Case Report

Unusual sites of intracranial metastases from renal cell carcinoma presenting only with neurological symptoms

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Abstract We report a case where patient presented only with neurological symptoms from the metastases of an asymptomatic primary renal cell maligancy , alongwith review of literature for unusual sites of intracranial metastases in the clivus and choroid plexus.

Keywords: Choroid plexus, clivus, intracranial, metastases, renal cell carcinoma

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INTRODUCTION

Presence of intracranial metasases from a primary abdominal or thoracic malignancy is not unusual and can effect calvarium, brain parenchyma and meninges. Involvement of clivus and choroid plexus as sites of intracranial metastases producing only neurological symptoms from an asymptomatic intrabdominal primary malignancy is quite unusual to see in clinical practice. In this case report we present such case where patient had bilateral choroid plexus metastases and clival lesion and retrospectively diagnosed with asymptomatic and incidentally detected renal cell carcinoma along with review of literature.

CASE REPORT

A 55-year old male presented to the neurology clinic with complaints of holocranial headache, diplopia of 2 months' duration and photophobia in the right eye for the past 1 month. Neurological examination revealed intact higher mental functions, impaired lateral gaze in the right eye suggestive of right fourth cranial nerve (CN) palsy, and ptosis (which suggests impaired third CN function). Visual acuity unaided was 6/12 in both eyes. No field defect was seen. No facial hypoesthesia or asymmetry was present. No tongue deviation was noted. Right-sided gag reflex was impaired suggestive of tenth CN palsy. Motor system examination revealed normal tone and 5/5 power in all four limbs. Deep tendon reflexes were 2+ in all the limbs and plantar reflex was abnormal. Sensory examination revealed no sensory loss and posterior column was intact. Gait was normal and no cerebellar signs could be elicited. No signs of meningismus were observed. His routine hematological and biochemical investigations were within normal limits.

On the basis of clinical findings and examination, clinical suspicion of a skull base lesion was made and patient underwnt MRI brain to look for any lesion. MRI brain with contrast was done which shows bilateral choroid plexus lesions appearing hypointense and hyperintense on T1 and T2 weighted images respectively [Figure 1].

Access this article online	
Quick Response Code:	Website: www.wajradiology.org
	DOI: 10.4103/wajr.wajr_36_14

How to cite this article: Garg P, Lal H, Atwal S, Nayak S, Udiya AK. Unusual sites of intracranial metastases from renal cell carcinoma presenting only with neurological symptoms. West Afr J Radiol 2018;25:132-5.

Expansile and destructive lesion was also noted involving the clivus and adjoining petrous bones [Figure 3a and 3b]. On post gadolinium images, there was intense contrast enhancement within the choroid plexus and clival lesions [Figures 2a,2b,3c,3d]. In view of MRI brain findings of clival and bilateral choroid plexus enhancing lesions, the possibility of hypervascular metastatic lesions was considered as the primary differential diagnosis.

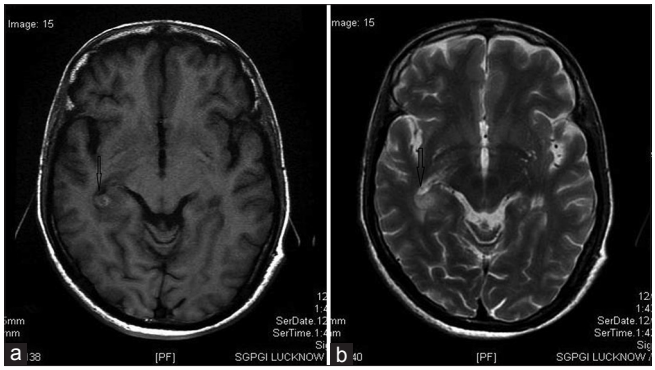

Figure 1: (a) Axial T1-weighted image showing rounded hyperintense lesion in the atrium of right lateral ventricle (arrow) with the surrounding white matter hypointensity suggestive of edema. (b) Axial T2-weighted image – same lesion is hyperintense (arrow) with the surrounding edema

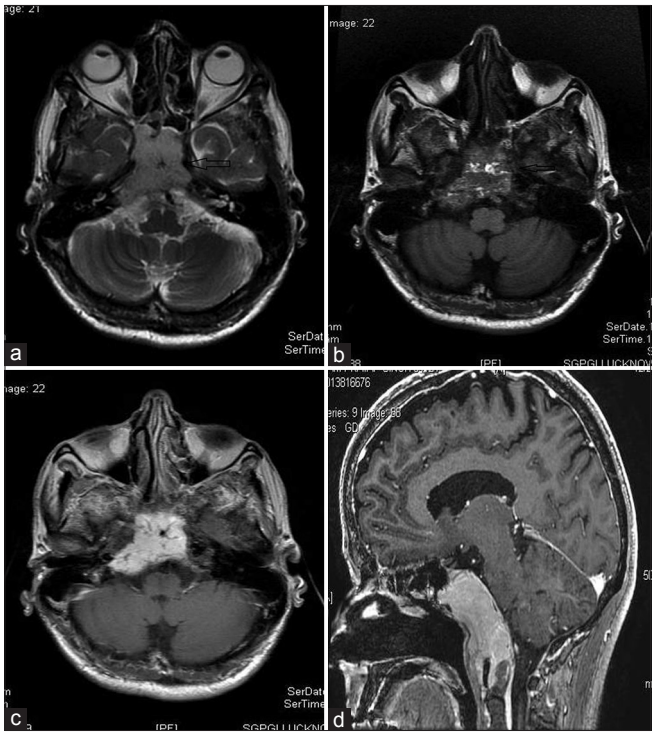

Figure 3: (a) Axial T2-weighted image at the level of skull base showing hyperintense expansile clival lesion with small hypointense foci. (b) Same lesion appears isointense on axial T1-weighted image and shows focal hyperintensities suggestive of hemorrhage. (c) Lesion showing intense contrast enhancement. (d) Sagittal image shows enhancing clival lesion (arrows)

Primaries which can cause hypervascular metastases in a middle-aged male patient can be from kidney, thyroid, melanoma, or islet cell tumors. Ultrasound abdomen was done which showed heterogenous echotexture, lobulated, mass lesion arising from the lower pole of the left kidney. Mass showed increased color flow on Doppler imaging [Figure 4a].

Contrast-enhanced multidetector computed tomography abdomen showed a well-defined mass lesion arising from the lower pole of left kidney, distorting the renal contour and architecture, and showed intense contrast enhancement with central nonenhancing hypodense area. Renal vein and inferior vena cava were normal [Figure 5].

In view of imaging findings in MRI brain and contrast-enhanced computed tomography abdomen and ultrasound, diagnosis of renal cell carcinoma (RCC) with clival and choroid plexus metastases was made.

The patient had undergone left-sided nephrectomy, and biopsy from the choroid plexus lesion was obtained which was diagnosed as clear cell variety of RCC. The patient was further planned for radiotherapy for intracranial metastases.

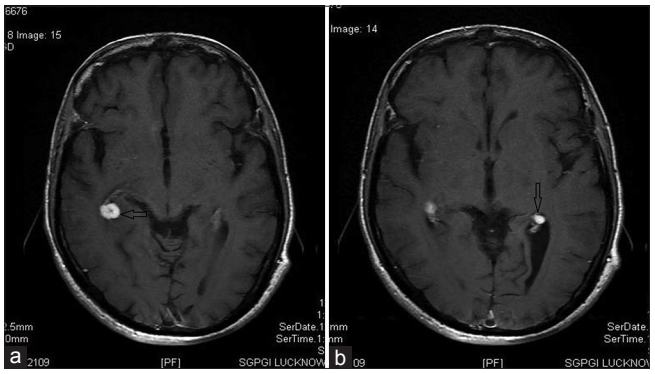

Figure 2: (a) Lesion shows intense contrast enhancement on postcontrast T1-weighted image. (b) Small, nodular enhancing lesion seen in left atrium (black arrow)

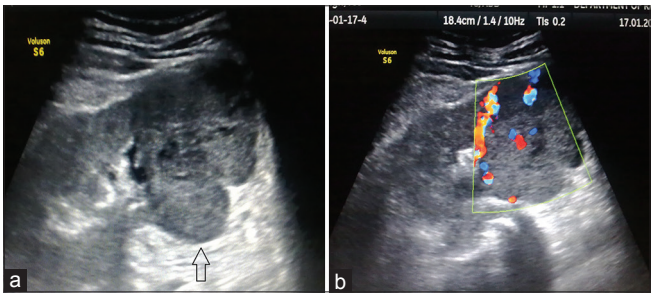

Figure 4: (a) Grayscale sonography image of the left kidney in longitudinal axis showing a well-defined, lobulated, hypoechoic mass lesion arising from the lower pole. (b) Color Doppler mode showing vascularity in the mass

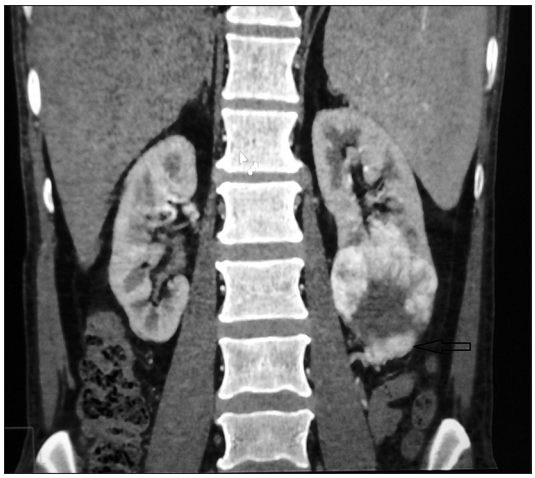

Figure 5: Coronal, arterial phase contrast-enhanced computed tomography image showing a lobulated mass lesion from lower pole of the left kidney showing areas of intense contrast enhancement with central nonenhancing areas (marked with black arrows)

DISCUSSION

RCC accounts for 3% of all malignancies reported per year which affects middle to elderly males who also have a history of smoking.[1] In most classical presentation, RCC presents with hematuria, flank pain, and palpable abdominal mass. However, at the same time, RCC is notoriously known for unusual presentations such as paraneoplastic syndromes and symptoms due to unusual sites of metastases as in our case.

RCC often remains silent till it assumes a large size. Incidental detection of RCC has increased over the past few decades due to vast improvement in cross-sectional diagnostic imaging modalities.[2]

RCC is known for hematogenous spread and usual sites of metastases are lungs and lymph nodes. Unusual sites of metastases include brain, thyroid, pancreas, and muscles.[3-5]

Intracranial sites such as choroid plexus and clivus are exceedingly rare[6] Pallini *et al*. reported seven cases of clival metastatic lesions which included three from lung primarily, two from prostate cancer, and one each from hepatocellular carcinoma (HCC) and melanoma.[7] Review of literature shows that most common primary site for clival metastases is from prostate, followed by thyroid and then HCC.

Fumino also reported clival metastases from RCC presenting as diplopia.[8]

Clival tumors generally present with headache, diplopia (involvement of CNs), and ataxia due to cerebellar dysfunction. Differential diagnoses which should be thought for in case of a destructive clival lesion are chordoma, chondroma, chondrosarcoma, and sometimes nasopharyngeal carcinoma invasion.

Metastasis to the choroid plexus accounts for only 0.9% of clinically evident intracranial metastases. In autopsy series, metastasis to the choroid plexus is identified in 2.6%–4.6% of cases of malignant extracranial neoplasm.[9,10]

Choroid plexus metastases from RCC also present as nodular lesions usually seen in the atria of lateral ventricles where choroid plexus has the greatest mass; these lesions show intense contrast enhancement and can also show adjacent white matter edema. Closest differential diagnoses are meningioma which is seen in middle-aged patients and often appears hyperdense on CT and can show calcification. Choroid plexus papillomas appear lobulated lesions with frond-like projections showing intense contrast enhancement and dilated ventricles due to overproduction of cerebrospinal fluid (CSF). These tumors are seen in children and choroid plexus carcinomas are very rare. Cross-sectional imaging is very sensitive in detecting these choroid plexus metastases because these lesions easily standout against the density or intensity of CSF in ventricle.

There are two potential mechanisms to spread to choroid, either by hematogenous root from anterior and posterior choroidal arteries or by CSF seeding. Kidney and lung are the most frequent sites of choroid plexus metastases, and less frequent tumors are melanoma, neuroblastoma, lymphoma, and carcinomas of stomach, bladder, breast, and colon.

Wasita *et al*. reported a case of choroid plexus metastases from thyroid carcinoma presenting with intraventricular hemorrhage.[11] Other rarer primary sites resulting in choroid plexus metastases are esophagus[12] and urinary bladder. Reported complications which may be found on imaging include hydrocephalus and hemorrhage from an intraventricular metastasis.[6]

CONCLUSION

During encounter of lesions in unusual intracranial sites such as clivus and choroid plexus in a patient presenting with cranial manifestations, thorough clinical examination and appropriate imaging of the rest of the body such as chest and abdomen should be done to see for primary tumors such as RCC, thyroid, gastrointestinal tract, and breast which can metastasize to these unusual locations. Delay in the diagnosis of primary malignancy will upgrade the tumor staging, rendering the patient unfit for timely curative surgery.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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