CASE REPORT

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Adult Onset Recurrent Painful Ophthalmoplegic Neuropathy: Isolated Abducens Paresis

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ABSTRACT Ophthalmoplegic migraine (OM), previously known as a form of migraine, was defined as recurrent painful ophthalmoplegic neuropathy according to the latest classification of the International Headache Society. The incidence of the disease is 0.7 per million and it is common in childhood. We present a 21-year-old female patient who admitted to our hospital with the complaint of migraine-like headache for 10 days, accompanied by blurred vision and double vision in the right eye within 4 days of its onset. It was learned that she had her first attack of migraine-like headache on the right side, double vision and inability to look outward in the right eye, which lasted about a month, four months ago. In her neurological examination, other examination findings were normal except sixth cranial nerve palsy in the right eye. Adult- onset OM with recurrent isolated sixth nerve involvement was found to be worthy of presentation because of its rarity.

Keywords: Ophthalmoplegic migraine; adult onset; abducens paresis

The disease, which was defined as ophthalmoplegic migraine (OM) by Charcot in 1890 was accepted as cranial neuralgia and central facial pain according to the classification of the International Headache Society (IHS) in 2004.[1-3] According to the last classification in 2013, it was defined as recurrent painful ophthalmoplegic neuropathy (RPON) due to magnetic resonance imaging (MRI) findings and good response to steroids in some cases. The most affected nerve is oculomotor nerve in OM.[4]

Especially in third nerve involvement, three quarters of the patients have focal nerve thickening and contrast enhancement on MRI.[5] Abducens and trochlear nerve paralysis are seen less frequently in OM compared to oculomotor palsy.[5,6] Although the course of the disease is good, its duration and severity can vary in patients. The attack often ends in 2-3 weeks without sequelae but after several episodes some deficits may persist.[6]

In this case, we present a 21-year-old female patient who developed sixth nerve palsy on the same side as the pain after migrainous attack, which regressed with steroids.

CASE REPORT

A 21-year-old Syrian female patient was admitted to our clinic with complaints of blurred vision in the right eye and double vision with a throbbing especially retroorbital headache accompanied by nausea, vomiting, photophobia and phonophobia in the right half of the head which had started ten days ago. It was learned that four months ago, she had a headache in the character of her current pain on the right side, which lasted for about a month, as well as inability to look outward and double vision in the right eye, which regressed spontaneously with the use of analgesics. The patient's history and family history were unremarkable. The mother and aunt had a history of migraine.

In her neurological examination; she was conscious, cooperative and oriented but she looks ill. The patient who had outward gaze limitation in the right

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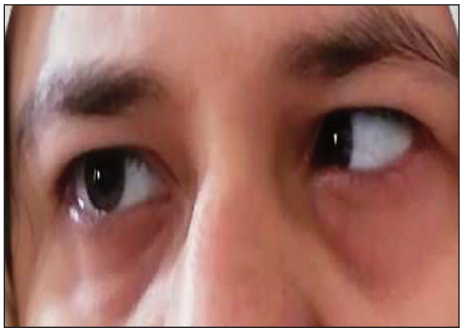

FIGURE 1: Right abducens paresis in the first examination.

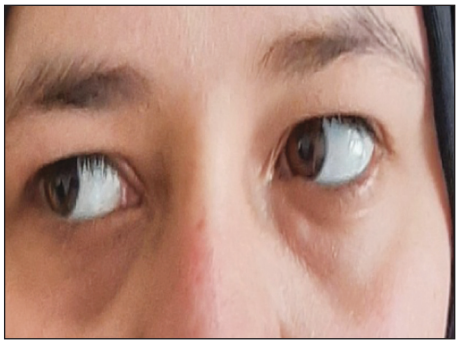

FIGURE 2: After steroid treatment, abducens paresis regressed, eye movements were normal.

eye, was admitted to the hospital (Figure 1). She had no motor and sensory loss, and her gait was balanced. In laboratory examinations, routine biochemical and hematological examinations, serological tests, coagulation tests, sedimentation rate, Creactive protein, rheumatoid factor values were normal. Contrast-enhanced brain MRI, MRI angiography and MRI venography examinations of the patient were within normal limits. No pathology was observed in the cranial spinal fluid (CSF) examination. CSF pressure was 180 mmH_2O, protein, chloride, lactate dehydrogenase values were in normal limits and there was no pleositoz and no growth in CSF culture.

During the treatment phase, 1 mg/kg of steroid and nonsteroidal anti-inflammatory treatment were administered by tapering slowly for 2 weeks. Beta-blocker prophylactic treatment was started for the patient, whose abducens paralysis regressed but her headache continued, although it decreased (Figure 2). The headache lasted for 4 weeks and her complaints regressed completely at the end of this time.

DISCUSSION

OM, more recently renamed RPON by the IHS. It is an uncommon and poorly understood condition with an incidence of 0.7 per million.[4] The third cranial nerve involvement is frequently seen in recurrent attacks, however sixth or fourth nerve involvement are uncommon.

IHS 3 criteria defines OM/RPONS as at least two attacks with migraine-like headaches are accompanied with, or followed within 4 days of onset by, paresis of one or more of the third, fourth or sixth cranial nerves. Parasellar, orbital fissure and posterior fossa lesions should be excluded by appropriate investigations (Table 1).

Neuroimaging is very important in the differential diagnosis of ophthalmoplegia to rule out possible structural lesions. Intracranial infection, aneurysm, lipoma, schwannomma, diabetic ophthalmoparesis and tolosa hunt syndrome should be considered in differential diagnosis.[3,6] Especially Tolosa Hunt Syndrome may mimic single attack of ophtalmoplegic migraine because this inflammatory syndrome is likely to reveal headache with migrainous features.[7] In our case, the brain MRI, MRI angiography and MRI venography examinations were performed, no structural lesion was observed to explain the current clinic (Figure 3). Also biochemical tests, especially glucose levels were in normal limits.

Myasthenia gravis and miller fisher syndrome are among the diseases to be considered in the differential diagnosis of ophthalmoplegia. Our patient did not have areflexia or ataxia, and no muscle weakness showing fluctuation during the day was observed in her clinic. The worsening seen in

TABLE 1: Diagnostic criteria of recurrent painful ophthalmoplegic neuropathy.

ICHD-3 Diagnostic Criteria
A. At least 2 attacks fulfilling criterion B
B. Unilateral headache accompanied by ipsilateral paresis of 1, 2, or all 3 ocular motor nerves
C. Exclusion of orbital, parasellar, or posterior fossa lesions by appropriate investigation
D. Not better accounted for by another ICHD-3 diagnosis
ICHD-3-International Headache Society's revised ICHD

ICHD: International Classification of Headache Disorders.

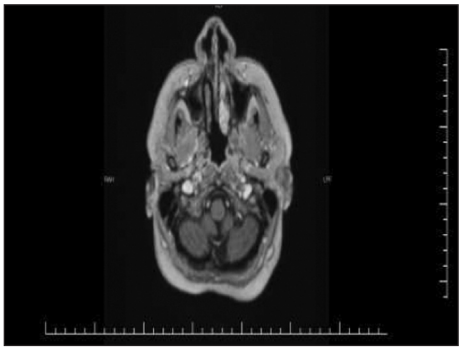

FIGURE 3: Axial T1-weighted, contrast-enhanced magnetic resonance imaging showing normal findings.

myasthenia towards the onset steroid treatment was not observed. Also she hasn't trauma history.

Uncontrolled migraine is thought to be the most important reason of OM. Severe migraine attacks are described before the onset of OM.[8,9] Lal et al. reported ophthalmoplegia during severe migraine attacks in 62 patients aged between 15 and 68 years. Most patients describe an increase in migraine severity before ophthalmoplegia. There was no contrast enhancement in the nerve; CSF examination and biochemistry values were within normal limits; oral steroid use accelerated the recovery and no sequale remained.[9] In cases of reported OM/RPON, there is a high incidence of personal or family history of migraine headaches, suggesting that migraine may be a predisposing factor in the development of the condition.[10] Our patients had family history of migraine.

OM is thought to be childhood and adult subtypes. The disease is often seen in childhood. In this type oculomotor nerve involvement is very common and enhancement and focal thickening of the affected nerve are frequently seen in brain MRI. As in our case, sixth nerve palsy is more common in the adult subtype compared to the third nerve palsy and no contrast enhancement is observed in the nerve roots on cranial MRI.[2] In our patient, this finding probably strengthens the idea that enhancement is common in children not in adults.

Verhagen et al. presented a 44-year-old woman with recurrent left sided abducens paresis after severe ipsilateral pulsatile headache especially behind the eye, regressed completely in 3 weeks to 2 months.[11] Celebisoy et al. pesented two patients adult onset OM with abducens palsy.[12] In these case reports they didn't find any abnormality in abducens nerve enhanced MRI studies too.

The pathophysiology of the disease remains unclear until now due to the absence of autopsy or surgical resection but the possible pathogenesis is said to be due to either compression, ischemia or demyelinating lesion, according to review by Lal.[2] Lance and Zagami point to the relapsing-remitting demiyelinating or inflammatory process of OM. They proposed that irritation of the trigeminal sensory fibres because of inflammation provoked the pain associated with the recurrent ophtalmoplegia so activation of trigeminovascular system triggers the migrainous headaches.[13] Also according to ischemia hypotesis, activation of trigeminovascular system stimulates the proinflammatory neuropeptides (calcitonin gene related peptide, substance P, cytokines, etc) entry into the vessel wall causing breaching blood nerve barrier and so nerve edema and ischemia develop. In pediatric patients because of the immaturity of blood nerve barrier, enhancement and thickening of the involved nerve commonly seen but absent in adults.[10,14]

RPON is a diagnosis of exclusion of other causes of painful ophthalmoplegia so detailed research and neurologic examination must be done and migraine history should be questioned. We presented adult onset female who has RPON with abducens palsy. She has no conrast enhancement of the nerve on MRI and her ophthalmoplegia was steroid responsive.

Informed Consent

Written informed consent is obtained from the patient.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

This study is entirely author's own work and no other author contribution.

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