Teaching *NeuroImages*: Remote cerebellar hemorrhage following resection of a supratentorial tumor

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Figure Remote cerebellar hemorrhage

Noncontrast brain CT (A) shows only left temporal lobe encephalomalacia. Gradient echo brain MRI (B) shows bilateral low intensity (arrows) within the cerebellar sulci consistent with chronic hemosiderin staining due to remote cerebellar hemorrhage. The pattern of alternating blood and cerebellum in curvilinear, irregular stripes imitates a zebra's coat and is sometimes referred to as the zebra sign.¹

A 23-year-old man was admitted with blurred vision and headache. Ten years ago he was diagnosed with a left temporal pleomorphic xanthoastrocytoma; his last resection was 6 years ago. Current CT and MRI showed left temporal encephalomalacia; MRI also revealed incidental bilateral remote cerebellar hemorrhages (RCH) (figure). Called “remote” due to their distance from the surgical site, RCH are rare complications of supratentorial and spinal operations.¹ Depending on extent, RCH may be symptomatic and diagnosed acutely on CT, or incidentally discovered as chronic hemosiderin on MRI. RCH are thought to be due to venous traction and rupture from postoperative CSF loss and brain shift.^{1,2}

AUTHOR CONTRIBUTIONS

Dr. Paul: drafting/revising the manuscript, study concept or design. Dr. Jhaveri: drafting/revising the manuscript. Dr. Lewis: drafting/revising the

manuscript, study concept or design, study supervision, analysis or interpretation of data.

REFERENCES

1. Brockmann MA, Nowak G, Reusche E, Russlies M, Petersen D. Zebra sign: cerebellar bleeding pattern characteristic of cerebrospinal fluid loss. *J Neurosurg* 2005;102:1159–1162.
2. Amini A, Osborn AG, McCall TD, Couldwell WT. Remote cerebellar hemorrhage. *Am J Neuroradiol* 2006;27:387–390.

MYSTERY CASE RESPONSES

The Mystery Case series was initiated by the *Neurology*® Resident & Fellow Section to develop the clinical reasoning skills of the trainees. Residency programs, medical student preceptors, and individuals were invited to use this Mystery Case as an education tool. Responses were solicited through a group e-mail sent to the AAN Consortium of Neurology Residents and Fellows and through social media.

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For this Mystery Case, we received 25 answers, all responses coming from individual residents rather than groups, and they were all well-reasoned and thoughtful. The majority of respondents (19) identified the hemosiderin deposition between cerebellar foliae on gradient echo MR images as due to venous rupture from postoperative CSF loss and/or brain shift. The second most

favorable diagnosis (3) was a vascular or leptomeningeal spread of the primary tumor associated with microbleeds.

This Mystery Case illustrates a rare complication of supratentorial and spinal surgery, sometimes called the zebra sign.

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