Expert Opinion

Is an MRI Scan Indicated in a Child With New-Onset Daily Headache?

Case History and Follow-up Submitted by Randolph W. Evans, MD
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To scan or not to scan, that is the question.

CLINICAL HISTORY

This 8-year-old girl presents with a 1-year history of headaches which were occurring once a week until 1 month ago when they increased to almost daily. She has mild headaches about every other day often in the afternoon described as a bifrontal pressure with light sensitivity lasting a couple of hours after taking acetaminophen. On other days, she reports a generalized throbbing associated with dizziness and light sensitivity lasting about 2 hours after she takes acetaminophen. For the last few weeks, she has been averaging two acetaminophen per day.

The patient and her mother deny any new stressors. Her grades in school are satisfactory and have not changed in the last year. Family history is negative for migraine.

Neurologic examination is normal.

The mother is concerned about possible secondary causes of headache and would like a scan of the brain performed even after I advised her that the episodes have features of migraine and tension-type headaches and that there may be an element of medication rebound.

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Questions.—What is the likelihood that an MRI scan of the brain would be abnormal? What do you advise parents in this situation?

EXPERT COMMENTARY

This 8-year-old girl has had 1 year of intermittent headache which has evolved to a daily pattern throughout the last month. At present, she describes two types of headache: a background, daily, bifrontal pressure or tension-type headache and a superimposed, intense, throbbing headache with dizziness and light sensitivity. She frequently takes acetaminophen tablets.

Her examination is normal.

This mixed pattern of headache falls within the broad spectrum of chronic daily headache (CDH), although the definition generally requires more than 4 months of headache with greater than 15 headaches per month and the headaches lasting 4 or more hours.

The likelihood that the MRI would be "abnormal" is about 16% based upon a recent report of 30 children with CDH who had normal neurologic examinations and who underwent neuroimaging. Five of the 30 children had abnormal findings including sinus disease, Chiari malformation, or occult vascular malformations. All of these findings were viewed as incidental findings that did not influence management. None needed surgical intervention.[1] Further comment is necessary, however.

This patient does not meet the definition of CDH of more than 4 months of headache as was used in the aforementioned study. Therefore, extrapolation of its results to this patient may be invalid.

Furthermore, this patient describes dizziness with her headache. "Dizziness" requires clarification. Does she mean vertigo, lightheadedness, double vision, or confusion? Vertigo or double vision must be viewed as posterior fossa symptoms and must at least raise the issue of whether to perform an MRI. If she means confusion, this suggests alteration of mental status and may warrant imaging, electroencephalography, or metabolic investigation. Dizziness can also accompany chronic sinusitis or pseudotumor cerebri. This young lady's optic discs must be carefully viewed.

It is stated that the mother "would like a scan of the brain." This mother is very concerned that her daughter has a brain tumor. She may have read the January 2001 issue of *Reader's Digest* where, on page 12, a child is described who had headache for 2 years and was being treated medically before the parents insisted on an MRI scan which showed a brain tumor. This sort of mass media attention influences parental expectation and erodes confidence in the medical system.

The family needs reassurance that there are no signs of brain tumors or other organic causes. Recognizing that 97% to 99% of children with brain tumors have objective evidence of neurologic abnormalities with either papilledema, abnormal eye movements, ataxia, hemiparesis, or abnormal deep tendon reflexes, this reassurance can usually be made on clinical grounds.[2]

Can that confident reassurance be provided without imaging? That answer must be made individually.

As a fellow in child neurology, I felt it was my duty to stand as sentry to the CT scan suite, limiting scans to selective patients. Through the years of clinical practice and coming to grips with medicolegal issues and patient expectations, I no longer feel the need to bar the door to radiology. Yes, the yield goes down, but the quality of clinical practice has not suffered.

Given the accompanying symptom of dizziness and this mother's insistence upon a scan, I would probably comply with her wishes. A wise pediatrician named Tony Austin told me a long time ago: "Listen to mothers, they are usually right."

For management, I would ask the family to start a headache calendar to monitor the pattern of headaches. The patient's sleep patterns, activities, eating habits, and school performance would be reviewed to look for exacerbating or precipitating phenomena.

As far as drug management, I would recommend the cessation of acetaminophen to limit the analgesic rebound component. I would initially begin a course of amitriptyline, 10 mg, at bedtime and use naproxen 250 to 375 mg twice daily, dependent upon her weight, as needed for pain. If the naproxen should be ineffective for the more intense episodes, I would provide the family with sumatriptan nasal spray starting with the 5-mg preparation.

I would see her back in the office within 4 weeks to reexamine her and assess her response to this regimen.

REFERENCES

1. Lewis DW, Dorbad D. The utility of neuroimaging in the evaluation of children with migraine or chronic daily headache who have normal neurological examinations. *Headache.* 2000;40:629-632.
2. The Childhood Brain Tumor Consortium. The epidemiology of headache among children with brain tumor. *J Neurooncol.* 1991;10:31-46.

FOLLOW-UP

The MRI scan of the brain was normal.