Clear cell renal cell carcinoma brain metastases

Clear cell renal cell carcinoma intracranial metastases

- Evaluation of primary venous thromboembolism prophylaxis in hospitalized patients with primary brain tumors or secondary brain metastases
- Peptide Hydrogels for Renal Carcinoma Therapy via Synergistic Inhibition of Glycolysis and Mitochondrial Metabolism Reprogramming
- Current status of adjuvant immunotherapy and relapse management in renal cell carcinoma: Insights from a European delphi study
- Metastatic renal cell carcinoma to the glans penis: A case report of rare presentation
- Importance of Apparent Diffusion Coefficient in Differentiation of Cerebral Tumors
- Unilateral Pheochromocytoma in Von Hippel-Lindau Syndrome Revealed by a Hemangioblastoma
- Predictive Factors for Multiple Metastases of Clear-cell Renal Cell Carcinoma
- Severe hypercalcemia as the initial presentation of renal cell carcinoma: a diagnostic case report

---

Renal cell carcinoma (RCC) is one of the primary cancers that metastasis to the brain frequently, although RCC accounts for only 1% of all cancer. The metastatic tumor from RCC has the propensity of intratumoral hemorrhage and relatively massive surrounding edema compared with other metastatic tumors. These characteristics make an emphasis on surgical resection in the management of metastatic tumors. However, surgery is not always possible due to the characteristics of the tumor and the patient.

The outcome of conventional whole-brain radiotherapy is unsatisfactory due to the resistant feature of RCC to the radiation, although it plays an important role in other malignancies. The stereotactic radiosurgery (SRS) including various modalities have showed the excellent outcomes in the control of tumor itself and surrounding edema. The repeatability of SRS is also attractive merit, because the new brain metastasis can be encountered in anytime regardless of the first-line treatment modalities. A few adverse effects following SRS have been reported however, incidence and severity could be acceptable without severe morbidity. Therefore, SRS must be emphasized in the management of brain metastasis from RCC and individual various combined treatment strategies could be suggested [1].

Treatment

Total removal of brain metastases from RCC was easy with little bleeding in most cases. Our results suggest that GKS is effective for growth control of metastatic brain tumors from RCC. Higher marginal dose such as 25 Gy or more is desirable to obtain peritumoral edema control, so GKS is not suitable for control of symptomatic peritumoral edema associated with relatively large tumors. Tumor removal of RCC metastases is relatively easy and rapidly reduces peritumoral edema. Treatment strategy for metastatic brain tumors from RCC depends on tumor size, number of tumors, and presence of symptomatic peritumoral edema [2]

Current guidelines for metastatic renal cell carcinoma (mRCC) do not recommend routine brain imaging as part of the surveillance protocol unless central nervous system (CNS) symptoms or abnormal laboratory values suggest brain involvement.

Renal cell carcinoma pituitary metastases

Renal cell carcinoma pituitary metastases.

Case series

Patients undergoing evaluation for RCCBM from 1989 to 2006 were identified. Their characteristics, symptoms, pathologic variables, number and size of RCCBM, CNS treatment, CNS recurrence, overall survival, and use of systemic therapy were reviewed.

A total of 138 patients were identified with RCCBM, of whom 92% had clear cell RCC and 95% had synchronous extracranial metastases. CNS symptoms were noted in 67% of patients. Symptomatic CNS tumors were larger (2.1 cm vs 1.3 cm; P < .001) and more frequently required a craniotomy (P < .001). The median overall survival after a diagnosis of RCCBM was 10.7 months; the 1-year, 2-year, and 5-year survival rates were 48%, 30%, and 12%, respectively. Median CNS recurrence was 9 months after RCCBM treatment. The initial number of tumors (>1 tumor) was found to be an independent predictor of CNS recurrence (hazards ratio of 3.72; P < .001). Those patients with 1 and >1 lesion had a median CNS recurrence-free survival of 13 months and 4 months, respectively (P < .001). Patients receiving interleukin-2 after CNS treatment had a response rate of 17%.

Patients with metastatic RCC should undergo CNS screening to allow the identification of smaller lesions that are more amenable to treatment. Those patients with solitary RCCBM are less likely to develop CNS recurrence after local therapy. Selected patients with good performance status may exhibit prolonged survival and should be offered aggressive therapy [3)].

Case report

A 65-year-old man with a history of nephrectomy due to renal cell carcinoma was admitted because of mild cognitive disorder and gait disorder. An initial MRI of the brain demonstrated a 5 × 3 × 4.5 cm-sized, heterogeneously well-enhanced tumor with a large cystic component compressing the left thalamus and corpus callosum near the lateral ventricle. Owing to its large size and proximity to critical structures, they decided to perform 3 fractionated GKRSs over 3 consecutive days. After the first fraction of 9 Gy with 50% isodose, follow-up MRI the next day revealed an unexpected increase in tumor volume up to 30%. Therefore, the radiosurgical plan was adjusted, and GKRS was performed again using the same dose for the second fraction. The image taken on the third day showed rapid shrinkage of the tumor volume. This case shows that a tumor may change its shape and volume unexpectedly even during the short period of a fractionated GKRS session. Hence, for optimal fractionated GKRS treatment of tumors with the likelihood of an abrupt change in the short term, interval imaging should be considered [4)].

1)
Kim YH, Kim JW, Chung HT, Paek SH, Kim DG, Jung HW. Brain metastasis from renal cell carcinoma. Prog Neurol Surg. 2012;25:163-75. doi: 10.1159/000331190. Epub 2012 Jan 6. PubMed PMID: 22236678.
2)
Shuto T, Matsunaga S, Suenaga J, Inomori S, Fujino H. Treatment strategy for metastatic brain tumors from renal cell carcinoma: selection of gamma knife surgery or craniotomy for control of growth and peritumoral edema. J Neurooncol. 2010 Jun;98(2):169-75. doi: 10.1007/s11060-010-0170-4. Epub 2010 Apr 20. PubMed PMID: 20405309.
3)
Shuch B, La Rochelle JC, Klatte T, Riggs SB, Liu W, Kabbinavar FF, Pantuck AJ, Belldegrun AS. Brain metastasis from renal cell carcinoma: presentation, recurrence, and survival. Cancer. 2008 Oct 1;113(7):1641-8. doi: 10.1002/cncr.23769. PubMed PMID: 18671240.
4)
Roh H, Kim J, Chong K, Yoon WK, Kwon TH, Kim JH. Unexpected Daily Changes in Tumor Volume during Fractionated Gamma Knife Radiosurgery for Solitary Intraventricular Metastatic Renal Cell Carcinoma: A Case Report. Stereotact Funct Neurosurg. 2019 Apr 4:1-5. doi: 10.1159/000497152. [Epub ahead of print] PubMed PMID: 30947203.