

Solitary choroid plexus metastasis of clear cell renal carcinoma 11 years after nephrectomy: A case report

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Brain metastasis is the most common intracranial tumors amongst adults. While brain metastasis of Renal Cell Carcinoma (RCC) is less common, intraventricular localization is particularly rare. There are few small series and mostly case reports which have noted intraventricular involvement of RCC metastasis. Here we report a new case of Solitary choroid plexus metastasis of clear cell renal carcinoma 11 years after nephrectomy. It's about a 51-year-old patient, diagnosed with renal tumor in 2010 and a nephrectomy was performed. He presented with a frontal syndrome

consecutive to a left frontal intraventricular tumor with ipsilateral ventricular dilation. He was operated on for a complete excision of this tumor. Histopathological examinations revealed a metastasis of clear cell renal carcinoma. He underwent 3 radiosurgery sessions one month later. At 6 months of follow-up, he has described an important clinical improvement, mainly of his frontal syndrome.

BM secondary to RCC tend to be located in the ventricular system with close association to the choroid plexus. Early detection of brain metastases and a therapeutic strategy including surgery and radiosurgery can offer patients an extended survival.

Key Words: Renal cell carcinoma; Choroid plexus tumor; Brain metastasis; Intraventricular tumor

ABBREVIATIONS

RCC: Renal Cell Carcinoma; BM: Brain Metastasis; MRI: Magnetic Resonance Imaging; CP: Choroid Plexus.

INTRODUCTION

Brain Metastasis (BM) which commonly arises in patients with lung cancer, breast cancer and melanoma are the most common intracranial tumors amongst adults. While brain metastasis of Renal Cell Carcinoma (RCC) is less common, intraventricular localisation is particularly rare. Choroid plexus metastasis are typically challenging to distinguish from other intraventricular lesions because of their low frequency. Surgical treatment may be challenging, owing to the hypervascularity of the tumor. There are few small series and mostly case reports which have noted intraventricular involvement of RCC metastasis. Here, we report our experience with a patient operated of a solitary choroid plexus metastasis from renal cell carcinoma in our department. Based on recent reports, we describe the clinical and radiological features of these tumors, to allow an early diagnostic suspicion and to devise the optimal therapeutic strategy.

CASE PRESENTATION

51-year-old patient, diagnosed with renal tumor in 2010 and a nephrectomy was performed. He presented confusion, memory loss and concentration disorders during 4 months. Nevertheless, weakness of his right halfbody was noted by the patient since two months without any signs of HTIC or comituality. Clinical examination showed a delirium, memory disturbances and aphasia with a lack of words and dysarthria, without motor deficit. A brain MRI was done showing a left frontal intraventricular tumor with ipsilateral ventricular dilation (Figures 1 and 2). The CT-TAP didn't show suspicious lesions. He was operated on April 2021 for a complete excision of this tumor. Histopathological examinations revealed a metastasis of clear cell renal carcinoma. He underwent 3 radiosurgery sessions one month later. At 6 months of follow-up, he has described an important clinical improvement, mainly of his frontal syndrome.

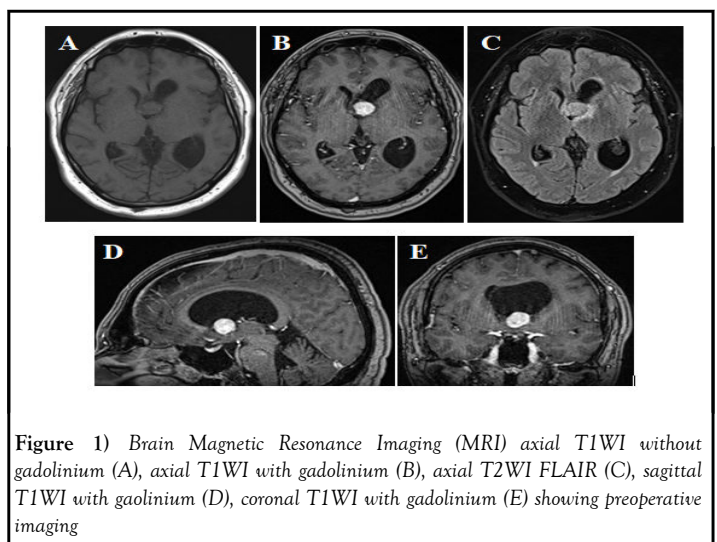


Figure 1) Brain Magnetic Resonance Imaging (MRI) axial T1WI without gadolinium (A), axial T1WI with gadolinium (B), axial T2WI FLAIR (C), sagittal T1WI with gadolinium (D), coronal T1WI with gadolinium (E) showing preoperative imaging

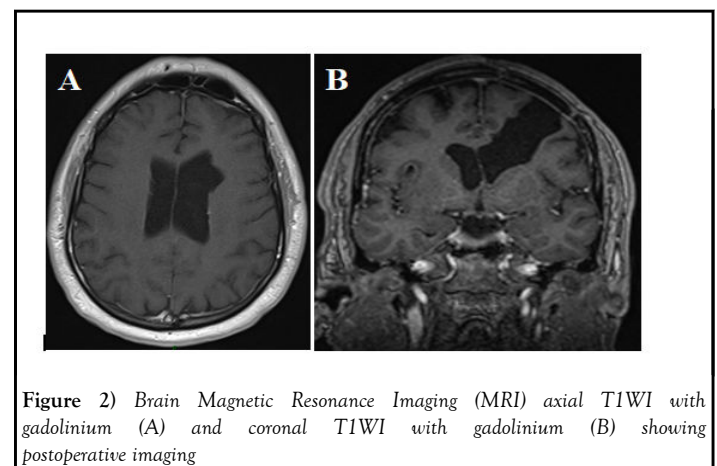


Figure 2) Brain Magnetic Resonance Imaging (MRI) axial T1WI with gadolinium (A) and coronal T1WI with gadolinium (B) showing postoperative imaging

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RESULTS AND DISCUSSION

The most common intraventricular tumor in adults is meningioma, whereas choroid plexus papillomas, carcinomas, and ependymomas tend to appear in children and young adults (3% of all intracranial tumors in children and 0.5% in adults) [1]. Intraventricular metastasis is rare. Usually the metastasis of the brain is present by multifocal intraparenchymal lesions. It is rare to have only one metastatic lesion at the Choroid Plexus (CP).

Metastases to the CP are mostly reported as series of autopsied patients. Schreiber et al. Study with 737 autopsied cancer patients described only 19 cases (2.6%) of choroid plexus metastasis. Only one of these cases is a single metastasis of the choroid plexus (0.14%) [2]. In Japan Brain Tumor Registry, 37 cases (0.9%) of metastases to the lateral ventricle are observed among 3917 cases of brain metastasis.

Renal cell carcinoma is the ninth most common cancer with 338,000 new cases diagnosed each year. Usually it is asymptomatic in its early stages. RCC Metastases to the brain are described in less than 15% of cases, and metastases to the choroid plexus tended to be a relatively late complication of the disease. When the brain metastasis occurs, the prognosis is worst with a median survival of 1-3 months in untreated patients [3]. After brain surgery, a median length survival of 12.6 months has been reported.

A study conducted by Shapira et al. Proved that BM secondary to RCC tend to be located adherent to the choroid plexus in the ventricular system [4]. The reason for this association is still unknown. However, it may be related to chemokine-based homing processes, which play a key role in a wide range of physiological processes during brain development [5]. Another study suggests a relationship between immunohistochemical expression of RCC marker and other papillary carcinomas like papillary choroid carcinoma [6].

The mean time interval to initial metastasis after nephrectomy is 47 months (range 5–189 months, 132 months in our case). A very slight male versus female predilection was demonstrated with a predilection for the right lateral ventricle. Our case is male but with a left sided localisation.

On CT scan and MRI scan, CP metastases from RCC show strong homogeneous contrast enhancement with surrounding vasogenic oedema. Jelinek et al. demonstrated that metastatic tumors are frequently found around the foramen of Monro or in the body rather than in the trigon of the lateral ventricle and that is important to make a differential diagnosis from meningioma, which occurs most frequently at this site [7]. An Intra and/or peritumoral flow-voids are also reported that they are relatively characteristic of brain metastasis from RCC. In the present case, the intraventricular mass was, at first, interpreted as a hemangioblastoma because of absence of peritumoral oedema and the vascular character with habitual bleeding during surgery.

Tumors with intraventricular location are in close association with the choroid plexus. They are fed by choroidal vessels. Thus, early control on these vessels is important during surgical approach. Although, preoperative embolization of choroid plexus tumors could be a good solution to minimize blood loss and facilitate complete tumor removal [8].

The indication of radiosurgery is still being discussed. Sheehan et al. conducted a retrospective review of 69 patients undergoing stereotactic radiosurgery for a total of 146 renal cell cancer metastases [9]. They found that that Stereotactic radiosurgery for treatment of brain metastasis of renal cell carcinoma provides effective local tumor control in approximately 96% of patients and a median length of survival of 15 months. Our patient underwent radiosurgery after surgical complete excision.

CONCLUSION

Crisman et al. conducted a study with clinical outcomes of 22 patients of RCC metastatic lesion to the choroid plexus, 22.7% of cases developed local progression in the follow-up period. The progression free survival rates

were 81.6% and 68% at 1-year and 3-year actuarial, respectively. At the follow-up period, 14 patients are known to have died. In this group of died patients, the median time of death was 2.4 years after the first treatment. The overall survival median time was 2.8 years and the overall survival rates were 76.7% and 28.3% at 1-year and 5-year actuarial, respectively. Other additional cerebral metastases were found on MRI during the follow-up period in 8 patients.

DECLARATIONS

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AUTHORS' CONTRIBUTIONS

All authors contributed equally to the manuscript and read and approved the final version of the manuscript.

PATIENT CONSENT

The patient consented to participate and publish their clinical data.

CONCLUSION

Brain Metastasis (BM) secondary to Renal Cell Carcinoma (RCC) tends to be located in the ventricular system with close association to the choroid plexus. Early detection of brain metastases and a therapeutic strategy including surgery and radiosurgery can offer patients an extended survival.

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