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RARE SEED-AND-SOIL RELATIONSHIP BETWEEN LUNG CANCER AND CHOROID PLEXUS- A CASE REPORT

Radio-Diagnosis

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ABSTRACT

Introduction: Metastatic tumors in the choroid plexus (CP) are uncommon and radiological features are often misleading. The most frequently reported primary cancers that can metastasize to CP are renal cell carcinoma. Here, we present a case of CP metastasis from lung cancer which was detected on computed tomography (CT) and magnetic resonance imaging (MRI) brain scan and further confirmed histologically. **Case Presentation:** A 65-year old male was presented to the hospital with left sided weakness. Systemic screening by CT detected an irregular mass lesion measuring approximately 50 × 50 × 36 mm in the lower lobe of left lung along with multiple other randomly distributed nodules bilaterally. MRI brain demonstrated heterogeneously enhancing clustered nodular lesions centered at trigone of right lateral ventricle with hemorrhage and mass effects. Tumor biopsy confirmed lung carcinoma metastasis to the CP. **Conclusion:** Diagnosis of CP metastasis is challenging. Owing to its rarity, there is no standard of care treatment and thus management of CP metastasis requires a tailored approach. Even though prognosis for CP metastasis is generally poor, however, survival rates can vary widely.

KEYWORDS

INTRODUCTION

Majority of intracranial metastasis occurs in the brain parenchyma. Choroid plexus (CP) metastasis is rare and it represents only about 0.3-0.6 % of all intracranial tumors [1]. Due to its scarcity little is known about CP metastases and limited case reports are available. Primary cancer most commonly reported to metastasize CP is renal cell carcinoma followed by lung carcinoma. Approximately, 30 % of CP metastasis is constituted by the lung and the incidence of lung carcinoma metastasizing to CP is 2-6.7 % [2, 3]. Here we report an extremely rare case of choroid plexus metastasis from lung cancer presenting as a large solitary intraventricular tumor. This case report highlights the importance of systemic and imaging studies in detecting CP metastasis without any known primary carcinoma diagnosis.

CASE REPORT

A 65-year-old male presented to out-patient department of the hospital with complaints of gradual onset left sided weakness and mild headache from 3 months. The patient did not have any other complaints. He did not have any significant past medical or surgical history. On admission, he was alert and well oriented. Rests of the physical examinations were normal. Plain CT brain revealed an ill defined heterogeneously hyper dense SOL in right parietooccipital lobe/trigone with mild perilesional edema and mass effects (Fig. 1a). MRI demonstrated enhanced clustered nodular lesions that appeared as a solitary heterogeneous mass of approx 77 × 41 × 54 mm centered at trigone of right lateral ventricle extending across parieto-occipital cortex with ventricular walls inseparable from parenchyma at places. Lesion showed hemosiderin residue and mass effects (Fig. 1 b-d and Fig.2). Routine chest x ray revealed an ill defined opacity in left lower lung zone (Fig. 3a). Further evaluation by CT detected an irregular mass lesion measuring approximately 50 × 50 × 36 mm in lower lobe of left lung and multiple other randomly distributed nodules in bilateral lungs (Fig. 3b-c). Considering size of the brain tumour and mass effects, surgical intervention via right parieto-occipital craniotomy was considered. Tumour excision revealed soft, suckable, highly vascular, pale white to yellowish tumor arising from right ventricle attached to choroid plexus and extending through cortex (Fig. 4). Histopathological examination with immunohistochemistry (IHC) showed metastasis from lung adenocarcinoma (Fig. 5). Patient was explained about the need for further management in cancer centre at the time of discharge.

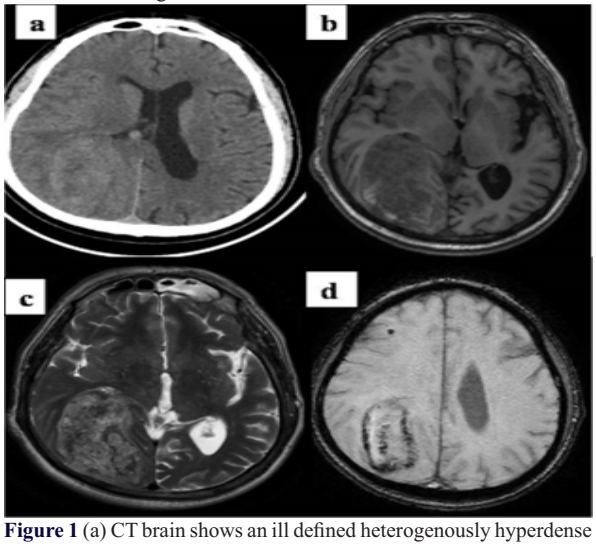

Figure 1 (a) CT brain shows an ill defined heterogenously hyperdense

SOL in right parieto-occipital lobe with effacement of ventricle. (b) Axial T1 and (c) Axial T2 MR Images respectively demonstrating an iso to hypointense and hyperintense mixed signal tumor in the right lateral ventricle trigone extending across parieto-occipital cortex. The trigone is distended. Lesion shows minimal vasogenic edema with hemorrhage. (d) Gradient echo (GRE) images shows hemosiderin residue in periphery and within the lesion.

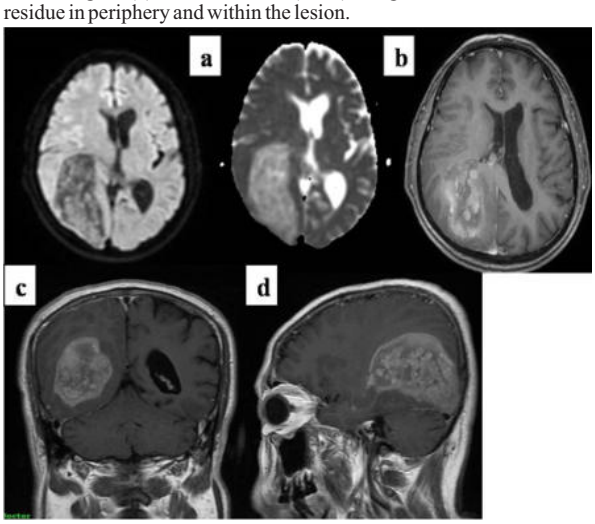

Figure 2 (a) DWI with ADC reveals mild restriction. (b) axial, (c) cor, (d) sag post contrast images demonstrating enhancing clustered nodular lesions appearing as a solitary heterogeneous mass of approx 77 x 41 x 54 mm with smooth and fairly well defined margins, centered at trigone of right lateral ventricle inseparable from CP, extending upto cortex. Mass effect is seen.

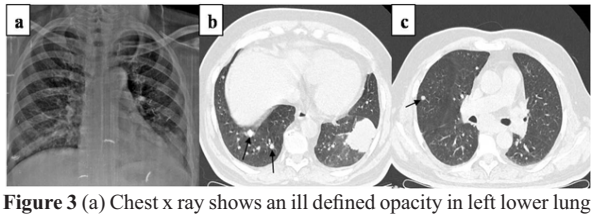

Figure 3 (a) Chest x ray shows an ill defined opacity in left lower lung zone (white arrow). (b)HRCT chest shows irregular mass lesion of approx 50 x 50 x 36 mm in lower lobe of left lung (black arrow head) along with multiple other randomly distributed nodules bilaterally [black arrows in (b) and ©].

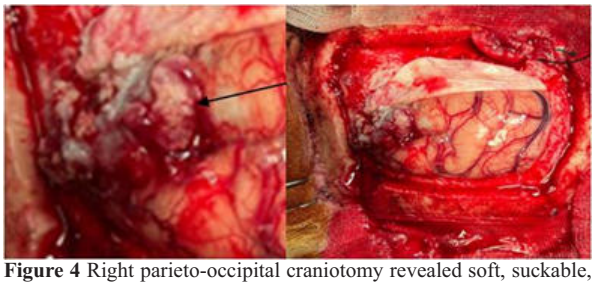

Figure 4 Right parieto-occipital craniotomy revealed soft, suckable, highly vascular, pale white to yellowish tumour arising from right ventricle attached to choroid plexus and extending through cortex.

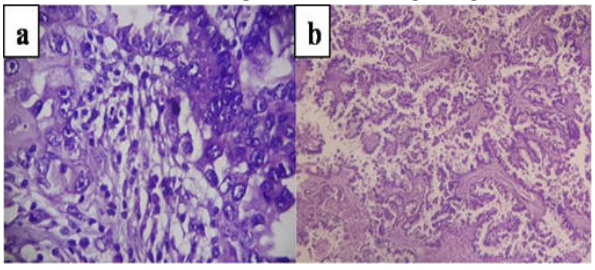

Figure 5 (a) and (b) Sections examined from paraffin blocks display metastatic deposits of cuboidal to low columnar tumor cells arranged in papillary and acinar architecture. The cells displayed moderate cytoplasm and round to oval hyperchromatic nuclei. On immunohistochemistry, tumor cells express CK-7, TTF- 1 and Napsin A.

DISCUSSION

Diagnosis of CP metastasis is often challenging particularly if the primary cancer is not known and often patients remain asymptomatic for a long period of time. Clinical features are non-specific and generally include headaches, nausea, vomiting, altered consciousness, obstructive hydrocephalus, motor weakness, cognitive impairment, ataxia and dizziness. Incidental diagnosis of CP metastasis during imaging is sometimes seen in few cases. In our case, the patient had vague headache and left sided weakness for a few months with no primary cancer diagnosis.

Radiological features of intraventricular lesions such as CP metastasis may be variable. Identification of exact location and number of lesions are crucial in the diagnosis and surgical or therapeutic planning of CP metastasis. Complications that may be seen in imaging includes hydrocephalus, hemorrhage, mass effect or local invasion. While imaging modalities such as CT scan and MRI are gold standards in the evaluation of CP metastases, however, enhanced contrast MRI is more sensitive than CT particularly in detection of small CP lesions. On non-enhanced CT, the lesions often appear hypo or isodense and may demonstrate moderate or marked contrast enhancement if contrast is used. On the other hand, on MRI, lesions may appear T1-isointense or hypointense, T2-hyperintense and post-contrast T1 strong enhancement [6]. Classically, CP metastasis originates from the third/lateral ventricle. In our case, both T1 and T2-weighted images showed isointense to hypointense and hyperintense mixed signals respectively in the right lateral ventricle trigone extending across parieto-occipital cortex and DWI with ADC revealed mild restricted diffusion. Differential diagnoses to be considered in case of intraventricular lesions are primary CP tumors (papilloma or carcinoma), diffuse hyperplasia, lymphoma and finally metastasis [7]. Histological feature most frequently observed is adenocarcinoma followed by squamous cell carcinoma and small cell carcinoma [5]. Similar observation was seen in our case where histopathological examination revealed adenocarcinoma.

Treatment modalities generally include surgical resection in case of a single lesion. Surgical approach can be challenging in case of multifocal metastases. Systemic chemotherapy, radiotherapy, hormone therapy or immunotherapy is considered in case of multifocal and bilateral lesions. Prognosis typically remains poor and survivality is about 12 months for lung cancer patients following CP metastasis [4].

CONCLUSION

There is an extremely rare seed-and-soil relationship between some cancers and CP. This is one of the limited case reports demonstrating this phenomenon. As it is so rare, CP metastasis is uncommon on the list of differential diagnosis of intraventricular tumors and biopsy is crucial for its diagnosis. Radiologists should be aware of this uncommon entity and in a patient with concomitant or previously diagnosed extra cranial malignancy CP metastasis should be included in the differential diagnosis of an intraventricular mass.

Acknowledgement

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