Case Report

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Eyebrow bleeding as a rare migraine symptom: a case report

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Abstract

This case report documents a rare presentation of eyebrow bleeding occurring during migraine episodes in a 10-year-old girl, highlighting atypical signs associated with the disorder. Despite her normal neurological examinations and imaging studies, the patient experienced recurrent, severe headaches accompanied by localized bleeding and red spots on the forehead. This unusual symptomatology suggests potential underlying neurovascular and neuroinflammatory mechanisms, necessitating heightened awareness among healthcare providers. Following treatment with Coenzyme Q10, Vitamin B2, and Cyproheptadine, both headache frequency and symptom intensity significantly improved. This case underscores the importance of comprehensive evaluation and recognition of uncommon migraine manifestations in clinical practice.

Keywords: atypical signs, eyebrow bleeding, forehead dot, migraine, pediatric

Introduction

Migraine is a complex neurological disorder characterized by recurrent, often debilitating headaches, typically accompanied by a range of symptoms, including nausea, photophobia, and phonophobia[1]. The prevalence of migraine ranges from 5 to 40% in the pediatric population. Before puberty, there is an equal prevalence in girls and boys, but after puberty, the prevalence is 2–3 times more common in girls[2,3]. While the most common manifesta tions of migraine are well documented, atypical symptoms can sometimes emerge, posing challenges in diagnosis and manage ment. One particularly rare and intriguing presentation is the occurrence of dermatological signs during a migraine episode[4].

There are a few similar reports of dermatological symptoms of migraine on the face, including extensive skin markings, petechiae, ecchymosis, and red dots[5–7]. However, there have been no reports of eyebrow bleeding as a migraine symptom in the medical literature.

The pathophysiology of migraine involves intricate interactions between neurovascular and neuroinflammatory pathways[8]. Several lines of evidence support the implication of the potent vasodilators, including parasympathetic neuropeptides and nitric oxide, in migraine pathophysiology, which may explain the diverse array of symptoms experienced by patients[9].

This report delves into the clinical presentation of a patient who experienced eyebrow bleeding as an extraordinary feature accompanying their migraine episodes. This case report aims to highlight dermatological signs of migraine, shedding light on its potential underlying mechanisms and implications for clinical practice.

HIGHLIGHTS

- A 10-year-old girl experienced eyebrow bleeding during migraine episodes, challenging traditional views of migraine symptoms.
- Despite severe headaches and unusual symptoms, both CT and MRI scans showed no abnormalities, emphasizing the need for careful evaluation.
- The unusual bleeding and skin changes may be linked to neurovascular and neuroinflammatory processes associated with migraines.
- The patient showed significant improvement in headache frequency and intensity after treatment with coenzyme Q10, vitamin B2, and cyproheptadine.
- This case underscores the importance of recognizing atypical migraine symptoms to ensure comprehensive care and accurate diagnoses in pediatrics.
- More studies are needed to explore rare migraine manifestations and develop targeted treatment strategies for such cases.

Case presentation

Case history/examination

A 10-year-old girl without any past medical, surgical, or medication history presented to the neurology clinic with severe recurrent headaches since a year ago. Headaches originate in the

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temporal region and spread to other areas of the head. The mentioned headaches are pulsating, usually one-sided, and without a visual aura. The headache episodes initially started at 10-day intervals and lasted about 24–48 hours each time. Then, the intervals of headache episodes have decreased to 3 days in between, one day in between, and finally daily. In headache episodes, the patient experiences bleeding from the eyebrow skin (Fig. 1). Sometimes red spots appear on the forehead, which disappears by themselves shortly after the end of the headache (Fig. 2).

In the physical examination, tenderness was not found in the temporal region, forehead, and eyebrows, and other neurological examinations, including mental, cranial nerve, motor, sensory, and reflex examination, were normal. Bleeding of the eyebrow skin is limited and mild, but blood can be felt on touch.

Investigations

CT scan and MRI have been done for the patient, both of which were unremarkable and without any evidence of structural or vasculitis disorders. Blood tests at presentation were unremarkable for direct bilirubin (0.1 mg/dl, normal range: 0–0.4 mg/dl), total bilirubin (0.4 mg/dl, normal range: 0.1–1.2 mg/dl), liver enzymes (AST: 13 IU/L, NR: 5–40 IU/l; ALT: 15, normal range: 5–40 IU/l; ALK.P: 183 IU/l, normal range: 180–1200 IU/l), C-reactive protein (8 mg/l, normal range: 8–10 mg/l), ESR 1st h (10 mm/h, normal range: 1–20 mm/h), BUN (15 mg/dl, normal range: 5–23 mg/dl), creatinine (0.8 mg/dl, normal range: 0.5–1.5 mg/dl), sodium (139 mEq/l, normal range: 136–145 mEq/l), potassium (5 mEq/l, normal range: 3.7–5.5 mEq/l), calcium (9.7 mEq/l, normal range: 8.6–10.6 mEq/l), white blood cells ($8.3\times1000/mm^3$, normal range: $4–10\times1000/mm^3$), hemoglobin (13.1 g/dl, normal range: 12–16 g/dl), platelet ($233\times1000/mm^3$, normal range: $140–440\times1000/mm^3$), and coagulation tests (PT: 12.4 Sec, normal range: 12–13 Sec; INR: 1.05, normal range: 1–1.1; PTT: 27.6 Sec, normal range: 25–40 Sec) (Table 1).

Follow-up and outcome

After confirming the diagnosis of migraine, the patient was treated with coenzyme Q10, high doses of vitamin B2, and cyproheptadine. Following treatment, the interval between headache episodes has decreased to 7 days. Also, the intensity of headaches and skin signs has decreased significantly.

Discussion

The presented case report of eyebrow bleeding during a migraine episode in a pediatric patient provides compelling insight into the atypical manifestations of migraines, challenging conventional perceptions of the disorder. While migraine is widely recognized for its debilitating headache, the emergence of unusual dermatological signs raises the need for broader diagnostic awareness among healthcare providers.

Similar studies have highlighted the diverse manifestations of migraines, but reports detailing specific skin changes, are scarce. For instance, a study reports extensive skin markings from the patient's forehead to the nose during migraine attacks[5].

Other studies mention periorbital, eyelid, and glabellar ecchymosis along with migraine attacks that had different durations and intensities and were managed with different treatments including NSAIDs, topiramate, amitriptyline, indomethacin and atenolol[4,7,10–12]. CT scan and MRI were unremarkable, as the similar point of this case and previous reports, which probably rules out intracranial vascular and structural disease. But on the other hand, the mentioned studies have mostly reported migraines in adults. Also, other differential diagnoses such as trauma or other types of headaches, as seen in this case, can be ruled out according to the patient's history, normal laboratory data, and appropriate response to migraine treatments.

Recently, a novel phenomenon known as red forehead dot during recurring migraine attacks was described. Red forehead dot syndrome is more frequently accompanied by severe migraine attacks. There is typically a correlation between the migraine

Figure 1. Bleeding of the eyebrow skin that occurs in the same place in every migraine attack.

Figure 2. Temporary red spots on the forehead that appear during migraine attacks and disappear shortly after the headache ends.

intensity and the size and quantity of red dots[6]. There are few reports of red forehead dot syndrome like this case; however, eyebrow bleeding specifically remains unrecorded[13,14]. This dif ferentiation is critical, as it may influence clinical practice by prompting a more thorough examination of migraine signs, ensuring comprehensive patient care.

Although the cause of the dermatological signs of migraine is still unknown, the underlying mechanism for such presentations probably arises from the potential vasculopathies involved in migraine. The activation of the trigeminovascular system during a migraine attack causes changes in vascular permeability and vasodilation by vasoactive substances[15]. Studies using ultrasound and magnetic resonance angiography confirm the dilatation of peripheral branches of extracranial vessels, including frontal and superficial temporal vessels[16,17]. Also, migraine is associated with endothe lial dysfunction, both as a cause and a consequence, which leads to peripheral vasculopathy[18]. This may lead to localized bleed ing, potentially through extreme vasodilation of cutaneous blood vessels during migraine attacks. In this context, localized bleed ing, such as that observed in the eyebrow region, could be indi cative of cutaneous vascular changes during migraine attacks.

Treatment modalities for atypical migraine presentations must be approached carefully. Also, treatment approaches should be different according to the evidence available in pediatrics and adults[19]. In this case, the use of coenzyme Q10, vitamin B2, and cyproheptadine proved effective in managing migraine frequency and severity. Such treatments underscore the importance of a multifaceted approach, targeting both the neurological aspects of migraines and their peculiar symptoms[20]. Coenzyme Q10 and Vitamin B2 are known for their roles in mitochondrial function and energy metabolism, which may mitigate migraine pathophy siology, while Cyproheptadine, an antihistamine with anti-serotonergic properties, can alleviate migraine symptoms[21,22].

Table 1

Laboratory parameters of the patient at the presentation

Parameter	Presentation values	Units	Reference value
WBC	8.3	×1000/mm^3	4–10
Hb	13.1	g/dl	12–16
Platelet	233	×1000/mm^3	140–440
BUN	15	mg/dl	5–23
Creatinine	0.8	mg/dl	0.5–1.5
AST	13	IU/l	5–40
ALT	15	IU/l	5–40
ALK.P	183	IU/l	180–1200
Total bilirubin	0.4	mg/dl	0.1–1.2
Direct bilirubin	0.1	mg/dl	0–0.4
Sodium	139	mEq/l	136–145
Potassium	5	mEq/l	3.7–5.5
Calcium	9.7	mEq/l	8.6–10.6
PT	12.4	Sec	12–13
PTT	1.05	Index	1–1.1
INR	27.6	Sec	25–40
C-reactive protein	8	mg/l	8–10
ESR 1st h	10	mm/h	1–20

ALK.P, alkaline phosphatase; ALT, alanine transaminase; AST, aspartate transaminase; BUN, blood urea nitrogen; ESR, erythrocyte sedimentation rate; Hb, hemoglobin; INR, international normalized ratio; PT, prothrombin time; PTT, partial thromboplastin time; WBC, white blood cell.

Conclusion

In conclusion, the documentation of eyebrow bleeding as a rare sign of migraines highlights the complexity of this disorder and reinforces the necessity for recognizing atypical presentations. This case encourages further research into the range of migraine manifestations and the development of tailored treatment strategies that address both classical symptoms and unique phenomena, ensuring comprehensive patient-centered care in clinical practice.

Ethical approval

Code of ethics is not applicable for this case report. This study was conducted with the informed consent of the patient and her legal guardians and under the supervision of the Ethics Committee of Firozabadi Hospital.

Consent

Patient consent statement: It is hereby announced that informed consent has been obtained from the patient to conduct the study and the patient's personal information will not be disclosed in any way. The patient consent form is the official form of Firoozabadi hospital and is available for patient.

Consent for publication: Written informed consent was obtained from the patient's parents/legal guardian for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request. The patient consent form is the official form Firoozabadi hospital and is available for patient.

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Author contribution

All authors have made significant contributions to this case report study. M.R. designed of the work, and wrote the main manuscript text. A.T. supervised the implementation of the plan and edited main manuscript text. M.K. supervised the implementation of the plan and edited main manuscript text.

Conflicts of interest disclosure

The authors declare no conflict of interest.

Research registration unique identifying number (UIN)

This study is not a clinical trial, there was no intervention, and it was done only by observing existing documents.

Guarantor

Maryam Kachuei

Data availability statement

All information (without personal information of patient such as name and surname, etc.) is available for review by the Editor-in-Chief of this journal on request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

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