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Isolated internuclear ophthalmoplegia from ischemic origin

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A 67-year-old male with a medical history of hypertension, diabetes mellitus, and previous ischemic stroke applied to the neurology outpatient clinic due to acute onset double vision which had abruptly started 2 days ago. On neurological examination, the right eye could not adduct whereas nystagmus occurs on the left eye abduction (Figure 1). Upon history interrogation, it was learned that the patient had applied to the emergency department two days ago and cranial diffusion-weighted imaging (DWI) was performed which resulted in normal ranges (Figure 2). Based on the negative DWI result and atypical clinical presentation for stroke, third nerve palsy was considered in the forefront and the patient was discharged with suggestions of ophthalmology and neurology outpatient visit. However, following polyclinic evaluations, the diagnosis of the right internuclear ophthalmoplegia (INO) was favored. Other neurological examinations were normal; except right-sided, mild sequela paralysis due to a previous stroke. Based on the abrupt onset of the clinic and medical history of previous vascular disease, causes of INO such as myasthenia gravis and multiple sclerosis were not considered in the differential diagnosis. Rather, a provisional diagnosis of ischemic stroke with negative DWI was considered in the forefront. Repeated DWI showed restricted diffusion in the right, inferior midbrain, just anterior to the cerebral aqueduct (Figure 3). Further investigations for stroke etiology, including echocardiography, electrocardiography, were in normal ranges. Brain/neck tomography angiography revealed stenosis (70%) of the right pre-basilar vertebral artery. Interventional radiologists did not recommend a stent placement due to the high risk of the possible procedure. Hence, the patient was discharged with medical therapies dual antiplatelet therapy and 20 mg atorvastatin.

INO is a deficit in the control of conjugate eye movements, which results from damage to the medial longitudinal fasciculus at the brainstem that connects with ocular nuclei of 6th and 3rd

nerve[1,2]. Stroke is one of the most common pathophysiologic group of this manifestation[2,3]. However, pure isolated ischemic stroke from ischemic origin has rarely been reported in the literature. Clinical awareness of this syndrome is vital for the diagnosis such as in a crucial study, it was reported that MRI could demonstrate ischemic lesions producing INO in only 52% of the patients[3].

In the largest report in literature, the etiological classification of stroke origin in INO clinics was reported to be varying, ranging from small-vessel occlusion, branch atheromatous disease of posterior cerebral artery, superior cerebellar artery, or severe proximal basilar artery stenosis or occlusion[1]. In our patient, the stroke was evaluated in the setting of large vessel atherosclerosis as reported previously.

Based on this rare illustration, we point out this rare manifestation of isolated INO due to the ischemic stroke which should be kept in mind among emergency practice for avoiding under-diagnosis. Repeating DWI may provide substantial contributions in similar patients with diagnostic uncertainty, as negative DWI results are not rare in this rare manifestation of INO from an ischemic origin[3].

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Figure 1. Images showing eye movements. A: Conjugate eye movements toward the right side; B: Normal position. C: Abnormal conjugate eye movements toward the left side (right eye could not adduct, arrow).

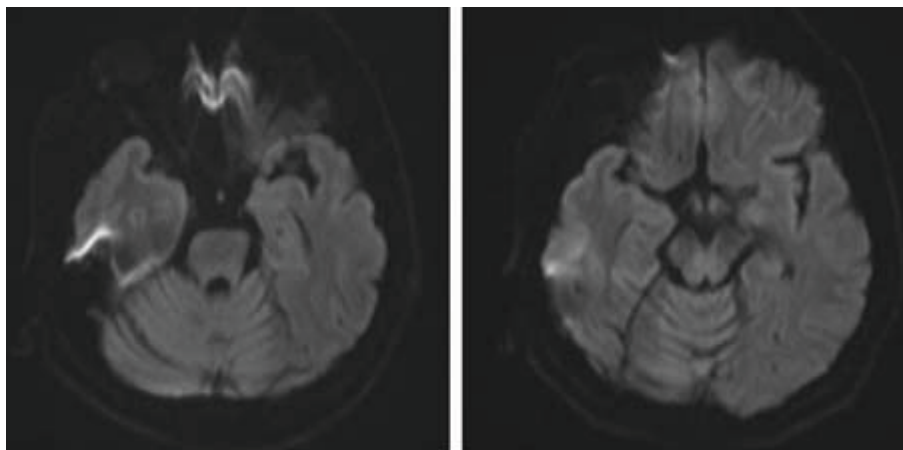


Figure 2. Initial DWI showing normal findings.

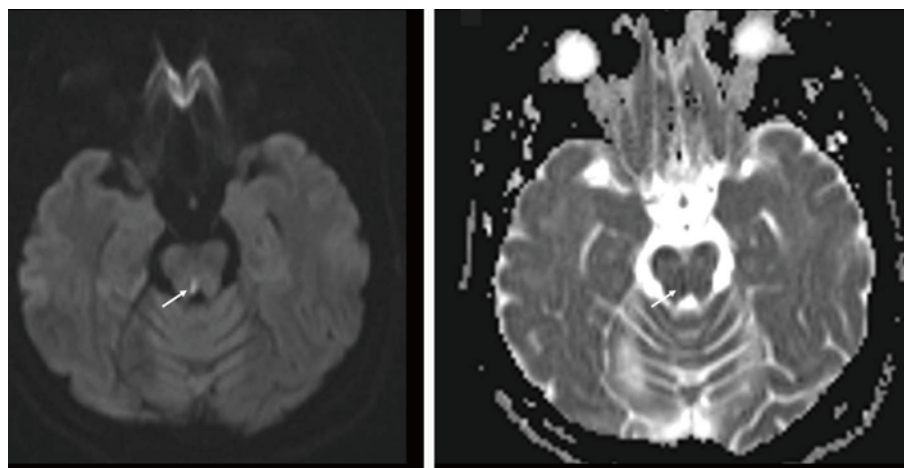


Figure 3. The second DWI, performed two days after the onset of symptoms, showing restricted diffusion in the right, inferior midbrain, just anterior to the cerebral aqueduct (arrows).

Ethical consideration

This study was approved by the Ethical Committee of Yozgat City Hospital, Yozgat, Turkey. The publication of Figure 1 has obtained the consent of the patient.

Conflict of interest statement

The authors report no conflict of interest.

Authors' contributions

H.O. contributed substantially to the design of the study,

evaluation of the patient, collection of the data, writing of the paper and submission of the paper. E.E. contributed substantially to the evaluation of the patient and collection of the data.

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