Stabbing Headache in an 8-Year-Old Girl: Primary or Drug Induced Headache?

abstract

The occurrence of stabbing headaches in children requires a thorough diagnostic approach that excludes secondary headaches. The organic background should be taken into consideration when alarming symptoms occur, such as a purely 1-sided location, a change in the character of the headache, or possibly a link to physical activity. The current study describes the case of an 8-year-old girl who suffered short-lasting stabbing headache attacks. The headaches with increasing intensity and frequency started 1 month before her hospitalization and were usually preceded by physical activity (dancing, running). The pain, which was located in the right supraorbital region, lasted 1 second and occurred several times during the day. No associated symptoms were observed. In addition, the girl suffered from allergic rhinitis and was on antiallergic treatment (levocetirizine, fluticasone nasal spray). On admission she was in good general condition, and a pediatric and neurologic examination revealed no abnormalities. Her brain MRI was normal. The initial diagnosis was that the patient was suffering from primary stabbing headaches. However, during a follow-up visit 4 months later, a relationship was observed between the cessation of the headache attacks and the discontinuation of an antihistaminic drug. Six months later, the girl remained headache free. In cases involving differential diagnoses of stabbing headaches, it is important to consider the adverse reactions of the drugs used. 

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KEY WORDS

stabbing headache, histamine antagonists, child

ABBREVIATION

SUNCT—short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing

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A stabbing headache in children is an alarming symptom, especially when the same location is affected and additional symptoms are present. Organic causes of stabbing pains, such as a brain tumor or vascular malformation, should first of all be excluded from the diagnosis. A differential diagnosis should take into account primary headaches such as primary stabbing headache, short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing (SUNCT), and neuralgias (trigeminal or occipital neuralgia).1 However, we should also not disregard the effects that administered drugs have in inducing headaches. In the present article, we describe an unusual correlation involving short-lasting stabbing headache attacks possibly induced by an antihistaminic drug.

**CASE REPORT**

An 8-year-old girl was admitted to the Department of Pediatric Neurology because of stabbing headache attacks. On the day of her admission, she had had 6 episodes of intense stabbing pain, which occurred in the morning after she got out of bed (1 day before the girl had engaged in a lot of physical activity: jumping on a trampoline; riding a quad). The pain was located in the right supraorbital area and was not accompanied by any nausea, vomiting, photo phonophobia, or other symptoms (including autonomic symptoms). Each episode was brief and lasted 1 second. No baseline hemicranial pain was observed. Because of the severity and frequency of the headaches, the girl’s mother gave her paracetamol (6.5 mg/kg), which brought her short-term relief, and the girl fell asleep. The headache attacks occurred again after she woke up, although with less intensity.

The headaches had started 1 month before admission, occurred rarely, and were usually preceded by physical activity (dancing, running) during hot weather. The frequency and characteristics of the headache attacks are presented in Fig 1. The patient had a negative family history of migraines. However, her cousin did suffer from epilepsy. There was no history of head trauma. Furthermore, the girl suffered from motion sickness. She had allergic rhinitis (positive allergy skin tests to inhalant allergens: grass, corn, and cat’s fur) and was undergoing anti-allergic treatment (levocetirizine 2.5 mg daily introduced 1 month before her admission, fluticasone nasal spray).

On admission the girl was in generally good health, and a physical examination did not reveal any signs of upper or lower respiratory tract infection. An otolaryngological examination revealed everything was normal. The results of neurologic and ophthalmologic examinations were unremarkable. During the examination, the girl experienced short episodes of headache attacks, which she expressed by holding her hand against her forehead. Her blood pressure was normal (115/66 mm Hg).

To exclude any organic cause of the acute stabbing headaches, an enhanced brain MRI was performed, which revealed only slight generalized dilatation of Virchow-Robin spaces. A diagnosis of epilepsy was considered due to the fact that the girl appeared to be sleepy after the attacks (postictal sleepiness). During a video-EEG, no clinical attacks could be recorded and EEG tracing did not reveal any paroxysmal activity. During the patients’ hospitalization, the frequency and severity of the headaches decreased spontaneously (Fig 1). No medication was used. Based on the clinical course and results of laboratory tests, the proposed diagnosis was primary headache. The symptoms met the criteria...
for primary stabbing headaches. In the differential diagnosis, SUNCT was considered, even though the patient did not exhibit any autonomic symptoms. Moreover, because the patient’s short-lasting headaches were located in the supraorbital region, trigeminal neuralgia was suspected. However, it could not be triggered by pressing the area.

The child was discharged and sent home, and it was suggested that she keep a headache diary.

When she began to experience aggravated headaches, abortive treatment with paracetamol or ibuprofen was recommended.

At a follow-up 1 month after hospitalization, the girl was in generally good health, and a pediatric and neurologic examination revealed nothing abnormal. The girl’s headache diary revealed that the headaches had declined in frequency and severity (Fig 1). The girl recorded sporadic shifts in the side on which she felt the headaches. In the first 5 days after being discharged from hospital, she reported the following confusing phenomenon: a sudden increase and then decrease in headache frequency. The girl’s mother admitted having given her an antihistamine drug again, which she ceased doing after she observed an increase in the headaches. She also recalled that the headache attacks had started in correlation with the introduction of levocetirizine. At that time, we considered the possibility that the drug had aggravated the course of the primary stabbing headaches. At the next follow-up 3 months later, the girl was headache free. Six months later, the girl still remained headache free, which suggests that the headaches were drug induced.

**DISCUSSION**

According to *The International Classification of Headache Disorders, Second Edition*, a stabbing headache can be primary, but any organic background must first be excluded. It is characterized by short-lasting attacks (up to few seconds) of stabbing pain usually located in the area of first trigeminal branch innervation. It can occur from 1 to many times a day and is not associated with other symptoms.

The headache attacks described in the present case fulfilled the criteria of a primary stabbing headache. However, their sudden onset with increasing frequency and intensity, their strict 1-sided location, and their association with physical activity could indicate secondary causes. Vieira et al. reported 20 children with short-lasting headaches in 2 of whom the headache had an organic background (1 child had Arnold Chiari Malformation type I and a second spinal cord compression due to C1-C2 subluxation). A neurologic examination of these children revealed abnormalities. Stabbing headaches in adult patients have been described as a manifestation of meningiomas, pituitary tumors, and cerebrovascular disorders. A single case of herpes zoster meningoencephalities and stabbing headache as its initial symptom has also been reported in the literature. A neurologic examination of our patient revealed nothing abnormal, and neuroimaging did not reveal any pathology of the central nervous system. Pang et al. reported a case of a short-lasting 1-sided headache with associated autonomic symptoms (SUNCTs-like symptoms) during the course of sphenoiditis. We found no changes in the paranasal sinuses in the MRI of our patient.

An EEG diagnosis of headaches is only performed in cases in which postseizure headaches or hemicrania epileptica are suspected. Due to postictal sleepiness, we performed an EEG on our patient, but it did not reveal any paroxysmal activity. An EEG in cases involving primary stabbing headaches can be normal or reveal no characteristic changes (posterior slow waves sensitive to hyperventilation). However, paroxysmal activity has been also described.

The clinical course of our patient’s headache and the results of the performed tests made an initial diagnosis of primary stabbing headache probable. The course of idiopathic stabbing headaches in children can differ from the course of idiopathic stabbing headaches in adults, an occipital location and a longer duration of the attacks (a couple of minutes) are accepted. The co-occurrence of other primary headaches such as migraines or cluster headaches is less common than in adults. However, a family history of headaches and motion sickness is frequent. The pain experienced by our patient was in a typical location, and most of the episodes lasted 1 second. Only 2 of the attacks lasted up to 2 to 3 minutes. The girl did not suffer from other primary headaches. She only had motion sickness.

The appendix of the *International Classification of Headache Disorders, Second Edition* includes a list of drugs, which may cause headaches during treatment or worsen the course of already existing headaches. The most commonly used drugs that can cause headaches are nonsteroidal antiinflammatory drugs, antihypertensive drugs like calcium channel blockers, digitals, nitrates, hormones (estrogens, gestagens), and also antihistaminic drugs. Headaches can occur as an acute adverse reaction to treatment, during chronic treatment, and also as a result of a drug overdose or withdrawal. A diagnosis of a headache as an acute adverse event attributed to medication used for other indication entails finding a correlation between the introduction of the drug and the onset of the headache anywhere between a couple of minutes and a few hours afterward and the cessation of the headache within 72 hours after discontinuing the drug.
According to primary headache sufferers, nitrate-induced migraine and cluster headache attacks are well known.\textsuperscript{12,13} It has been reported that SUNCT attacks can be induced by dopamine agonist in patients with prolactinoma.\textsuperscript{14} We could not find any articles on drug-induced stabbing headaches.

Levocetirizine, which our patient was treated with, is regarded as a safe and effective second-generation H\textsubscript{1}-antihistamine drug used in the treatment of allergic rhinitis in children.\textsuperscript{15–17} The adverse reactions reported for this medication were mild or moderate and similar to those observed in a group of children treated with placebo (33.7\% vs 30.7\%).\textsuperscript{16} The most frequently reported adverse events were respiratory tract infections, gastrointestinal disorders (infant group), and headaches, with a lower incidence in older children.\textsuperscript{15–17} Layton et al\textsuperscript{18} analyzed the tolerability of levocetirizine treatment in 12 367 patients (including 760 children ≤12 years old) during 2-month therapy. Upper respiratory tract infections, drowsiness/sedation, and headaches were the most commonly reported adverse events and occurred more frequently in the first month of therapy. However, both headaches and drowsiness/sedation were uncommon during treatment (>0.1\%, <1\%). Usually drug-induced headaches are not characteristic. They are dull, diffuse, and of moderate to severe intensity. In the present case, the type of headaches experienced by the girl were characteristic, which led us to adopt a diagnosis of primary stabbing headache and to assume that the headaches were probably aggravated by the antihistaminic drug. The complete cessation of the headache attacks observed during the second follow-up made us reconsider our diagnosis of drug-induced headaches. However, the clinical course did not fit the diagnostic criteria of headaches as an acute adverse event attributed to medication used for other indication, because the attacks abated within more than 72 hours after drug discontinuation. Furthermore, the headache attacks could not be treated as adverse events brought on by chronic medication because during levocetirizine treatment the headaches occurred on <15 days each month.

CONCLUSIONS
We offer the unusual conclusion that a pediatric patient suffered possibly drug-induced stabbing headaches in subacute form.

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