Extracalvarial Metastatic Renal Cell Carcinoma: A Treatment Strategy and Review of Literature

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Introduction

- Renal cell carcinoma is a common malignancy with highest incidence and predilection for men (0.7 per 100,000). It arises from the renal tubular epithelial cells by various mechanisms.

- Risk factors include genetic and lifestyle factors like smoking, obesity, and hypertension

- About 30% of patients diagnosed with renal cell carcinoma already have metastatic disease

- Renal cell carcinoma metastases usually spread by lymphatic or hematogenous routes with the venous system being a way to reach systemic circulation
Objective

• Metastatic tumors are most common cause of calvarial lesions in adults. This is particularly true in patients with primary breast, lung, or prostate cancer.

• In patients with renal cell carcinoma, however, the calvarium appears to be an unusual site and is a rare metastatic presentation.

• Patients are usually asymptomatic until lesions become extracalvarial, and may present with pain, scalp tenderness, lethargy, neurological deficits (if invasive to the cortex), or skin ulceration.
Methods (Case Report)

• A 63-year-old female with known metastatic renal cell carcinoma (clear cell type), prior history of nephrectomy (On dialysis) presented with incapacitating headaches, scalp tenderness, and swelling of the bi-frontal and bi-parietal scalp regions

• Neurologic examination was within normal limits except the palpable firm mass of 3 x 3 cm over bregma (anterior scalp), and biparietal scalp regions (right greater than the left)
Methods (Surgical procedure)

- Due to hemorrhagic extracalvarial tumor, bilateral STA embolization
- Bifrontal and right parietal craniectomy for resection of extracalvarial metastases
- Cranioplasty utilizing titanium mesh and polymethylmethacrylate bone cement
- Frozen section and postop histopathology with metastatic renal cell carcinoma (Clear cell type)
- No postoperative complications
Results

• 20 patients (M to F ratio of 3:1 & mean age 11 years {OCC versus LITT, (10.8 vs. 10.6)}) were operated for medically refractory epilepsy

• Of total 24 epilepsy operations, 16 OCC and 8 LITT surgical procedures

• Compared with OCC cohort, significant decrease in EBL (in ml) 84 vs. 7 (p<0.007), and decreasing trend towards LOS (5.7 vs 4.4, p<0.09) was observed in LITT cohort (1 patient had a CSF leak)
Intraoperative Images
Cranioplasty
Postoperative head CT scan with complete resection of the extracalvarial lesions
Postoperative Images of Scalp
3 months follow up      6 months postop follow up
Conclusions

• Extracalvarial metastasis from the systemic venous spread of the renal cell tumors is a rare presentation

• The treatment of these metastatic lesions can be very challenging

• Considering the inherent radioresistant nature of the renal cell tumor, therefore, a palliative surgical resection can be offered to control the metastatic spread and improve the quality of life of these patients

• Preoperative embolization can be an adjunct. Once resected completely, cranioplasty with the use of titanium mesh and bone cement is a viable option and help to improve overall cosmesis