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Article

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Cystic meningioma: unusual entity with review of literature

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Abstract: Cystic meningioma is a relatively rare condition, radiological appearance of the cystic-solid components of the mass may create a diagnostic dilemma. The presence of a cyst is not a common imaging feature and this makes it difficult to differentiate it from hemangioblastoma, craniopharyngioma, metastasis and gliomas. Cystic meningiomas are present more commonly in children. We present a 60 year old male who presented with seizures and frontal lobe signs. The lesion was suspected as glioma however, postoperative histopathological examination demonstrated as meningioma. Patient showed remarkable recovery after surgery. Complete cyst resection should be considered if it is technically feasible and safe.

Key words: Cystic meningioma. Cystic Brain Tumor, Meningioma

Introduction

Meningiomas account for nearly 15% of all intracranial tumors and are the common extra-axial tumors as well as the most common intracranial non glial tumors. Most of them are benign, although atypical and malignant forms of meningiomas also exist.(5) Cystic meningioma is a relatively rare condition accounting for 2% to 4% of all intracranial meningiomas. (8) Meningiomas with cystic component mimic metastatic lesions or malignant gliomas often causing diagnostic dilemma. The presence of a cyst is not a common imaging feature and this makes it difficult to differentiate it from hemangioblastoma, craniopharyngioma, metastasis and gliomas. (10) The other confounding feature is the presence of peri tumoral edema. We hereby report a case of cystic meningioma, along with review of literature.Case History

60 year male, with no comorbidities presented with history of frontal headache, memory disturbances of six months and behavioural changes in the form of agitation, irrelevant talks and use of abusive language of four months duration. There were two episodes of generalized tonic clonic seizures. No h/o blurring of vision or vomiting. On examination patient was hemodynamically stable. Neurologically his GCS was E4V4M6 with no cranial nerve involvement. There

were no motor or sensory deficits. His Mini mental score was 8/30

MRI brain Fig - (1A &1B) showed Solid cystic mass lesion measuring 42.3 x 60.9 x 43.7 mm in the right superior and middle frontal gyrus. Solid component was hypointense in T1W, mildly hyperintense on T2W with presence of perilesional edema. Contrast MRI showed enhancement of solid part with septal enhancement of cystic component. There was thick, smooth dural enhancement of the frontal lobe. The lesion was abutting lateral wall of anterior 1/3rd of superior saggital sinus (Fig 1-B & C). MRS showed increased choline to creatine ratio.

Patient underwent Rt fronto-temporal craniotomy with gross total excision of tumor.

Intraoperativaly lesion had well defined tumor brain interface. Cystic component was in posterolateral aspect. The tumor was moderately vascular non suckable with base infiltrating convexity dura. A thin sleeve of tumor over the anterior 1/3rd of superior saggital sinus was cauterized.

Post op CEMRI Brain (Fig 2A & 2B) showed minimal residual tumor along the wall of superior sagittal sinus. Postoperative recovery was uneventful and patient discharged on 8th post op day. MMSE Score improved to 27/30 at the time of discharge. Patient is on regular follow up and doing well.

Histopathology showed Meningothelial meningioma WHO grade-1.

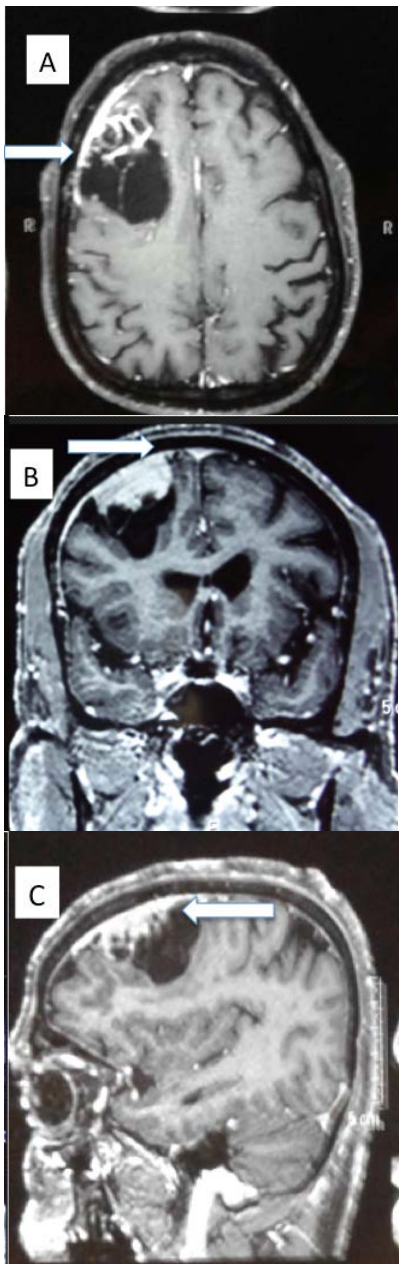

Figure 1 – Contrast MRI Brain (A) axial cut- (white arrow) showing solid and cystic componant. (B) coronal & (C) sagital cut (white arrow) - lesion abutting superior sagital sinus

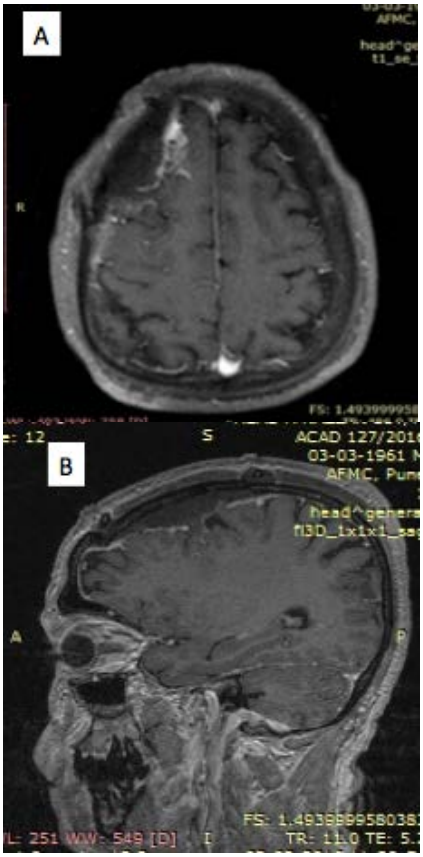

Figure 2 - Post operative contrast MRI A(axial) & B (sagital)– showing complete excision of the tumor

Discussion

The term "cystic meningioma" has been used to describe meningiomas having cysts intratumoral or peritumoral. (5) Rengachary et al. described two varieties 1) intratumoural cysts and 2) peritumoural cysts, based on meningothelial cell lining of the cyst. (8) These are more common in paediatric patients than in adults. In adults, cystic components are found in only about 3-7 % of cases as was seen in our patient.(12) The most common location is the frontoparietal region. (4) Large cystic meningiomas are usually difficult to differentiate from gliomas, intracranial abscesses, hemangioblastomas and metastatic lesions. (13)

The underlying mechanism of cyst formation remains unclear. Penfield was the first to describe cyst formation in a meningioma. According to Fortuna et al. (1) Intratumoral cysts are the outcome of cystic degeneration, ischemic necrosis, or hemorrhage within the tumor. In addition, transudation or secretory changes within the meningioma may also lead to the formation of cysts.(7) A peripheral cyst, on the other hand, may represent either peripheral degeneration or an arachnoid cyst.(2)

Nauta et al. in 1979 described four types of relationship between cyst and tumor in cystic meningiomas: (6)

a)A centrally located intratumoral cyst that is surrounded by macroscopic tumor throughout,

b)A peripherally situated intratumoral cyst

c)A peritumoral cyst that actually lies within the adjacent brain

d)Peritumoral cyst at the interface of tumor and brain.

Worthington et al (11) then added a fifth type to the Nauta classification: Type V, in which the cysts enclosed the tumor nodule with the neoplastic cells on the cystic wall. Our case was probably a Nauta type II as had a peripherally situated intratumoural cyst.

Patients of cystic meningioma have a clinical presentation similar to classical meningiomas. Symptoms can vary from features of raised Intra cranial tension, seizures, headache or neurological deficits.

Since most of the meningiomas are of extra axial origion, preoperative CEMRI brain

remains the gold standard for diagnosis. FDG PET though useful in differentiating atypical meningiomas from low grade meningiomas , has a little role in diagnosis of cystic meningioma.(9) Notably, atypical meningiomas have the tendency to form a cyst, as opposed to other subtypes of meningioma. The most frequent histological subtype has been found to be the meningothelial subtype. Our case also had similar histology. (10)

Treatment and prognosis depend on a various factors, such as histological subtype, tumor location, age of the patient, and comorbidities. Patients can be followed with serial MRI to assess for growth of tumor if the tumor is small and patient is asymptomatic.(5) Most of the benign meningiomas, depending up on location and accessibility, can undergo a safe total resection. In cases of malignant meningiomas, in addition to resection, combination of radiation and chemotherapy (Adriamycin and Dacarbazine or Ifosfamide and Mesna) as adjuvant therapy has shown to increase median survival up to 3 years. (3)

Conclusion

Some of meningiomas are associated with diagnostically confusing cysts. Cystic meningiomas are present more commonly in children. In spite of the various MR imaging features, cystic meningioma may present with diagnostic dilemmas. Their differentiation from the more common gliomas, abscesses, hemangioblastomas and metastases is sometimes difficult. It is advisable to excise it completely as leaving behind cystic components can lead to recurrence of a potentially curable tumor.

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