

Diffusion MRI of a cavernous angioma

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Section: Neuroradiology

Imaging Technique: MR

Imaging Technique: MR-Functional imaging

Case Type: Clinical Cases

Authors: R.N.Sener

Patient: 71 years, male

Clinical History:

Headaches and visual field defects

Imaging Findings:

The patient presented with intermittent headaches, and visual field defects. An MRI was performed including T1 and T2-weighted images, FLAIR images, and echo-planar diffusion MRI.

Discussion:

Histologically, cavernous angiomas consist of thin-walled, endothelial-lined, ectatic blood vessels of varying dimensions. They can be considered as true venous malformations. Cavernous angiomas occur throughout the central nervous system, but are most often located in the supratentorial and subcortical regions. In approximately one third of the cases they are multiple and often familial. Patients are usually asymptomatic. The MR imaging features of cavernous angiomas are usually characteristic especially when a central core of hyperintensity (methemoglobin) is surrounded by a ring of hypointensity (hemosiderin). These are usually best appreciated on spin-echo, and gradient-echo T2-weighted images. FLAIR images also show these. Diffusion MRI reveals further data on these, providing diffusion coefficient rates, especially on apparent diffusion coefficient (ADC) maps.

Differential Diagnosis List: Cavernoma in the occipital lobe

Final Diagnosis: Cavernoma in the occipital lobe

References:

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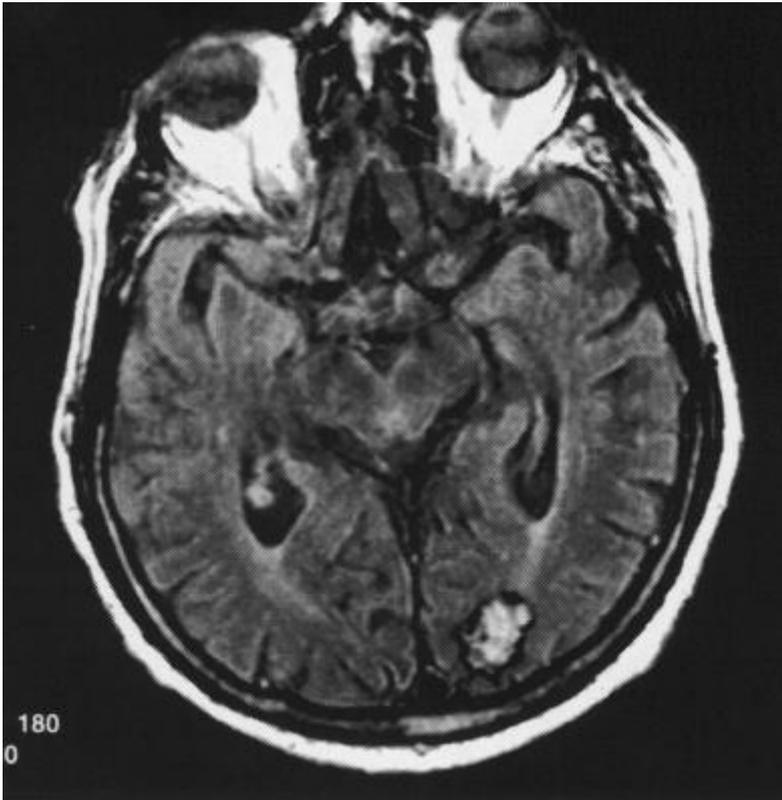
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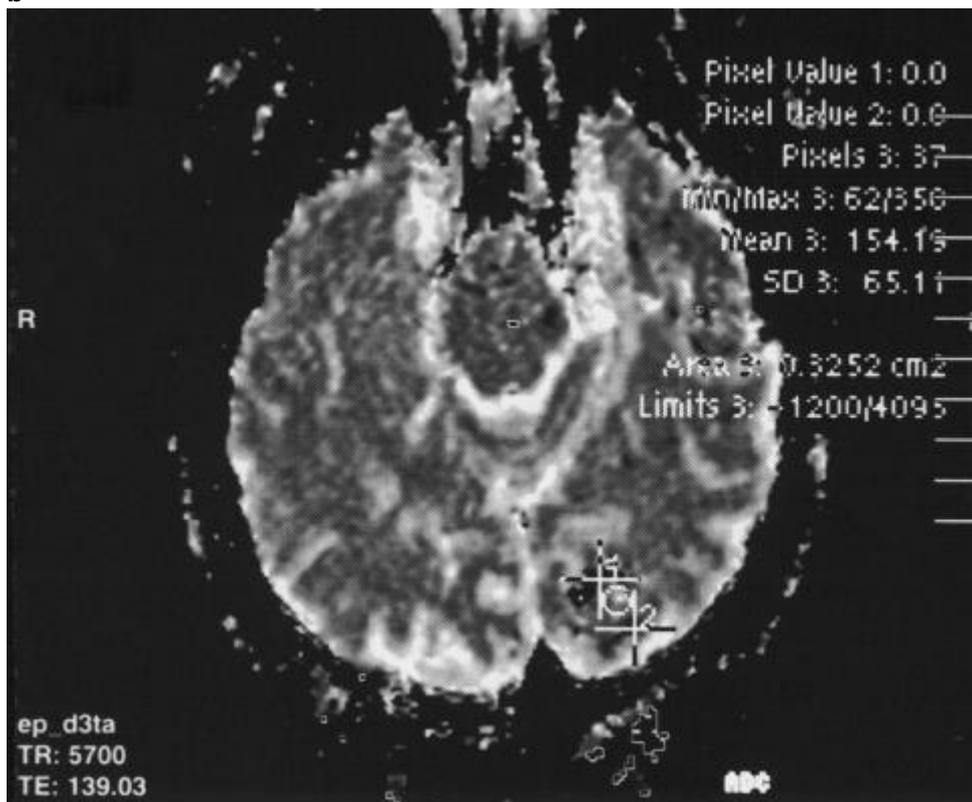
Figure 1

a



Description: FLAIR image reveals a cavernoma in the left occipital lobe with a characteristic hyperintense core (methemoglobin) surrounded by a hypointense rim (hemosiderin). **Origin:**

b



Description: ADC map from an echo-planar diffusion MRI sequence, reveals the ADC value of hemosiderin as 'zero'. The ADC value of the central region, consisting of methemoglobin has an ADC value of $0.37 \times 10^{-3} \text{ mm}^2/\text{sec}$. (the ADC value of normal brain parenchyma is approximately $0.84 \times 10^{-3} \text{ mm}^2/\text{sec}$) **Origin:**