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Incidental MRI Findings of Acute Gadolinium Hypersensitivity

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Key Words

MRI · Gadolinium · Allergy

Abstract

A 13-year-old girl with a remote history of juvenile pilocytic astrocytoma developed acute onset flushing, tachycardia and shortness of breath immediately following administration of gadopentetate dimeglumine during routine brain MRI that subsided following intravenous diphenhydramine. A retrospective review of the MRI results revealed multiple areas of contrast enhancement of the face, consistent with observed urticaria. The patient received pretreatment medications prior to subsequent gadolinium injections without incident. Gadolinium allergy is extremely rare and has been reported in less than 0.1% of injections. However, in patients who undergo anesthesia for MRI studies, similar subtle extracranial MRI findings should alert the neuroradiologist to possible gadolinium allergy that may warrant premedication prior to future injections.

Introduction

Gadolinium contrast agents have been safely used in children and adults for over 20 years. The incidence of gadolinium allergy in children is between 0.04 and 0.1%, based on published case series [1–3]. In those patients with central nervous system tumors, gadolinium contrast injection is absolutely necessary to monitor disease status. We report a case of a 13-year-old girl, with a history of low-grade glioma, who developed shortness of breath and urticaria following injection of intravenous gadolinium while in the MRI scanner. The incidental MRI findings reported may assist in recognizing gadolinium allergy in younger patients who are under anesthesia during their neuroimaging studies.

Case Report

A 13-year-old girl, diagnosed with a posterior fossa juvenile pilocytic astrocytoma, status post gross total resection 1 year prior, underwent routine MRI neuroimaging with and without gadolinium. Following an injection of intravenous gadopentetate dimeglumine, she developed acute onset flushing, tachycardia and shortness of breath. The patient was promptly removed from the MRI scanner and given intravenous diphenhydramine, after which she quickly returned to baseline. Her physical examination was notable for diffuse urticaria that resolved following treatment. Neurological examination showed no deficits. She had no prior history of allergic reactions and no known allergy risk factors. Brain MRI initially reported stable post-operative changes and no evidence of residual neoplasm. However, on retrospective review in light of the history, several extracranial areas of abnormality were discovered, as shown in [fig. 1](#). The post-gadolinium MRI revealed multiple areas of contrast-enhancing soft tissue lesions of the bilateral face consistent with the observed urticaria. Additionally, there was an area of contrast enhancement of the right ear. The patient has had subsequent MRI evaluations with gadolinium following pretreatment with corticosteroids and antihistamines without incident and with complete resolution of the aforementioned findings.

Conclusions

Our reported MRI findings of post-gadolinium hypersensitivity are admittedly coincidental; however, recognition of gadolinium allergy can be critical. Severe anaphylactoid reactions and even death have been well described in the literature [1–14]. Dillman et al. [1] reported a gadolinium allergy incidence of 0.4% in their pediatric population and a 7% overall incidence of severe reactions. Patients can have allergic reactions to gadolinium compounds in spite of pretreatment with antihistamines and corticosteroids [14]. Those patients with a prior history of allergic reaction to iodinated compounds may be at risk for reactions to gadolinium [15]. In the case of our patient, she had had several previous injections without incident and had no prior history of allergic reactions. Our case illustrates extracranial manifestations of gadolinium allergy that may alert the neuroradiologist, particularly in cases where patients are under anesthesia and may have less subtle findings.

Disclosure Statement

The authors have nothing to disclose and report no conflicts of interest.

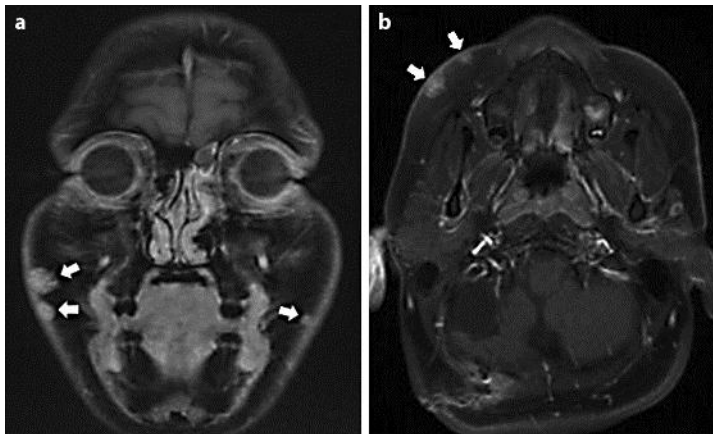


Fig. 1. MRI findings of gadolinium hypersensitivity. Coronal (a) and axial (b) post-contrast MRI brain sequences reveal multiple areas of superficial gadolinium enhancement (arrows) and right-sided auricular enhancement following administration of intravenous gadopentetate dimeglumine.

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