numerous studies have proven that the T2/FLAIR mismatch sign can identify IDH-mutant, 1p/19q non-codeleted astrocytomas with a specificity of up to 100%. For other purposes, multiparametric MRI, often coupled with machine learning methods, seems to achieve the highest accuracy in predicting molecular markers. Relevant future applications might be anticipating changes in the molecular composition of gliomas and providing useful information about the cellular and genetic heterogeneity of gliomas, especially in the non-resected tumor parts [1)].

The T2/FLAIR mismatch sign is a radiological finding observed in some cases of multiple sclerosis (MS). It refers to a discrepancy between the appearance of brain lesions on T2-weighted magnetic resonance imaging (MRI) and fluid-attenuated inversion recovery (FLAIR) MRI sequences.

T2-weighted MRI is sensitive to the presence of brain lesions and is commonly used to diagnose MS. In contrast, FLAIR MRI is a specialized imaging sequence that can suppress the signal from cerebrospinal fluid (CSF) and highlight brain tissue abnormalities, including MS lesions.

In some cases, MS lesions may be visible on T2-weighted MRI but not on FLAIR MRI, or vice versa. This discrepancy is referred to as the T2/FLAIR mismatch sign.

The T2/FLAIR mismatch sign may be useful in distinguishing between active and inactive MS lesions. Active lesions, which are associated with ongoing inflammation and demyelination, are typically visible on both T2-weighted and FLAIR MRI sequences. Inactive or chronic lesions, which are associated with tissue damage and gliosis, may be visible on T2-weighted MRI but not on FLAIR MRI.

The T2/FLAIR mismatch sign may also be associated with other clinical features of MS, such as greater disease severity, increased disability, and a higher likelihood of disease progression.

Overall, the T2/FLAIR mismatch sign is a useful radiological finding that may help clinicians better understand the underlying pathology of MS and guide treatment decisions. However, it's important to note that the T2/FLAIR mismatch sign is not specific to MS and may be observed in other neurological conditions as well.

1)
Metz MC, Wiestler B. Molecular imaging of gliomas. Clin Neuropathol. 2023 Mar 31. doi: 10.5414/NP301535. Epub ahead of print. PMID: 36999510.