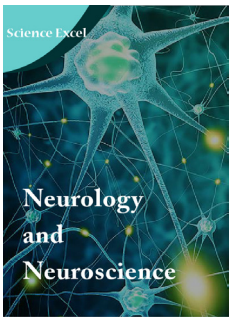
Neurology & Neuroscience

Case Report



Monocular pendular nystagmus in a patient with a dolichoectatic basilar artery

Ioanna Alexandratou[1*], Chara Zachariadi[1], Vasileios K Katsaros[2] and Stylianos Gatzonis[3]

[1]*Department of Neurology, Evangelismos Hospital, Ipsilantou 45-47, 10667, Athens, Greece*
[2]*Department of Advanced Imaging Modalities, General Anti-Cancer and Oncological Hospital of Athens "St. Savvas", Leof. Alexandras 119, 11475, Athens, Greece*
[3]*Neurosurgical Department of Epilepsy, Evangelismos Hospital, Ipsilantou 45-47, 10667, Athens, Greece*

Correspondence

Ioanna Alexandratou

Department of Neurology, Evangelismos Hospital, Ipsilantou 45-47, 10667, Athens, Greece

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Abstract

We present the case of a patient with the symptom of oscillopsia for the past six months. The neurological examination revealed a monocular horizontal pendular nystagmus in the left eye, present in all directions of gaze, while the remainder of neurological examination was normal. MRI brain scan revealed a dolichoectatic basilar artery causing a mild compression to the left part of the pontomedullary junction.

Introduction

EVertebrobasilar dolichoectasia (VBD) is a rare dilative arteriopathy defined as elongation or widening of the intracranial vertebral and/or basilar arteries [1].The prevalence ranges from 0.06% to 5.8% [2]. The majority of VBDs are asymptomatic but it can also present with symptoms due to: 1) compression of brainstem, 2) direct compression of cranial nerve, 3) ischemia of vertebrobasilar territory, 4) rupture of vessel, and 5) hydrocephalus [3-5]. VBD has also been linked with rare ocular movement disorders, as the downbeat nystagmus [6-8]. Pendular nystagmus is another major type of nystagmus. Pendular nystagmus is a sinusoidal oscillation without fast phases[9]. The waveform of pendular nystagmus may occur in any direction; it can be torsional, horizontal, vertical, or a combination of these, resulting in circular, oblique, or elliptical trajectories. It may be different in the two eyes, sometimes even monocular [10].Most patients with acquired pendular nystagmus have multiple sclerosis [11]. Less commonly it follows strokes, encephalitis, or vascular malformations in the cerebellum or brainstem [12-13] and occasionally tumors [14]. Rare causes include chronic toluene encephalopathy [15], unusual familial syndromes [16], and orbital myositis [17].

We present the rare case of an acquired monocular pendular nystagmus in a patient with VBD.

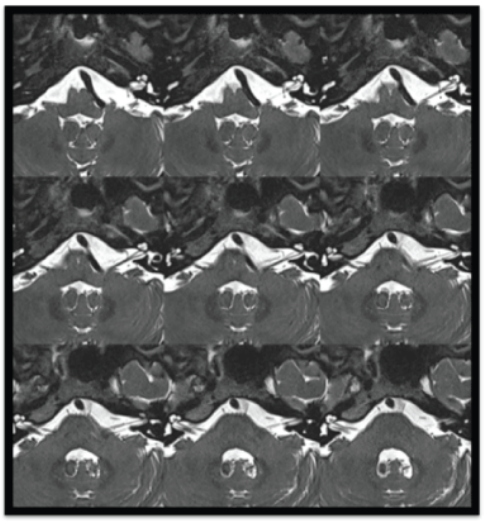

Figure 1. *Dolichoectatic basilar artery causing displacement and pressure effects on the pontomedullary junction and left pons.*

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Case Report

A 60-year-old woman presented in our outpatient clinic, acclaiming that for the past six months, she has the strange sensation of spinning when she closes only her right eye and looks with her left eye. Specifically, she described the feeling of oscillopsia during reading. She had a medical history of panic disorders and she took no medication. No history of chronic alcoholic exposure or lithium intoxication was reported. The family history was free. She claimed no double vision, headache, weakness, or any other symptoms. On examination, she appeared well and her blood pressure was 150/100mm Hg; heart rate, 80/min; and respiratory rate, 14/min. On ocular examination, visual acuity was 20/20 in both eyes. Anterior segment and fundus examination were unremarkable. A monocular horizontal pendular nystagmus in the left eye was noted. There was no change in rate and character of the nystagmus and it occurred in any direction. In the right eye, no pathological ocular movements were detected. Extraocular muscles movements, saccadic velocity, and smooth pursuit eye movements were within normal limit. Cranial nerve function was otherwise normal. The remainder of the neurological examination revealed normal muscle tone, strength, reflexes and gait. In order to exclude an epileptic monocular nystagmus, an electroencephalogram (EEG) was performed. It was characterized by an admixture of beta and alpha frequency range. No epileptiform discharges were recorded. Magnetic resonance imaging (MRI) of the brain revealed dolichoectatic basilar artery causing displacement and pressure effects on the pontomedullary junction and pons left, near the VII and VIII nerve nucleus, as well as on the ipsilateral VI and VII nerves from the pre-pontine cistern till the level of the cerebellopontine angle. Supratentorial cerebral hemispheres appeared unremarkable. No restricted diffusion on diffusion-weighted imaging (DWI) was depicted (Figure 1).

The patient was examined in our outpatient clinic on a follow-up basis for one year with no changes in her neurological examination. The symptoms of oscillopsia remained, but she refused on taking any medication.

Discussion

ANystagmus is a rhythmic regular oscillation of the eyes. It may consist of alternating phases of a slow drift in one direction with a corrective quick "jerk" in the opposite direction, or of slow, sinusoidal, pendular oscillation [18].Research into mechanisms that normally control eye movements has led to a better understanding of the pathogenesis of different types of acquired nystagmus [19].

There are several articles in literature reporting cases of monocular pendular nystagmus as a rather bizarre finding in neurological examination. Acquired pendular monocular nystagmus often occurs in association with disorders affecting the visual system, such as multiple sclerosis [20]. In Brodsky et al, a case of a 9-year-old girl with chiasmal glioma and longstanding monocular nystagmus is reported [21]. The Heimann-Bielschowsky phenomenon (HBP) is an unusual form of monocular vertical pendular nystagmus and is usually asymptomatic. It always occurs in an eye with longstanding, profound visual loss. Nguyen et al., reported a series of patients with HBP and mentioned how often these cases are under diagnosed [22]. In addition to the above, there are a series of articles reporting monocular nystagmus as a clinical finding of epileptic phenomena [23-25]. Schulz et al presented the case of a patient with epileptic monocular nystagmus and ictal diplopia who became seizure free after resection of a right frontal focal dysplasia (FCD)[26].

In our case, the patient visited our outpatient clinic due to the feeling of oscillopsia for the past six months. The only clinical finding in the neurological examination was a horizontal monocular pendular nystagmus in the left eye. EEG was normal. Except the dolichoectatic basilar artery no other abnormalities were identified in the MRI.

Radiographic confirmation of displacement and pressure effects on the pontomedullary junction and left pons, near the VII and VIII nerve nucleus, provides the most plausible mechanism for monocular nystagmus in this setting. Whether an actual cause-and-effect relationship exists between dolichoectasia of the basilar artery and monocular nystagmus remains speculative. We, however, report this case of a patient with monocular nystagmus and VBD as a sufficient mechanism.

Conclusion

EThis is a rare case of a patient with vertebrobasilar dolichoectasia and a monocular pendular nystagmus as a clinical event. This finding is not conclusive enough; however, we suggest that dolichoectatic vertebrobasilar artery could be associated with a proportion of cases of monocular nystagmus of undetermined cause.

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