Case 1080

Eurorad

Subcortical gray matter heterotopia causing extensive ventricular indentation

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Section: Neuroradiology
Imaging Technique: MR
Case Type: Clinical Cases
Authors: S. Cakirer (1), O. Kilickesmez (2)
Patient: 7 years, female

Clinical History:

A 7-year-old girl referred with partial complex epilepsy, right sided hemiparesia and mental motor retardation since the age of one year-old.

Imaging Findings:

A 7-year-old girl referred with partial complex epilepsy, right sided hemiparesia and mental motor retardation since the age of one year-old. MRI study of the cranium with SE T1, FSE T2, FLAIR sequences on three planes was performed. MRI study revealed a curvilinear band-like formation, isointense to gray matter in all sequences, which extends from the cortex of left posterior frontal lobe all the way to the left lateral ventricle, and causing extensive ventricular indentation. The subarachnoid space adjacent to this malformation was focally enlarged and inhabited an aberrant venous structure.

Discussion:

The gray matter heterotopia is the most common neuronal migration disorder, which results from disturbances of neuronal migration from germinal matrix in the wall of the lateral ventricle toward the cortex. Gray matter heterotopias can be divided into three groups: subependymal, subcortical, and band heterotopia. The exact mechanism of the migration disorder is unkown. Direct injuries such as vascular, environmental injuries to the radial glial fibers that guide neurons in their migration may cause heterotopias. Females are affected more than males. Location of heterotopias has a posterior predominance. The patient may be asymptomatic in mild cases. Partial complex or generalized tonic clonic seizures are the most common symptoms. Mental retardation, spasticity, hemiparesis, hemisensory deficits may be present. Histopathologically gray matter heterotopias are generally composed of normal neurons and glial cells. MRI shows all forms of gray matter heterotopias clearly, isointense with cortical gray matter and without contrast enhancement. Subcortical gray matter heterotopias extend between the cortex and the ventricular surface, they may cause ventricular indentations depending on their size. The adjacent subarachnoid space is focally dilated, and an aberrant drainage vein is seen within it. Differential diagnosis of the subcortical gray matter heterotopias should include mass lesions, but characteristic gray matter pattern without contrast enhancement easily rules out mass lesions. Treatment is conservative in patients with gray matter heterotopias, epileptic seizures are controlled with antiepileptic medications; surgery may have a role in treating localized subcortical heterotopias.

Differential Diagnosis List: Subcortical gray matter heterotopia causing extensive ventricular indentation

Final Diagnosis: Subcortical gray matter heterotopia causing extensive ventricular indentation

References:

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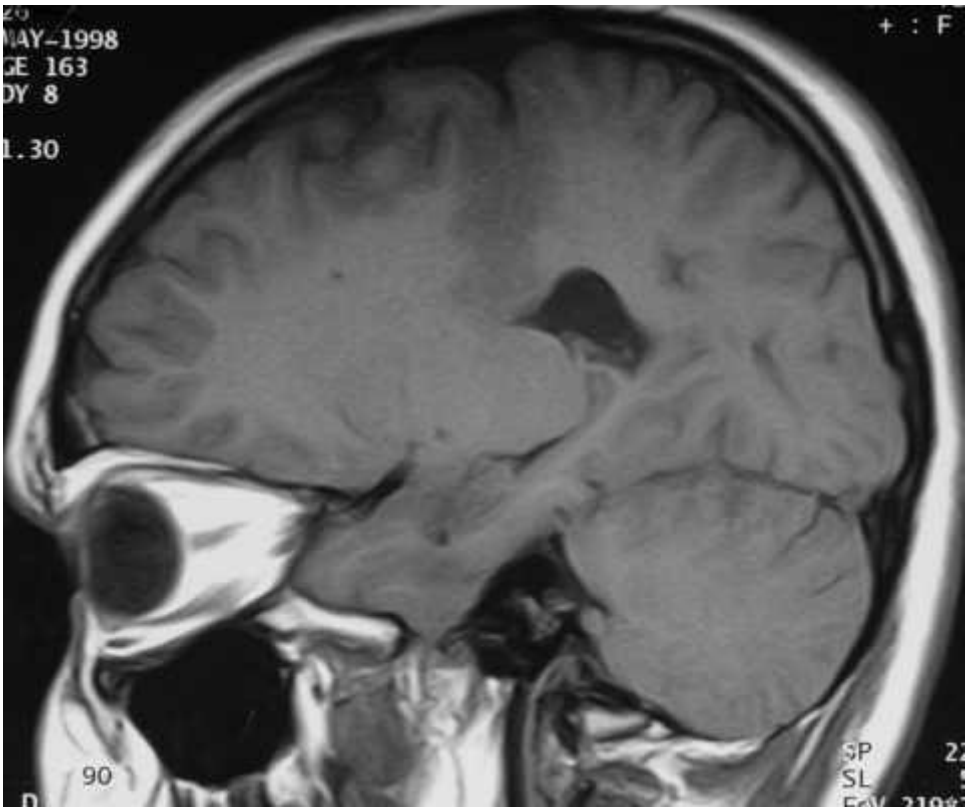
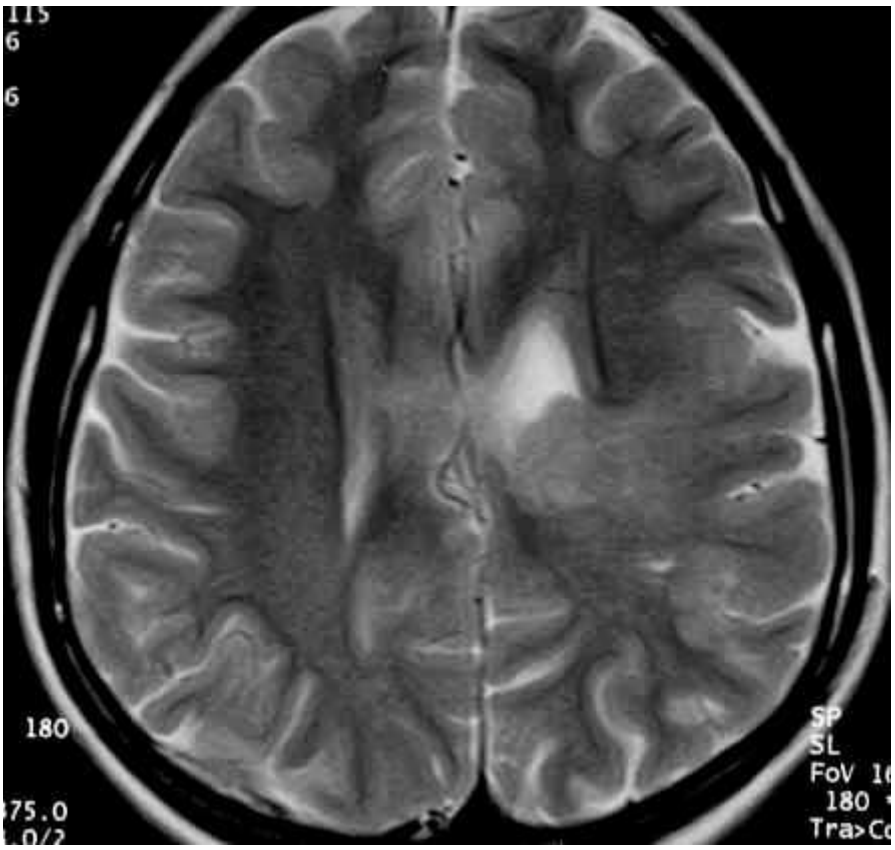
Figure 1

a



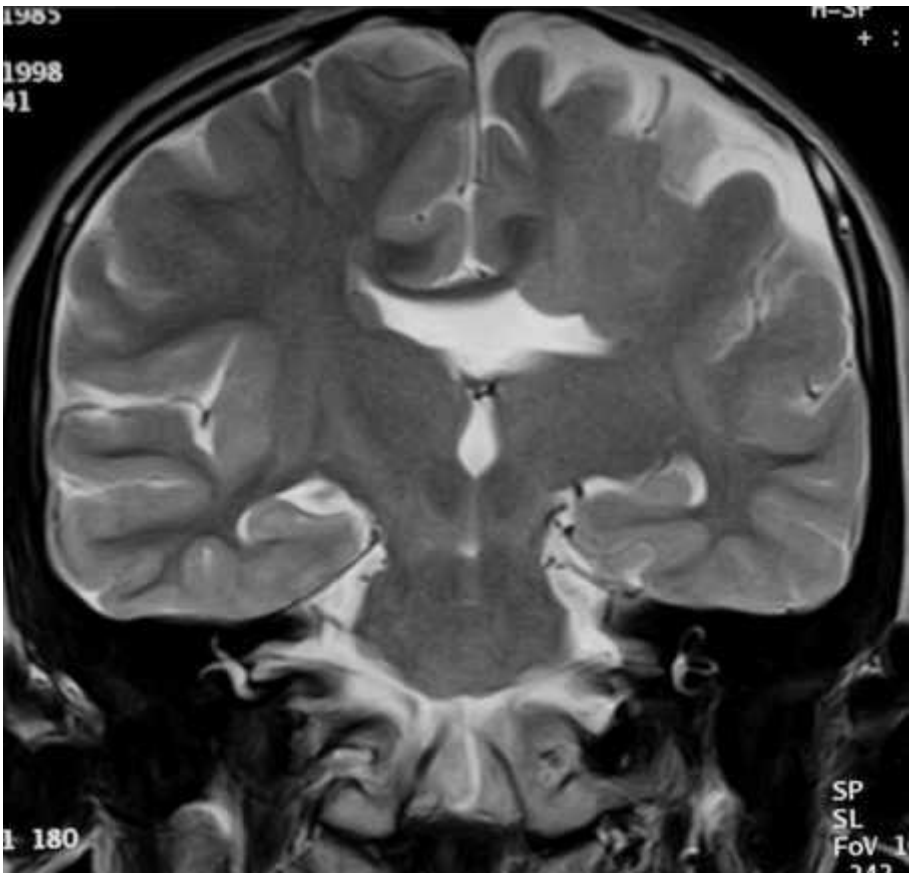
Description: Sagittal SE T1-weighted MR image shows a curvilinear gray matter formation, which extends from the cortex of posterior frontal lobe all the way to the lateral ventricle. **Origin:**

b



Description: Axial FSE T2-weighted MR image shows a curvilinear gray matter formation which extends from the cortex of posterior frontal lobe all the way to the lateral ventricle, and causes ventricular indentation. **Origin:**

c



Description: Coronal FSE T2-weighted MR image shows a curvilinear gray matter formation, which extends from the cortex of posterior frontal lobe all the way to the lateral ventricle. Note the adjacent subarachnoid space is focally enlarged, and inhabits an aberrant vein. **Origin:**