long-term Survival in a Case of Renal Cell Carcinoma With Brain Metastases: A Case Report

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ABSTRACT: Renal cell carcinoma with brain metastases is considered to have a poor prognosis. We are reporting a case of a 63-year-old male who showed excellent long term remission with a combination treatment of radiation and tyrosine kinase inhibitor for a solitary lesion in the brain, secondary to the renal tumor.

KEYWORDS: Renal cell carcinoma, Brain metastases, Tyrosine kinase inhibitor

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Introduction

Brain metastases in renal cell carcinoma (RCC) are reported in around 10% of patients[1,2] and are considered to have a very poor prognosis of around 10 months.[3] We are reporting a case of RCC with brain metastasis that showed excellent long-term survival with a combination treatment of radiation and tyrosine kinase inhibitor (TKI).

Case Report

A 63-year-old man presented with a history of focal seizure with facial palsy in October 2013. Initial evaluation showed a well-defined cortical lesion (2.5 cm × 2 cm) in right fronto-parietal region with perilesional edema in magnetic resonance imaging (MRI) of brain and an enhancing renal lower polar mass measuring about 10 cm × 6 cm on computerised tomography (CT) of abdomen with subcentimetric parenchymal nodules in basal lung filed largest measuring 7 mm. Renal biopsy confirmed the primary to be clear cell carcinoma (ISUP grade 2).

As per the recommendation by the multidisciplinary tumour board, the patient was treated with radiation therapy (single-fraction frameless stereotactic radiosurgery to the brain lesion 13 Gy) for brain lesion followed by sunitinib therapy at an oral dose of 50 mg daily for 4 weeks on and 2 weeks off. Dexamethasone 16 mg was also given daily, which was progressively decreased until discontinuation during the following months.

MRI of the brain (March 2014) revealed complete remission of the tumour (Figure 1). Computerised tomography of abdomen (April 2014) revealed a reduction in the size of renal mass (Figure 2). The patient underwent laparoscopic radical nephrectomy in April 2014. By February 2017, there was complete remission of brain and chest metastasis, but was found to have a lesion in the right kidney, for which the patient underwent radiofrequency ablation in March 2017. The procedure was uneventful and the patient was put on regular follow-up.

The patient developed chronic renal failure with serum creatinine level reaching 6.8 mg/dL and proteinuria. As a result, sunitinib was reduced to 25 mg OD (duration of therapy 40 months) and later changed to sorafenib 200 mg BD (on sorafenib for 21 months till last follow-up). There was no worsening of serum creatinine level with sorafenib therapy; hence, sorafenib 200 mg was continued. The patient is doing well till last follow-up in November 2018 (5 years from initial diagnosis).

Discussion

The prognosis of brain metastases in RCC has traditionally been dismal.[2] Cytokines used in RCC have limited central nervous system (CNS) efficacy[4] as it does not cross the blood-brain barrier. Tyrosine kinase inhibitor showed better response in metastatic RCC[1] and is considered to be the standard of care now. The efficacy of sorafenib, sunitinib, and temsirolimus in CNS is not known because the previous phase 3 trial with these drugs have excluded patients with CNS disease.[5–7] Management of brain metastasis in the renal tumour is still controversial even though there are case reports about the benefit of TKI in this scenario. A case reported in Greece on March 2007 showed the activity of sunitinib in brain metastases from RCC, in which the patient had a partial response of the cerebral lesion following treatment with sunitinib. Sunitinib was safe and led to a considerable shrinkage of the brain metastases without any serious adverse reactions or CNS toxicities.[8] The role of cytoreductive nephrectomy is disputed in these patients due to limited survival.

In our case, the brain metastases in RCC showed excellent response to sunitinib therapy and radiotherapy, leading to complete remission of the lesion in the brain, and hence a cytoreductive nephrectomy was advised later. This case shows that we can have an excellent response in select patients with a low burden of metastasis in the brain. Probably, the initial radiotherapy could have helped the penetration of the small TKI

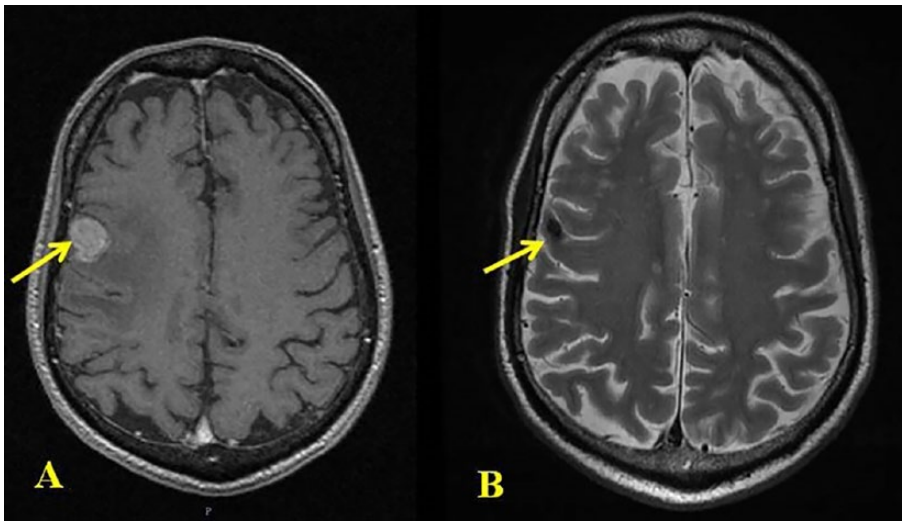

Figure 1. (A) MRI lesion in brain and (B) MRI lesion responding completely to TKI. MRI indicates magnetic resonance imaging; TKI, tyrosine kinase inhibitor.

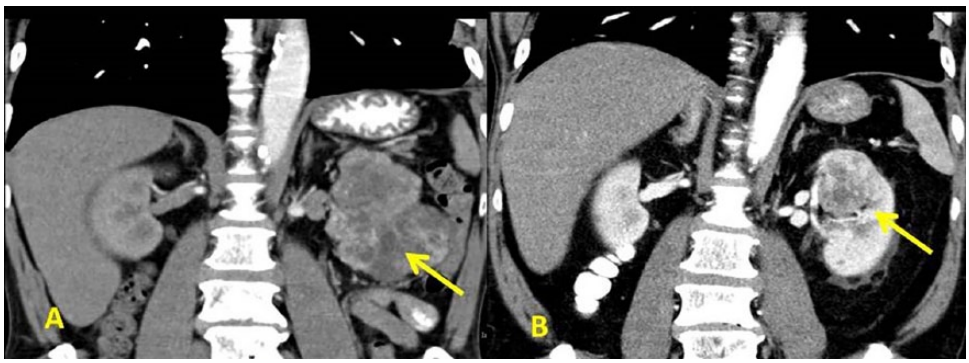

Figure 2. (A) Kidney tumour before staring TKI and (B) primary tumour after TKI. TKI indicates tyrosine kinase inhibitor.

molecules across the blood-brain barrier leading to the excellent response to the treatment.[9]

Conclusions

Even though RCC with brain metastases is considered to have a poor prognosis, they can have an excellent response with a combination of radiation and TKI. If there is a good response, they may be considered for cytoreductive nephrectomy. Further studies in this area may help in identifying factor predicting response to radiation and TKI in such patients.

Author Contributions

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