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## The use of sodium MRI in the diagnosis of an anaplastic astrocytoma during immunotherapy: a case report

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## Abstract

Gliomas in the pediatric population are targeted with immune-modulating therapies. The gold standard imaging modality for diagnosis and monitoring treatment response is magnetic resonance imaging (MRI); however, the complex post-therapy-induced changes can make treatment response assessment difficult. These include radiation necrosis, pseudoresponse, and pseudoprogression, as well as more complex responses in the setting of immunotherapy. We report a case of an 11-year-old male with a supratentorial astrocytoma (WHO grade 3) that underwent treatment with immunotherapy. There was a clinical concern for progression due to increased fluid-attenuated inversion recovery (FLAIR) hyperintensity at the site of the primary neoplasm during immunotherapy. However, the Sodium (<sup>23</sup>Na) MRI continued demonstrating decreased total sodium concentrations, supporting pseudoprogression over true progression, which was confirmed clinicaly. This case reports the capability of <sup>23</sup>Na MRI to differentiate between progression, recurrence, and other posttreatment changes.

Keywords: Astrocytomas; Immunotherapy; Magnetic resonance imaging; Pediatrics.

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