

## Left Sided Ptosis in Patient with Medical History of Migraine and Allergy: The Case Report of Probable Ophthalmoplegic Migraine

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### Abstract

**Background:** Ophthalmoplegic migraine is a very sophisticated condition characterized by ophthalmoplegia or ophthalmoparesis accompanied by ipsilateral headache. Previously considered as a type of migraine with cranial nerves palsy and finally has been interpreted as a recurrent painful ophthalmoplegic neuropathy.

**Case:** We present the case of a female patient with medical history of migraine that developed left sided ptosis. We suppose that there may have been an allergic mechanism involved. We have not found any other reasonable explanation for the cause of the symptoms. Moreover, the patient exhibited acute hives accompanied by Quincke's edema. We suspect that it could be the expression of the cross reaction between allergens of orange and gadolinium based magnetic resonance contrast. After the treatment with steroids the symptoms diminished. Full range of diagnostic procedures has been applied to exclude secondary causes of the symptoms.

**Conclusion:** Clinicians are obliged to perform the wide differential diagnosis of the headache accompanied by oculomotor dysfunction. We suggest that in the cases of no objective cause of the symptoms, we should take into account ophthalmoplegic migraine. That might lead to more targeted diagnostic procedures and better therapy.

**Keywords:** Ophthalmoplegic migraine; Painful ophthalmoplegic neuropathy; Allergy; Cross-reactivity; Quincke's edema

### Introduction

Ophthalmoplegic migraine is an extremely rare condition. Without the knowledge of the clinical picture even performing the precise and advanced diagnostic procedures does not guarantee the right diagnosis and successful treatment. Although migraine is a primary headache [1] we have to exclude all the secondary causes of the headache accompanied by cranial nerves palsy. In our case the typical symptoms have been observed in patient with allergy. It was the period of patients exposition to the tree pollen and clinical course was complicated with hives and Quincke's edema. The etiology of ophthalmoplegic migraine has oscillated somewhere between ischemic [2], compressive [3], inflammatory [4], and demyelinating [5] processes. As far as we know there have not been many, if any descriptions of the ophthalmoplegic migraine potentially triggered by the allergic factor.

### Case Report

The patient, a 54-years old, right-handed female, Caucasian, was admitted to emergency unit because of the ptosis of the left eye that

was noticed in the morning after sleep and had been preceded by the throbbing headache in left fronto-temporal area lasting for about 4 days. The onset of the ptosis was simultaneous with the remission of the headache (Figure 1). No earlier evidence of head trauma or similar symptoms had been reported.

This patient had a prior history of migraine without aura for about 15 years. The features of the headache included: paroxysmal (2-3 times a month), one sided, throbbing and accompanied by photophobia, phonophobia and sometimes nausea. The patient also had a medical history of allergy to pollen of plants like: birch, alder, hazel along with food allergens like carrot, apple and celery. The main symptoms of the allergic reaction were rhinitis, lacrimation and wheezing while breathing. We suppose that those symptoms were the result of cross reaction between food allergens and pollen of plants [6]. The treatment of the allergy was based on desensitization for about four years. However, last year the scheme of the desensitization had changed. For three earlier years, desensitization was applied once a month from September till January of the forthcoming year and was interrupted by the pause lasting for about seven months (without desensitization). In 2015, the immunotherapy was to continue for the whole year (every 4-6 weeks).



**Figure 1:** Showing the left ptosis which occurred after 4 days of throbbing headache.

The patient was given the last dose of allergen extracts about one month prior to the onset of the symptoms. The family history of the headache revealed that her children (male and female) had migraine. The patient did not suffer from other chronic diseases. She did not take any medicines chronically. She denied alcohol abuse. The Computed Tomography of brain did not show any pathology of the central nervous system. The Magnetic Resonance of the cerebral structures did not contain any visible focal lesions. The Magnetic Resonance Angiography of the brain vessels did not reveal any pathology (the aneurysm was also excluded). There was a dedicated radiological examination of the oculomotor nerve course with the use of Magnetic Resonance pulse sequence FIESTA [7], which was normal. The laboratory findings of the blood and cerebrospinal fluid showed normal basic parameters. The examination of the cerebrospinal fluid revealed normal level of protein and glucose, as well as the number of

cells within the normal range for the hospital laboratory. The patient showed an acute symptomatology of allergic reaction during performing the Magnetic Resonance with gadolinium enhancement. The patient ate an orange the day before the brain MRI was performed. Moreover, the patient had a history of cross reactivity between food allergens like carrot, celery and pollens of some trees. Because of the acute allergic symptoms that included dyspnea, swelling of the nose mucosa and presence of wheals accompanied by pruritus, this patient was diagnosed with the acute allergic hives with Quincke's edema [8]. The patient was treated with 100 mg hydrocortisone applied intravenously every twelve hours, and Cetirizine 10 mg orally twice a day. After two days of treatment we observed the resolution of allergic symptoms as well as ptosis (Figure 2). On the follow up visit after approximately one month there was complete recovery of the symptoms.



**Figure 2:** Reveals the diminution of the left eye ptosis.

## Discussion

According to the present headache classification we could categorize this type of syndrome as an example of probable painful ophthalmoplegic neuropathy (as it was the first episode of symptoms and two episodes are required to meet the criteria of the diagnosis). The third cranial nerve is affected most often in cases described as ophthalmoplegic migraine [9]. The involvement of the oculomotor nerve was not complete, because we only observed the ptosis of the left eye without abnormalities in eye movements. However, the research that has been done by Vivek et al. [10] revealed that about 20 % of the examined patients with oculomotor nerve involvement had isolated ptosis just like in our case. Considering the ischemic theory of the symptoms we can assume that the ophthalmoparesis was due to the vasoconstriction of the vasa nervorum during migraine attack. In that case we should diagnose the status migrainosus (the headache lasted more than 72 hours), which resulted in the cranial nerve palsy. If we reject the theory that the headache was primary, as the migraine is supposed to be, we can suspect that the same factor that caused the ophthalmoparesis was the trigger of the headache. However the time required to cause the headache was shorter than the time to develop the ophthalmoparesis and so the headache lasted for four days before the ptosis occurred. Considering the clinical, laboratory and radiological findings we excluded the common causes of the third nerve palsy [11] like: ischemic infarct of the midbrain, mass lesion, hemorrhagic infarct, aneurysm, lymphoma, cavernous sinus/ superior orbital fissure pathology. The patient did not have the history of hypertension or diabetes mellitus or other risk factors of vascular diseases. There are some well documented examples of MRI findings in children with ophthalmoplegic migraine that revealed the pathological enhancement of the oculomotor nerve at the root exit zone [2]. In our case we have not observed the pathological enhancement of the third nerve. However, there are reports on ophthalmoplegic migraine with the third nerve occupation complicated by the permanent neurological deficit without nerve enhancement seen on the MRI imaging [12]. The lack of vascular risk factors and lack of pupillary involvement (that would suggest the absence of compression of pupillary fibers that run superficially in the oculomotor nerve) [13] lead us to reconsider the inflammatory mechanism of the migraine headache accompanied by ophthalmoparesis [14]. There were no signs of active infection or vaccine injection preceding the symptoms. However, we think that allergic factor could take part in the immune reaction involving the oculomotor nerve that is connected, by its sensory fibers from the ophthalmic branch of trigeminal nerve, to the trigeminal nucleus [15] and could activate the trigeminal-vascular system, resulting in migraine headache especially in a patient with migraine history. We should also consider the allergic mechanism that caused the cranial nerve palsy by analogy to the cranial palsies observed during inflammatory polyneuropathies [16] that also involve humoral and cell-mediated immunity. We have to take into consideration the fact that the migraine like headache and consequent ptosis appeared in the period of intense pollen-shedding of birch and our patient had been undergoing the desensitization therapy, because of allergy. As an indirect evidence for the allergic hypersensitivity of the patient we described the acute allergic reaction after injection of gadolinium during the MRI of brain and good therapeutic response to steroids and antihistamine drugs. There is quite a large body of well documented research on food allergy connection with occurrence of migraine [17], but the theory of the allergic reaction manifesting as the headache with cranial nerve palsy seems to be innovatory.

## Summary

Painful ophthalmoplegic neuropathy continues to be a rare condition of still unknown etiology. Complex diagnostics of the headache accompanied by oculomotor palsy does not always guarantee the efficient therapy. We suggest that in the cases of no objective causes of the symptoms allergic reaction or at least the medical history of allergy should be considered. That might lead to more targeted diagnostic procedures and therapy.

The patient's explicit consent was obtained before publication of this case.

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