

A case of cerebral hemi atrophy with associated mesial temporal sclerosis in a child.

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Section: Paediatric radiology

Area of Interest: Neuroradiology brain

Procedure: Education

Imaging Technique: MR

Special Focus: Congenital Case Type: Clinical Cases

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Patient: 10 years, female

Clinical History:

A 10-year-old female presented with complaints of convulsion for the last 3 years, delayed development and cognitive dysfunction. She was evaluated with magnetic resonance imaging of the brain.

Imaging Findings:

MRI findings of the brain include diffuse right cerebral hemiatrophy as suggested by paucity of white matter, dilatation of ipsilateral lateral ventricle, prominence of cerebral sulci and sylvian fissure (Fig.1-6). There is mild atrophy of contralateral cerebellar hemisphere (Fig.1, 5, 6).

Right side Mesial Temporal Sclerosis is seen evidenced by atrophy of right hippocampus.(Fig.6)

Discussion:

Cerebral hemiatrophy occurs due to a variety of conditions which cause atrophy of any one cerebral hemisphere. Aetiologically it is divided into congenital and acquired. The congenital variety is originated in utero while the acquired variety occurs early in life. The acquired variety includes many causes such as ischemia, hypoxia, trauma, postictal, Sturge-Weber syndrome, Rasmussen encephalitis [1, 2]. Another entity, the Dyke-Davidoff-Masson syndrome (DDMS), refers to atrophy or hypoplasia of one cerebral hemisphere (hemiatrophy) which is secondary to brain insult in the fetal or early childhood period and leads to unilateral thickening of the calvarium, overdevelopment of the para nasal sinuses and elevation of the petrous ridge. These findings can also be seen on conventional plain radiography of the skull and CT. These changes occur only when the brain insult occurs before the age of 3 years [3]. Cerebral hemiatrophy can also be associated with ipsilateral secondary Mesial Temporal Sclerosis [1].

Symptoms of cerebral hemiatrophy include seizures, cognitive, behavioral abnormality and hemiplegia. Mental retardation may or may not be present [1-4].

Diagnosis of cerebral hemiatrophy is made on MRI by the characteristic imaging features of reduction in the volume of cortex and enlargement of ipsilateral lateral ventricle. There may be associated mild contralateral cerebellar atrophy. It should be differentiated from hemimegalencephaly and gliomatosis cerebri.

In our patient, there were no features of Dyke-Davidoff-Masson syndrome which suggests that the insult occurred

after 3 years of age. There was no history of trauma, no history of birth asphyxia, no evidence of port-wine stain to suggest Sturge-Weber syndrome, no past history suggestive of meningitis or encephalitis, no history of any focal neurological deficit. Intracranial vessels show normal flow voids on T2 weighted images. There was no history of any stroke-like episode and no history to suggest cerebral hypoxia. The cerebral hemiatrophy in this patient may be attributed to prolonged convulsions as a diagnosis of exclusion.

Management is usually symptomatic with treatment of convulsion. Other management is occupational therapy, behaviour therapy and physiotherapy.

Differential Diagnosis List: Cerebral hemiatrophy with right sided Mesial Temporal Sclerosis, Dyke-Davidoff-Masson syndrome, Hemimegalencephaly, Gliomatosis cerebri

Final Diagnosis: Cerebral hemiatrophy with right sided Mesial Temporal Sclerosis

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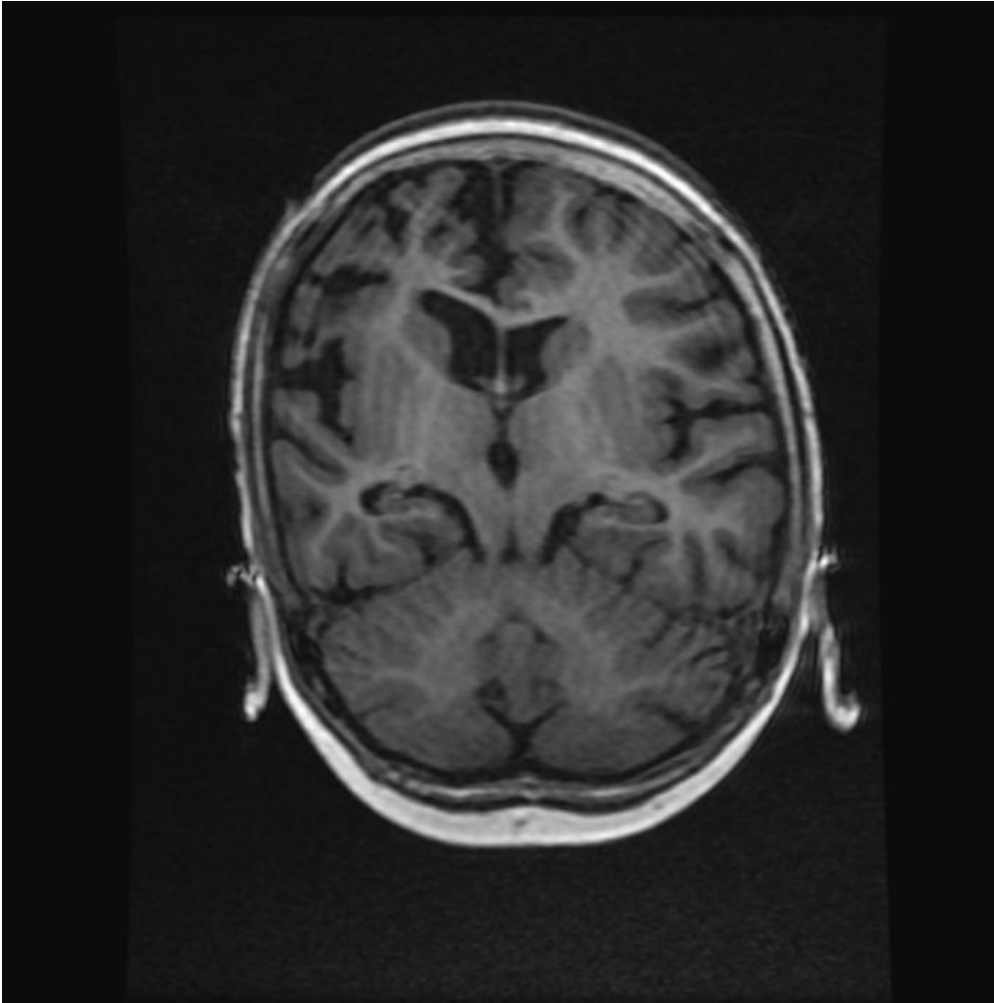
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Figure 1

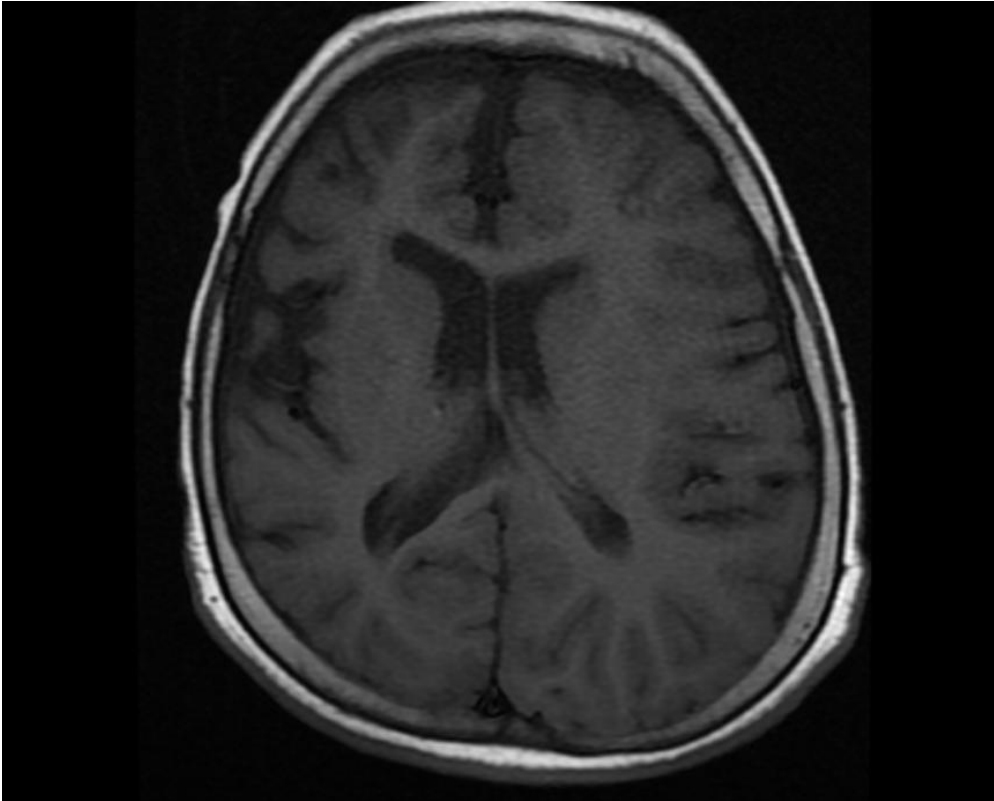
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Description: Coronal T1W Inversion Recovery image shows right cerebral hemiatrophy as evidenced by paucity of white matter, focal dilatation of right lateral ventricle, prominence of cerebral sulci and sylvian fissure. **Origin:** Radiology department, P.D.U. Medical college and hospital ,Rajkot.

Figure 2

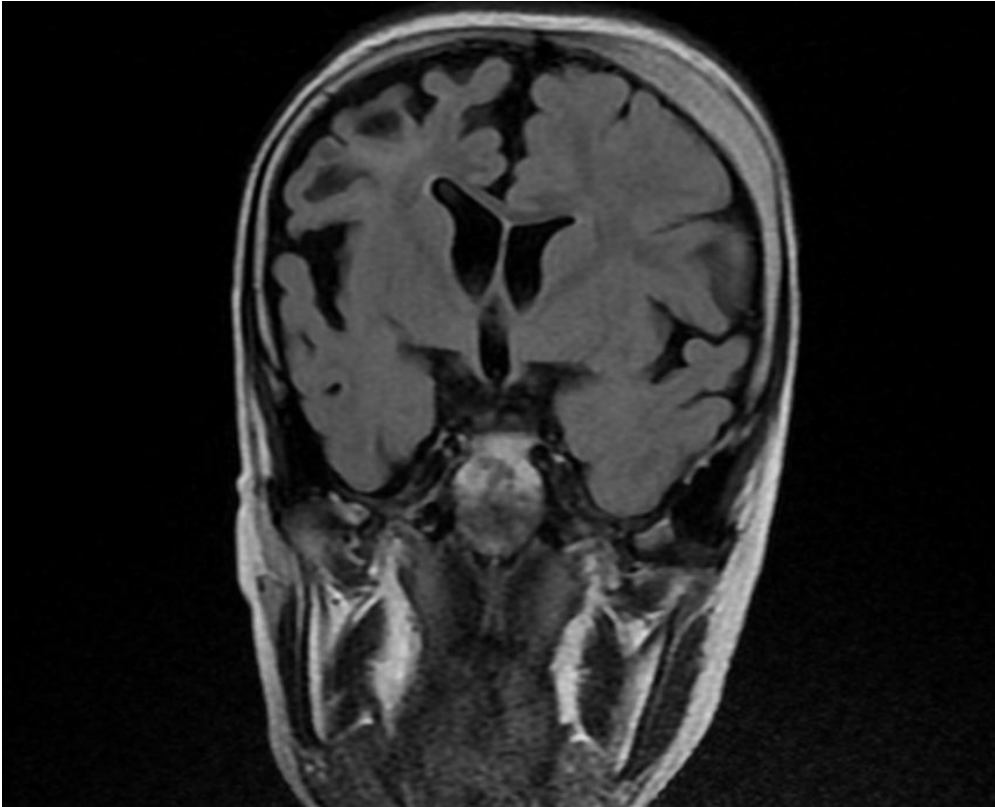
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Description: Axial T1W image shows right cerebral hemiatrophy as evidence by focal dilatation of right lateral ventricle, prominence of cerebral sulci and sylvian fissure. **Origin:** Radiology department, P.D.U. Medical college and hospital ,Rajkot.

Figure 3

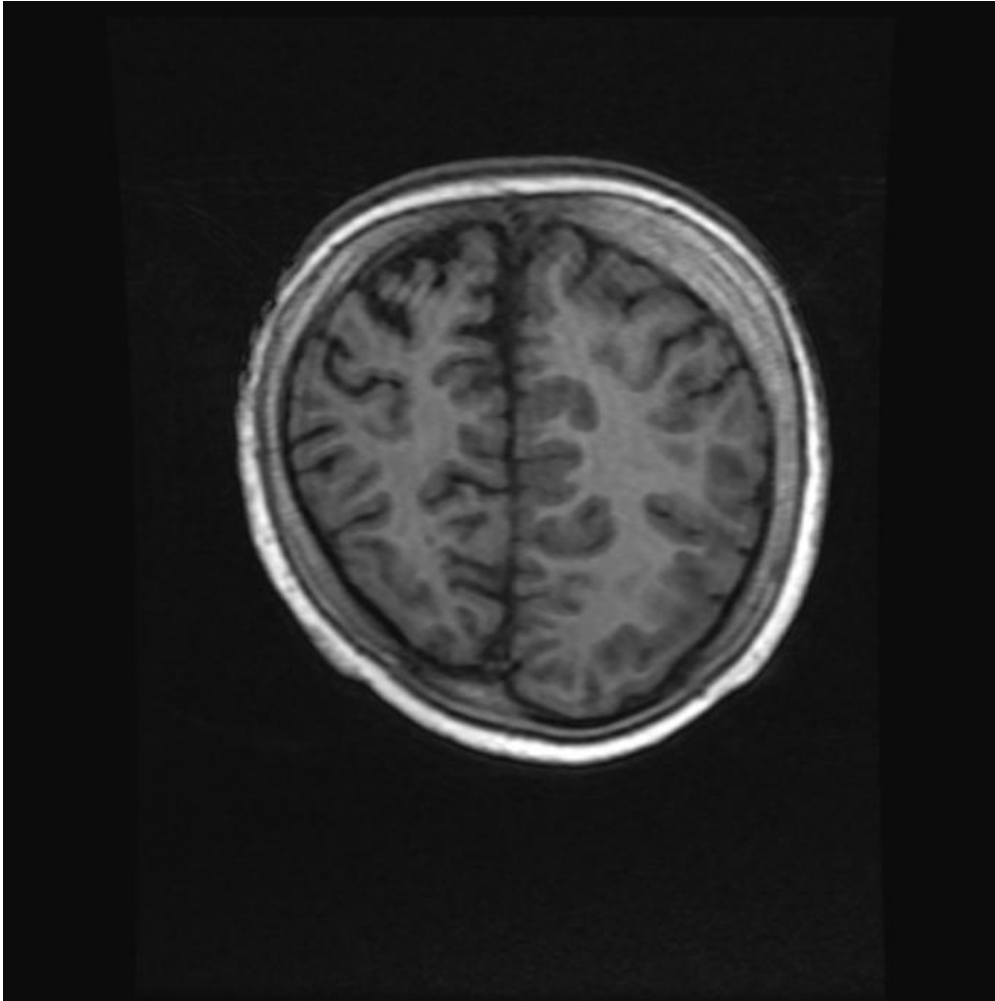
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Description: Coronal T1W Inversion Recovery Image shows atrophy of right parieto-temporal lobe with dilated ipsilateral lateral ventricle. **Origin:** Radiology department, P.D.U. Medical college and hospital ,Rajkot.

Figure 4

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Description: Oblique coronal T1W Inversion Recovery image shows right cerebral hemiatrophy.

Origin: Radiology department, P.D.U. Medical college and hospital ,Rajkot.

Figure 5

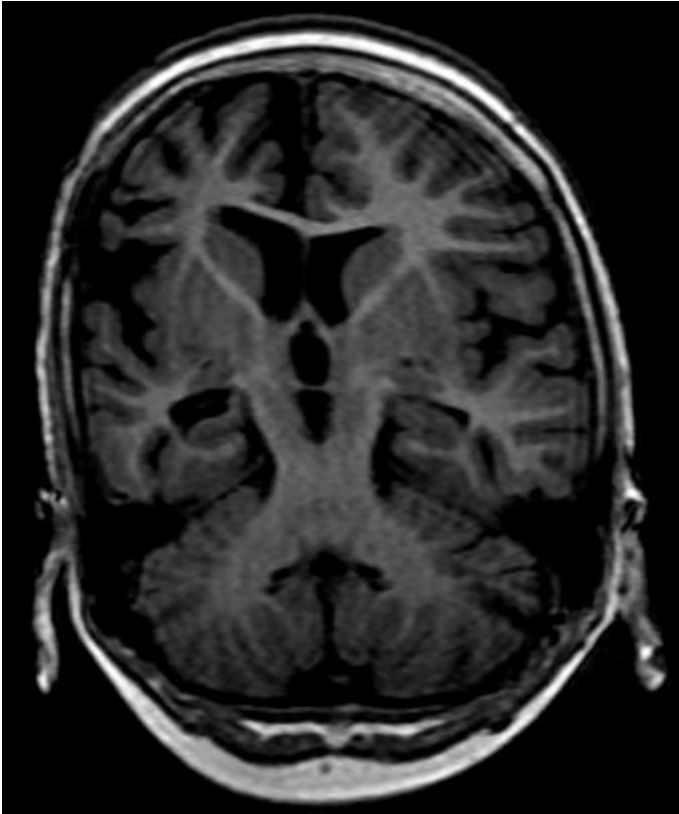
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Description: Axial T2WI at level of cerebellum shows prominent cerebellar sulci in left cerebellar hemisphere suggestive of mild cerebellar atrophy. **Origin:** Radiology department, P.D.U. Medical college and hospital ,Rajkot.

Figure 6

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Description: Coronal T1W Inversion Recovery image perpendicular to long axis of hippocampus shows atrophy of right hippocampus and right cerebral hemisphere. Prominent cerebellar sulci are seen in left cerebellar hemisphere. **Origin:** Radiology department, P.D.U. Medical college and hospital ,Rajkot.