Functional Magnetic Resonance Imaging at 3T in Patients with Intracranial Tumors

Functional magnetic resonance imaging (fMRI) is a non-invasive technique that localizes hemodynamic changes in areas of neuronal activity with high spatial resolution using the blood oxygen level dependent (BOLD) contrast. Until recent years, 1.5T MR units have been the standard tool in this field. There is a paucity of literature on 3T in this context. Increased field strength results in higher signal to noise and greater sensitivity to susceptibility changes. Since both effects increase the contrast-to-noise ratio, the step from 1.5T to 3T is of special benefit for fMRI.

In this issue of Acta Radiologica, Dr Danielle van Westen and her colleagues describe their experience of fMRI at 3T as a clinical tool for preoperative evaluation of patients with intracranial tumors (1). Twenty patients with tumors close to eloquent sensorimotor or language areas were prospectively studied. Simple paradigms well applicable to clinical routine were used. Paradigm effectiveness and the quality of the activation maps proved high. Non-invasive and preoperative fMRI yielded important information in neurosurgical decision-making and planning. This study is an important contribution in its field and the article is highly recommended reading.

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Reference


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