Generalized Seizure After IV Administration of Gadopentetate Dimeglumine

Since its approval by the Food and Drug Administration, the use of gadopentetate dimeglumine (Magnevist; Berlex Laboratories, Wayne, NJ) for contrast-enhanced MR imaging has increased rapidly. To date, few reports of adverse anaphylactoid reactions related to use of this agent have been published [1, 2]. Following is a report of a case of generalized seizure after IV administration of gadopentetate dimeglumine.

Case Report

A 14-year-old boy with a 16-month history of frequent, almost daily, left frontal headache was referred for MR of the brain. Previous contrast-enhanced head CT had shown mild, nonspecific lateral ventricular enlargement. High-frequency hearing loss on the left side had been diagnosed when the patient was 5 years old. He had no history of allergy, previous adverse drug reaction, or seizure disorder. The results of physical examination were unremarkable. The patient took no medication on a routine basis.

The precontrast part of the MR examination was uneventful. T1- and T2-weighted MR images (465/20/6 and 2000/60, 120/2, respectively) again showed mild lateral ventricular enlargement. Immediately after the routine slow IV infusion of 12 ml (0.1 mmol/kg) of gadopentetate dimeglumine, the patient became unresponsive and had a self-limited generalized tonic-clonic seizure. He was given supportive care during the event. Vital signs obtained during the postictal state were normal (heart rate, 60 beats per minute; supine blood pressure, 110/70 mm Hg). After the patient's neurologic status had returned to baseline, enhanced images were obtained (465/20), which showed no evidence of an enhancing abnormality. Subsequently, the patient was afebrile with stable vital signs and unremarkable findings on physical examination. At a follow-up office visit 2 weeks later, no changes from baseline were seen. An electroencephalogram (EEG) was normal.

Discussion

Gadopentetate dimeglumine increasingly is being used as an IV contrast agent in MR imaging. In clinical trials with 3700 patients to date, common adverse reactions have included headache (9%) and nausea (3%); localized pain at the injection site, vomiting, paresthesia, and dizziness have occurred in less than 2% [3]. A wide variety of other adverse reactions have been seen in less than 1% of cases, including hypotensive episodes and rash. More recently, anaphylactoid reactions, including laryngeal edema responsive to epinephrine, diphenhydramine, and methylprednisolone, have been reported [1, 2], as well as diffuse pruritis and paresthesia, which decreased with premedication [4].

Aside from clinical trials conducted by Berlex, several other studies [5–9] have suggested a relatively low rate of adverse reactions in both adults and children. The safety of using gadopentetate dimeglumine in children has been studied in groups of various sizes [8, 9]; the size of the largest group was 65 [7]. To date, in children, one case of urticaria has been reported. Generalized seizure has been reported in patients who had a history of a known seizure disorder [3, 5] and in one patient who had a history of bifrontal headaches and AIDS [5]. Postulated reasons for seizures that occur while the patient is in the magnet include anxiety and hyperventilation, which predispose to seizures [10]. This mechanism seems unlikely in the case reported here, as the patient appeared comfortable and relaxed before and after the noncontrast part of the examination. The seizure occurred immediately after infusion of gadopentetate dimeglumine, before the patient was positioned in the magnet. EEGs obtained before and after injection with gadopentetate dimeglumine were compared in two multicenter studies, and an abnormal change in the EEG was found in eight of 174 patients [5]. However, none of the EEG changes was considered to be of clinical concern, or definitely related to administration of the contrast agent. In this case, the patient had a generalized seizure that apparently was unrelated to any preexisting seizure disorder or systemic illness. In light of the increasing use of gadolinium, radiologists should be aware of this potential adverse reaction and be able to provide appropriate care when necessary.

Olin L. Harbury
Massachusetts General Hospital
Boston, MA 02114

REFERENCES

1. Tishler S, Hoffman JC Jr. Anaphylactoid reactions to IV gadopentetate dimeglumine. *AJNR* **1990**;11:1167
2. Salonen OLM. Case of anaphylaxis and four cases of allergic reaction following Gd-DTPA administration. *J Comput Assist Tomogr* **1990**;14:912–913
3. Magnevist product insert (revision). Wayne, NJ: Berlex Laboratories, August **1989**
4. Chan K, Bosanko CM, Wang AM. Pruritis and paresthesia after IV administration of Gd-DTPA. *AJNR* **1989**;10[suppl]:553
5. Goldstein HA, Kashanian FK, Blumetti RF, Holyoak WL, Hugo FP, Blumenfield DM. Safety assessment of gadopentetate dimeglumine in U.S. trials. *Radiology* **1990**;174:17–23
6. Russell EJ, Schaible TF, Dillon W, et al. Multicenter double-blind placebo-controlled study of gadopentetate dimeglumine as an MR contrast agent: evaluation in patients with cerebral lesions. *AJNR* **1989**;10:53–63
7. Elster AD, Reiser GD. Gd-DTPA enhanced cranial MR imaging in children: initial clinical experience and recommendations for its use. *AJNR* **1989**;10:1027–1030, *AJR* **1989**;153:1265–1268
8. Cohen BH, Bury E, Packer RJ, et al. Gadolinium-DTPA-enhanced magnetic resonance imaging in childhood brain tumors. *Neurology* **1989**;39:1178–1183
9. Powers TA, Partain CL, Kessler RM, et al. Central nervous system lesions in pediatric patients: Gd-DTPA-enhanced MR imaging. *Radiology* **1988**;169:723–726
10. Wolf GI. Current status of MR imaging contrast agents: special report. *Radiology* **1989**;172:709–710