CSF cleft sign

Conventional Magnetic resonance imaging approaches to predict the adhesion between the tumor and the brain rely on depiction of the gross morphologic structure of the tumor-brain interface and the presence or absence of a CSF cerebrospinal fluid cleft around the interface [1) 2) 3) 4)]

The CSF cerebrospinal fluid cleft occurs when CSF cerebrospinal fluid fills in the spaces between the tumor and the adjacent brain. It is typically observed as a thin layer of high signal intensity on T2-weighted and FIESTA fast imaging employing steady-state acquisition images and low signal intensity on T2-weighted FLAIR fluid-attenuated inversion recovery images. Although the MR signal intensity characteristics of the CSF cerebrospinal fluid cleft can provide information about tumor adherence, the absence of CSF cerebrospinal fluid cleft at the interface is not sufficient to predict adhesion [5)].

Nevertheless, it remains a good sign that a mass is extra-axial and typically consists of:

High T2 signal (representing CSF +/- solutes)

Vessels: pial or larger vessels.

Hypointense dura (on both T1 and T2 on the surface of the mass (if extradural) [6)]

Kim et al. fron the Department of Neurosurgery, Gangnam Severance Hospital, Yonsei University College of Medicine. 211 Eonju-ro, Gangnam-gu, Seoul,Korea, investigated whether the CSF cleft sign on ADC maps is beneficial for differentiating extraaxial tumors from intraaxial tumors. Seventy-seven intracranial tumor patients were reviewed. Visual grades of CSF cleft sign on T2WI and ADC were compared. The diagnostic performance of CSF cleft sign using ADC plus T2WI was compared with that using T2WI alone. A CSF cleft was more easily visualized on ADC ($P<0.01$). The diagnostic performance of CSF cleft sign significantly increased in accuracy of 85.7 to 96.1% ($P<0.01$) when ADC and T2WI were used together [7)].

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