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Pericallosal lipoma with corpus callosal dysgenesis in an elderly patient: A rare case report

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Clinical history: A 55 year old female patient came to the neurology OPD with complaints of giddiness since 1month and vomiting since 15 days. There was no history of focal neurological deficit/ fever/ seizures/ headache/visual disturbances. No history of any co-morbidities. Neurological examination was normal.

Imaging:

Plain CT and MRI study of the brain was done for the patient using using 128-slice MDCT scanner (Ingenuity core 128 v3.5.7.25001; Philips healthcare) and Philips Ingenia 3T MRI machine respectively. The study showed the following imaging findings –

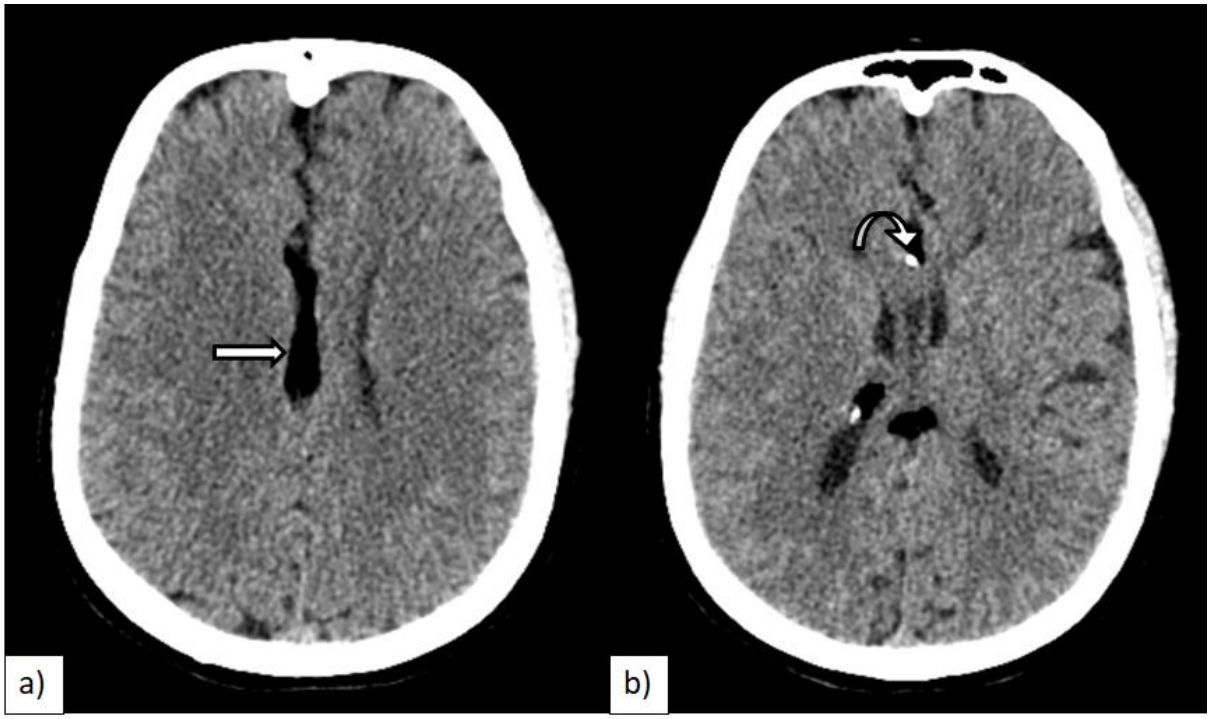

Figure 1: NCCT Axial images of brain – a) Homogenous and well circumscribed fat-density mass lesion in the pericallosal area and interhemispheric fissure (straight arrow). b) The lesion is showing extension into right lateral ventricle with foci of peripheral calcification (curved arrow).

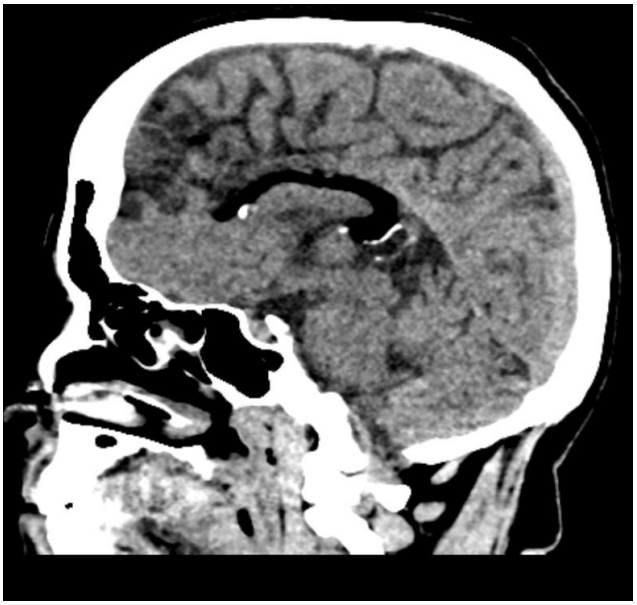

Figure 2: NCCT Sagittal image of brain – Curvilinear fat density lesion in the pericallosal area with foci of peripheral calcifications.

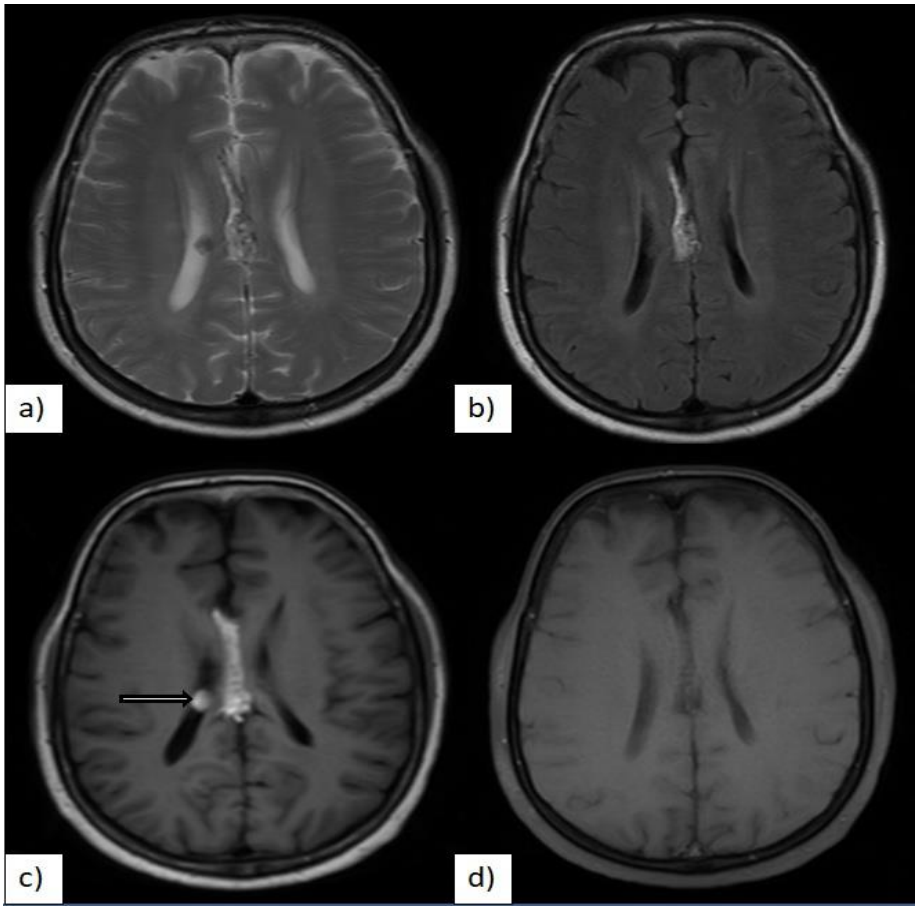

Figure 3: a),b) & c) - Axial T2W, FLAIR and T1W images demonstrate linear well-defined hyperintense lesion in the interhemisphere region and extension to right lateral ventricle (Arrow). d) Axial T1W- FS image- the lesion demonstrates complete suppression of the T1 hyperintensity – consistent with fat attenuation.

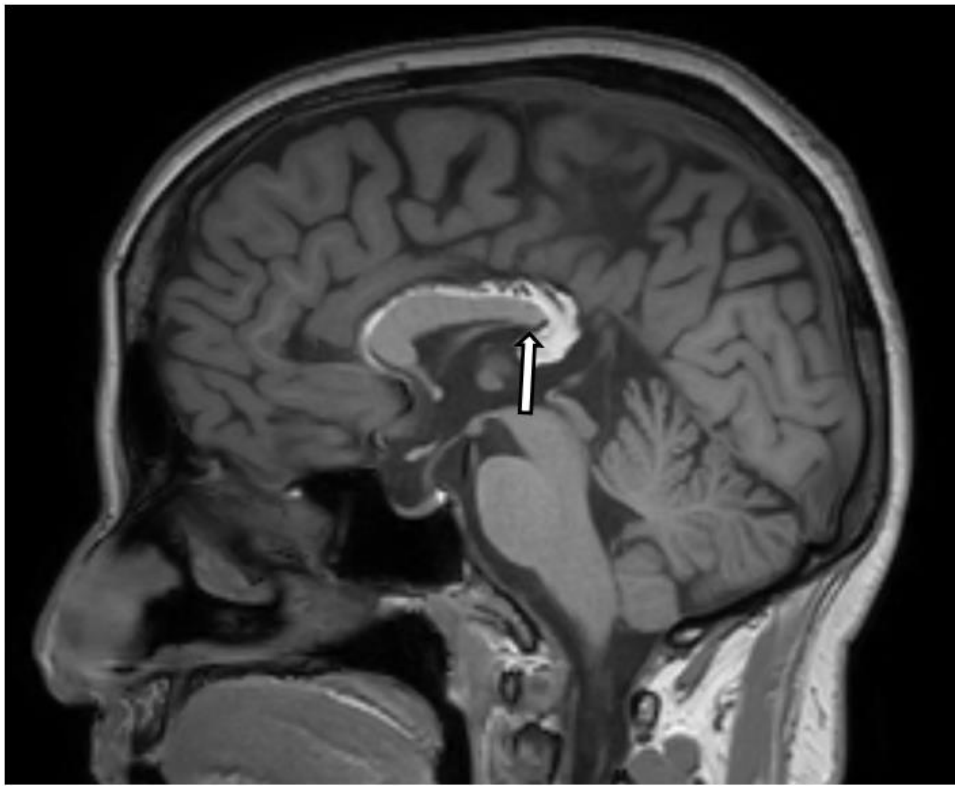

Figure 4 : T1W mid-sagittal image of brain - Curvilinear T1 hyperintense lesion in the pericallosal area with absent splenium of corpus callosum(arrow).

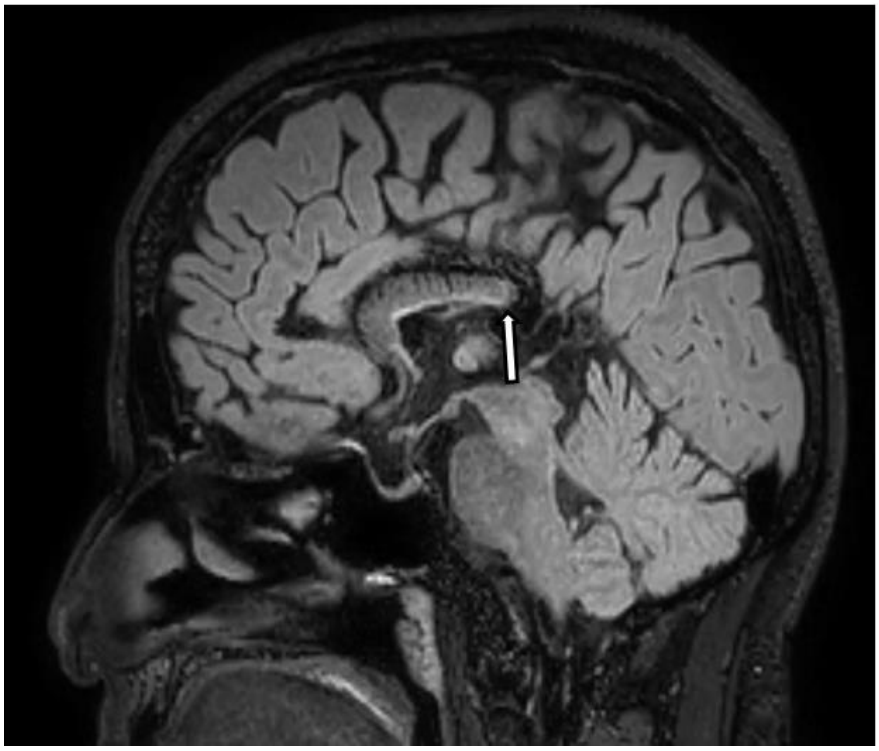

Figure 5: FLAIR-FS mid-sagittal image of brain - **A**bsent splenium of corpus callosum(arrow)- consistent with corpus callosal dysgenesis.

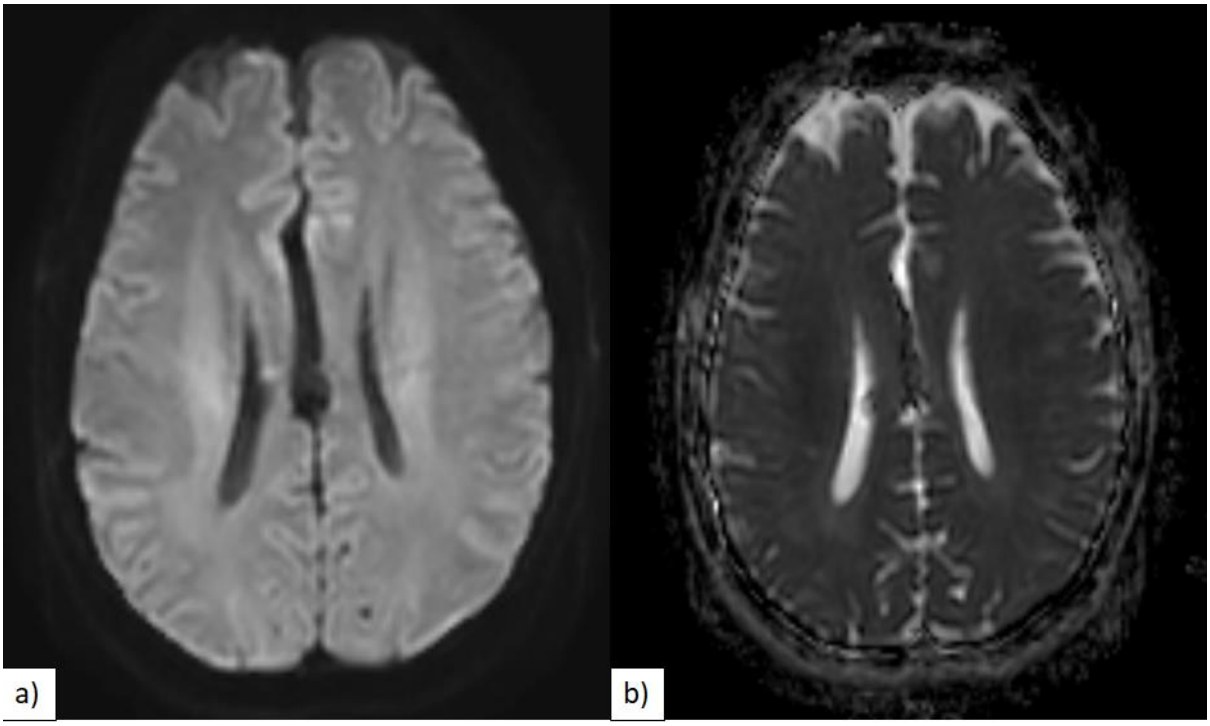

Figure 6 (a and b): - DWI and ADC axial images demonstrate no restricted diffusion in the lesion.

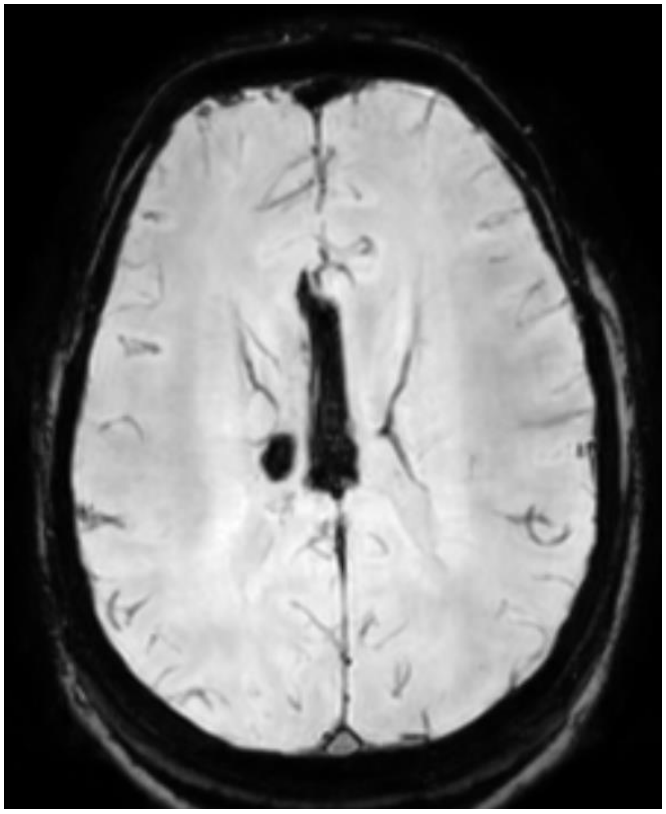

Figure 7: GRE axial image demonstrates blooming in the lesion and in right lateral ventricle.

Final diagnosis: Fat attenuation lesion in the pericallosal and interhemispheric region with intraventricular extension and peripheral calcifications; Non-visualisation of the splenium of corpus callosum – S/o Pericallosal lipoma with corpus callosal dysgenesis.

Differential diagnosis:

- Dermoid cyst
- Teratoma

Discussion:

Pericallosal lipomas are rare, fat-containing asymptomatic lesions that are generally considered as congenital malformations.

Epidemiology:

Intracranial lipomas represent only 0.1-0.5% of all intra-cranial tumours[1]. The most common location is the interhemispheric fissure intimately related to the corpus callosum and are associated with varying degrees of dysgenesis of corpus callosum. Pericallosal lipomas constitute the commonest variety of all intracranial lipomas (40%-50%) [2] and are found in all age groups, without sex predilection.

Etiopathogenesis:

Pericallosal lipomas are considered to be the consequence of abnormal resorption of the meninx primitive. If primitive meninges persists longer instead of being resorbed between 8^{th} and 10^{th} week of development, it differentiates into mature lipomatous tissue. Such malformations can develop in all the cerebral cisternae, but more frequently occur in the area of corpus callosum. Therefore, anomalies of development of corpus callosum almost always co-exist.

Clinical presentation:

Most pericallosal lipomas are usually asymptomatic. Symptoms if present, are pertaining to the local mass effect. They can also present with seizures, headache, psychomotor retardation, clumsiness, diplopia, vertigo and monoparesis.

Pericallosal lipomas can be morphologically classified as tubulonodular and curvilinear types. Tubulonodular lipomas are anteriorly located, rounded or lobular and are generally >2 cm thick. They have a high incidence of corpus callosal dysgenesis, frontal lobe anomalies, and encephaloceles. Curvilinear lipomas are

posteriorly located, more extensive and measure <1cm thick. They usually present with a normal corpus callosum and a low incidence of associated anomalies.

Imaging features:

- Ultrasound:
    - The characteristic appearance of fat as a hyperechoic midline mass in the region of corpus callosum.
- CT Findings:
    - Smooth contoured, homogenously hypoattenuating masses with fat density (-40 to -100 HU). Peripheral calcifications may be present, sometimes referred to as bracket sign on coronal images. CT angiography may be indicated to identity other associated anomalies such as vascular malformations or aneurysms.
- MRI Findings:
    - MRI is the most important modality for differential diagnosis and identification of associated congenital malformations.
    - T1W – Homogenously hyperintense with attenuation of signal on fat suppression sequences.
    - T2W and FLAIR - They appear heterogeneously hyperintense.
    - Gradient sequence- can produce blooming due to susceptibility artefact. Presences of calcification can also showing blooming.
    - DWI – No restricted diffusion
    - Post contrast T1W - They do not enhance after i.v. gadolinium injection. Sometimes central flow voids representing pericallosal arteries coursing through the substance of the tumour may be seen.

Treatment:

Pericallosal lipomas are usually asymptomatic and are slow growing tumours. Neurosurgical intervention is generally not required and it should be limited depending on the patient's symptoms, surgical feasibility, and associated malformations. A surgical approach should be considered in epileptic patients who do not respond to medical management [3]. Imaging follow up is also not required.

Teaching points –

- Pericallosal lipomas are the most common intracranial lipomas and are associated with varying degrees of dysgenesis of corpus callosum.
- Most of them are asymptomatic and slow growing tumours requiring no treatment.
- They develop due to abnormal resorption of the meninx primitive and can be either tubulonodular or curvilinear in morphology.
- MRI is the most convenient modality for the diagnosis of pericallosal lipomas and the identification of associated congenital malformations.

References:

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2. Elhend SB, Belfquih H, Hammoune N, Mouhsine A. Lipoma with agenesis of corpus callosum: 2 case reports and literature review. World Neurosurgery. 2019 May 1;125:123-5.
3. Hassan Q. Pericallosallipoma and agenesis of corpus callosum with associated lipoma of choroid plexus: A rare case report and review of literature. International Journal of Radiology. 2016 Sep 13;3(3):120-3.