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(CASE REPORT)

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Multifocal intracranial meningioma coexiting with a transphenoidal meningocele of the Sella as seen on magnetic resonance imaging: A case report from a specialist hospital in Port Harcourt Rivers State, Nigeria

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Abstract

Meningiomas are frequently extra axial tumors and represent the most common tumor of the meninges. They are benign non- glial neoplasms which arise from meningothelial cells of the arachnoid membranes. However, they could be locally invasive and aggressive. They are classified into three grades according to the WHO, criteria, namely grade I (benign), grade II (atypical) and grade III (anaplastic). Atypical locations of meningioma (subcortical intra axial) have been reported. Our case study shows both the extra axial and intra axial locations. The latter represents a challenge in Radiological diagnosis because it could be taken as a metastatic tumor or a vascular malformation.

Our case study, is a 57year old woman who presented to the Radiology department for a brain magnetic resonance imaging (MRI) investigation on account of a 3year history of seizure disorder, headache and occasional irrational behavior as explained by her relative. The seizures are inconsistent in pattern, it could be generalized tonic clonic or focal (facial or limb twitches or abnormal movement of the head). Magnetic Resonance Imaging of the brain revealed a dura based homogenously enhancing, isointense subcortical mass at the right occipital lobe with marked vasogenic perilesional oedema. A similar but smaller lesion is seen at the parasagittal area of the frontal lobe.

Keywords: Meningioma; Intra-axial meningioma; Magnetic resonance imaging

1. Introduction

Meningiomas by definition are benign, typically slowly growing tumors of the cerebral meninges, specifically from the arachnoid or meningothelial cells.[1,2,3,4]They account for 35% of all primary intracranial neoplasms in the USA as reported by Central Brain Tumor Registry, and the most common tumor in adults[5]. Extra-axial location is the most frequent intracranial meningioma[3] Generally speaking, meningiomas have a dural attachment. Tumors without dural attachment are rare and are most commonly seen in the intraventricular and pineal regions and the sylvian fissure [6,7,8] Meningiomas are commoner in females 2:1, intracranial lesions are commoner than spinal lesions 4: 1 and it is uncommon before the age of 40.Therefore meningioma before the age of 40years should raise a suspicion of neurofibromatosis (NF2). Incidence of meningioma increases with advancing age and so meningiomas are most common in adults >65years. The vast majority are asymptomatic, thus 50% are diagnosed at autopsy[9,10,11]. The clinical presentation of meningiomas may include headache, paresis, change in mental status, seizures etc. with headache being the most common symptom/presentation.

Multifocal meningiomas (MM) is rare with an incidence of 1-10%. It has unique etiologies including sporadic, familial and radiation- induced and pose some challenges in radiological diagnosis as well as management. Patients with solitary

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meningioma run a risk of long-term impaired health related quality of life, despite being a generally benign tumor. The situation is even worse or less favorable for patients with multifocal meningioma. MM should be regarded as a chronic disease as in most cases the management goal is disease control as cure is seldom possible.

Meningiomas normally exhibit typical radiological characteristics that facilitates its diagnosis on MRI and CT (Computed axial tomography)[1]

Aim/objective

To report the existence of this disease entity, multifocal meningioma with transsphenoidal meningocele of the sella in our environment as well as further consolidate on the already existing knowledge of the invaluable use of Magnetic resonance imaging in the detection of soft tissue pathologies of the brain especially as MRI is the best imaging modality for the assessment of soft tissue.

2. Case report

Our case study is a 57year old woman who presented with a 3year history of seizure of sudden onset, headaches and occasional irrational behavior. The seizure started with just facial twitch and uncontrollable movement of the head and later progressed to involve the limbs and at times generalized tonic clonic pattern was also noticed. On physical examination, patient's condition was stable, vital signs were normal and throughout her stay in the MRI suite there was no seizure. No tell- tale signs of possible injuries during seizure episodes. When we enquired about the last episode of seizure we were told it was two weeks before she presented at the Radiology department of the hospital.

MRI of the brain revealed an isointense, fairly well defined homogenously enhancing mass with a dural tail and some reaction at the adjacent diploe space in the right occipital lobe. An associated marked vasogenic perilesional oedema was noted in the right parieto-occipital region, with effacement of the right lateral ventricle and midline shift to the left. The mass is mixed intensity on T2W and STIR sequence.

A similar but smaller lesion is seen in the parasagittal region of the frontal lobe.

A well-defined lobulated cystic mass is seen in the Sella, it is hypointense on T1W, and FLAIR, hyperintense on T2W sequences -CSF signal intensity. The pituitary gland was not visualized in the sella. In lieu of the marked vasogenic edema herniation of the meninges into the sella is for first consideration of the origin of the cystic sella mass.

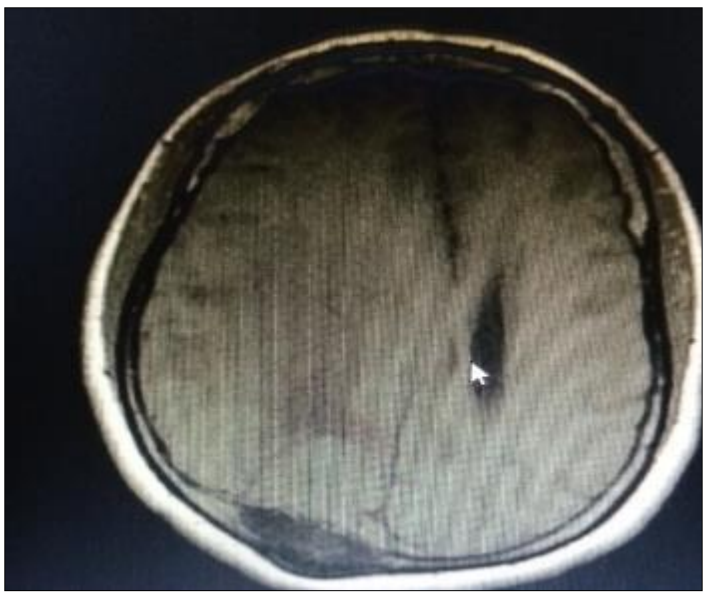

Figure 1 Axial T1W image showing a well-defined broad based isointense white matter extra-axial mass with marked hypointense vasogenic oedema in the right parieto-occipital region and effacement of the ipsilateral lateral ventricle alongside midline shift to the contralateral side. Note dilatation of the contralateral lateral ventrile and hyperostosis of the bone adjacent to the mass(single view/close up view)

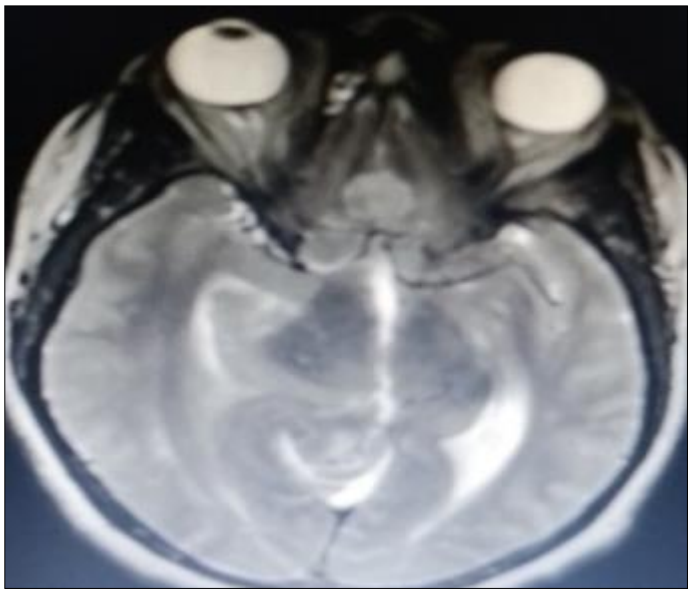

Figure 2 An axial T2W image showing the parasagittal roundish hyperintense lesion a single/close up view

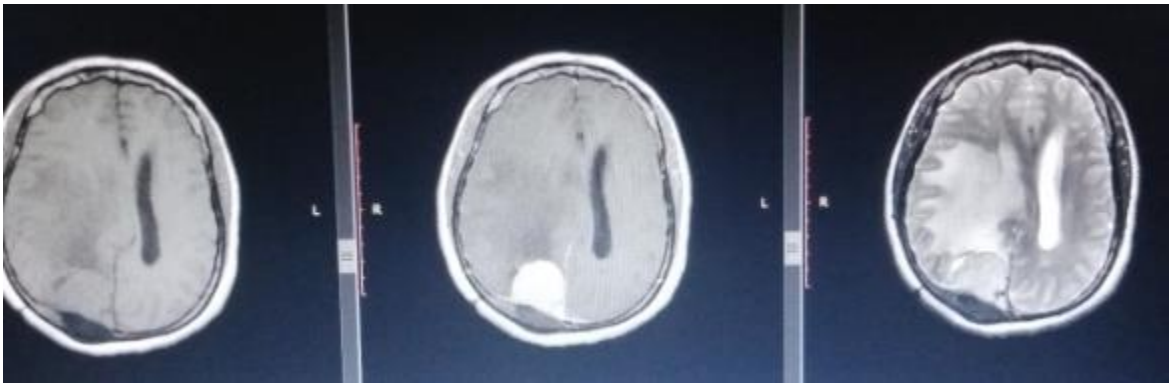

Figure 3 Axial images showing a broad based well defined brilliantly enhancing isointense mass to white matter with a dural tail in the right occipito-parietal region. Noted associated marked perilesional oedema with effacement of adjacent sulci and gyri as wellas the ipsilateral lateral ventricle. (Images sequences are T1W, T1W+C, T2W)

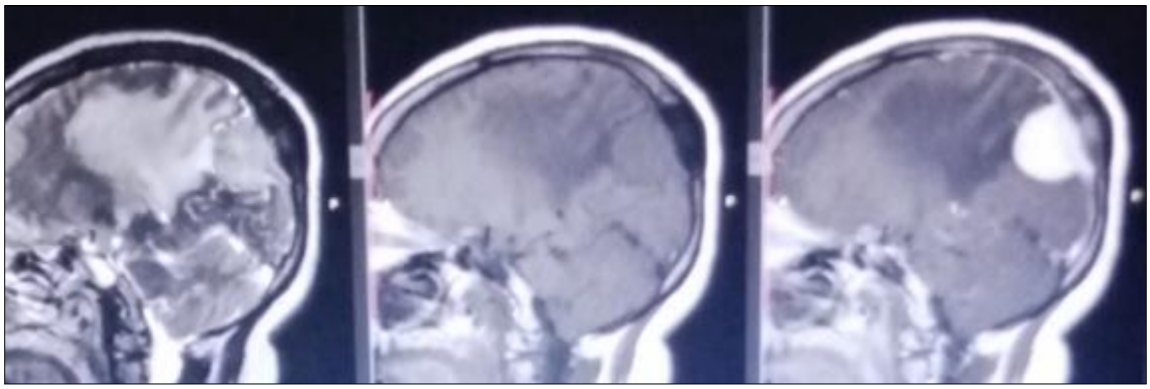

Figure 4 Sagittal views of the previously described images (Images sequences T2W, T1W, T1W+C)

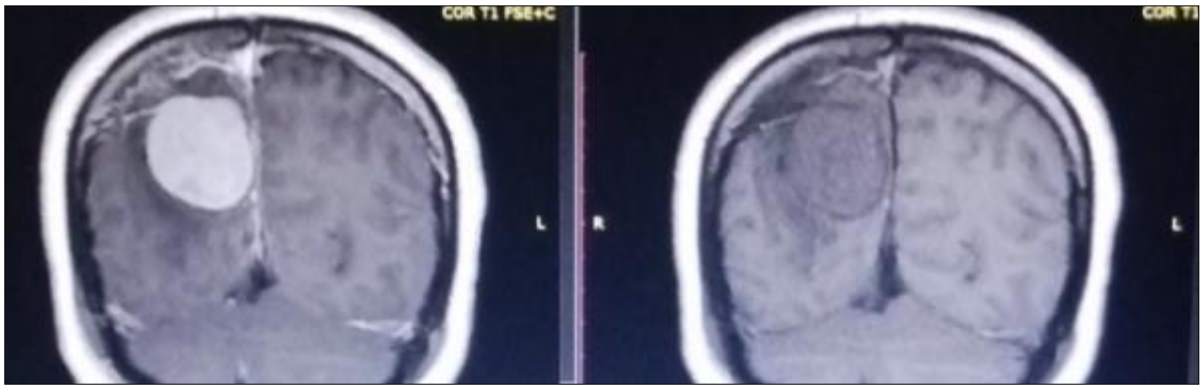

Figure 5 Are coronal views of the previously described image-T1W+C and T1W

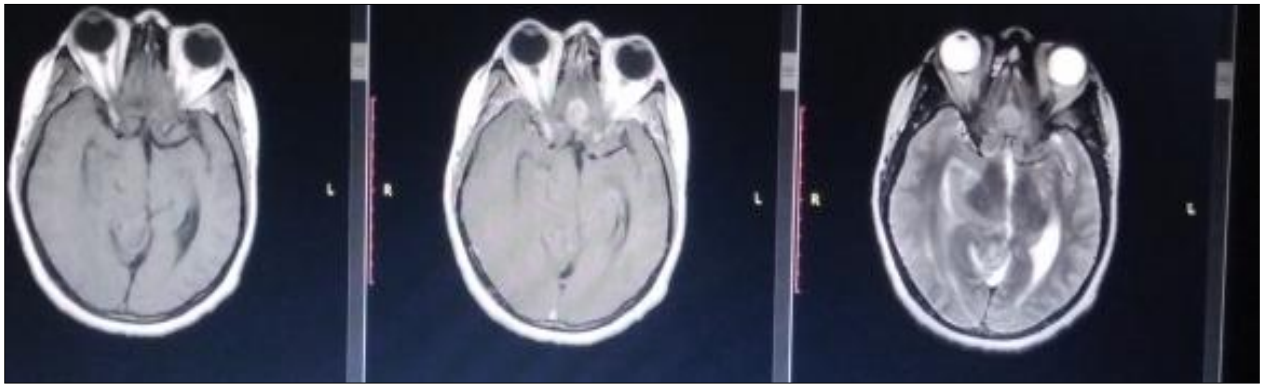

Figure 6 Showing a homogeneously enhancing isointense to white matter parasagittal lesion with minimal perilesional oedema. The aforementioned lesion is hyperintense on T2W. (Images sequences are T1W, T1W+C and T2W)

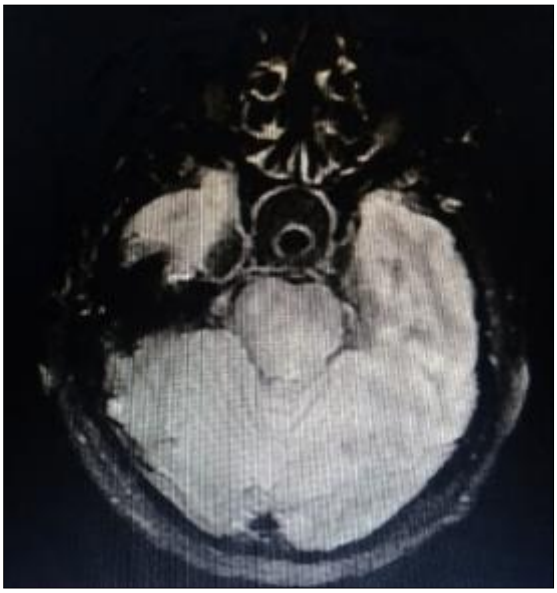

Figure 7a Is an axial flair sequence image showing the transphenoidal meningocele which is hypointense

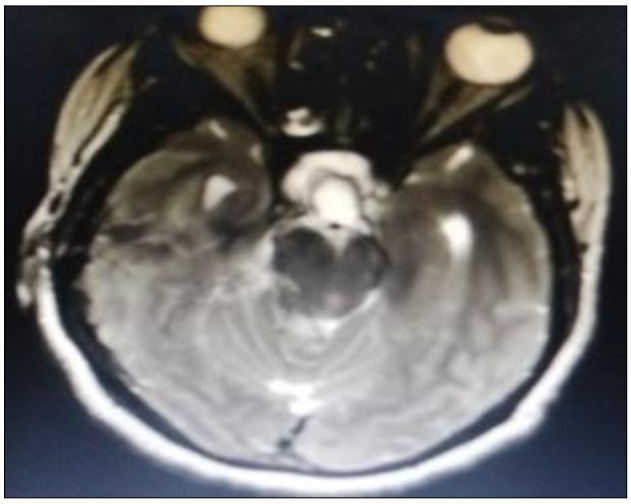

Figure 7b This is an axial T2W sequence image of Fig.7a

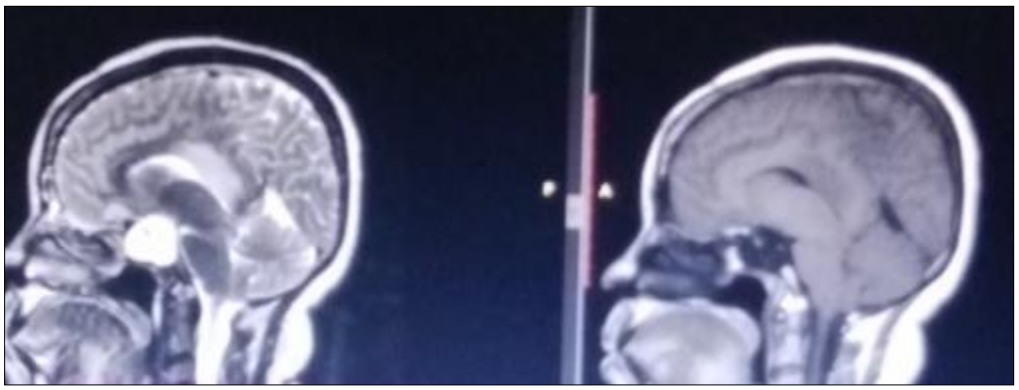

Figure 8 Are sagittal T2W and T1W images of the transphenoidal/pituitary lesion which hyperintense on T2W and hypointense on T1W

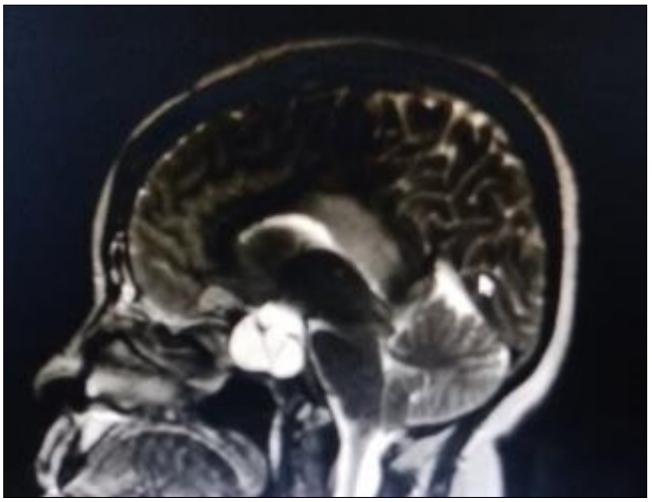

Figure 9 Is a close view sagiital T2W sequence image showing the transphenoidal/pituitary lesion which is hyperintense.

3. Discussion

Meningiomas are the most common primary brain tumors in adults, representing approximately a third of all intracranial neoplasms. 37.6% of all primary brain tumors in adults are meningioma. In Central Brain Tumor Registry of the United States an incidence of 8.83% per 100,000 has been reported[12,13] . The median age of diagnosis of meningioma is 65years, likely due to increasing incidence of meningioma due to advancing age. Frontal meningiomas especially large tumors may present with altered personality/mental status as is the case in our case study. This could lead to misdiagnosis of dementia or severe depression[14]

Meningiomas are best diagnosed with cross sectional images like MRI and CT, because of better soft tissue contrast as seen in MRI, as well as the ability to use contrast media in these modalities which will further improve visibility for better characterization. Angiography as in MRA/DSA, are also helpful in the proper diagnosis of meningioma.

There are a few helpful imaging signs which could be seen in meningioma: dural tail, white matter buckling, mother in-law sign, CSF cleft sign, sunburst or spoke wheel appearance etc. The latter is seen on MRA/DSA. The CSF cleft sign is non-specific for meningioma but helps to establish that the mass is extra axial. Loss of this can be seen in grade ii and iii types of meningioma.

Vasogenic edema could be associated with meningioma, more than half of meningiomas demonstrate a variable amount of edema in adjacent brain parenchyma[15]

Radiological appearance of meningiomas includes:

3.1. MRI

T1W-They are predominantly isointense (60-90%) to grey matter. About 10% are hypointense.

T2W/ FLAIR- They are usually hyperintense but could be heterogeneous in signal intensity.

On contrast administration, they show avid homogenous enhancement.

4. Conclusion

This case report has shown that multiple meningioma which is a rare presentation on its own, can also coexist with trans-sphenoidal meningocele. This goes to show the superiority of MRI in modern day medical practice in the diagnosis of CNS tumors.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Verbal/written consent was obtained.

Authors contribution

CW- Manuscript conceptualization, reviewed the manuscript, performed and interpreted the radiological studies, VNA-Manuscript conceptualization, reviewed and edited the manuscript, also assisted with the interpretation of the radiological studies.

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