



False negative diffusion weighted imaging in an acute onset double vision patient with isolated internuclear ophthalmoplegia from ischemic origin

Halil Onder[✉]

Neurology Clinic, Yozgat City Hospital, Yozgat, Turkey

Dear Editor,

A-72-year-old male with medical history of hypertension admitted with acute onset double vision. On neurological examination, right eye could not adduct whereas nystagmus occurs on the left eye abduction. Cranial diffusion weighted imaging (DWI) was in normal ranges. Based on the negative DWI result and atypical clinical presentation for stroke, third nerve palsy was considered in the forefront and the patient was planned to be discharged with suggestion of ophthalmology outpatient visit. However, following neurology evaluation, the diagnosis of left internuclear ophthalmoplegia (INO) was favored. Other neurological examinations including motor, sensory and cerebellar investigations were in normal ranges. On etiological aspect, a provisional diagnosis of ischemic stroke with negative DWI was considered and the patient was hospitalized after initiation of aspirin and enoxaparin therapies. Repeated DWI also resulted in normal findings. Finally, additional thin section axial DWI (performed on the fourth day of the clinical onset) showed restricted diffusion in the inferior midbrain, just anterior to the cerebral aqueduct (Figure 1). Further investigations for stroke etiology, including brain/neck tomography angiography, echocardiography, electrocardiography, were in normal ranges. 24-

hour-Holter monitoring revealed PAF attacks. With the diagnosis of cardioembolic stroke, dabigatran 2×110 mg and metoprolol 50 mg treatments were initiated.

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 3th nerves[1]. Stroke is one of the most common pathophysiologic group of this manifestation[2]. However, pure isolated ischemic stroke from ischemic origin has rarely been reported in literature[1,3]. Clinical awareness of this syndrome is vital for the diagnosis such that in a crucial study, it was reported that MRI could demonstrate ischemic lesions producing INO in only 52% of the patients[2]. Of note, in this study, all manifestations including INO from ischemic origin were included and not a method of selection of the isolated INO patients was conducted. Therefore, considering that lesion resulting in solely INO (without accompanying other manifestations) would rather concern a localized region and negative DWI can be seen rather in small ischemic lesions[4], I think that false negative DWI results would be higher than this ratio (52%) in patients with isolated INO presentations. Taken together, the presentation of this rare case with INO at whom initial DWIs failed to show ischemic lesion (2 times) constitutes a remarkable sample in this regard.

[✉]First and corresponding author: Halil Onder, Neurology Clinic, Yozgat State Hospital, Yozgat, Turkey.
Tel: 3544442066
Email: halilinder@yahoo.com

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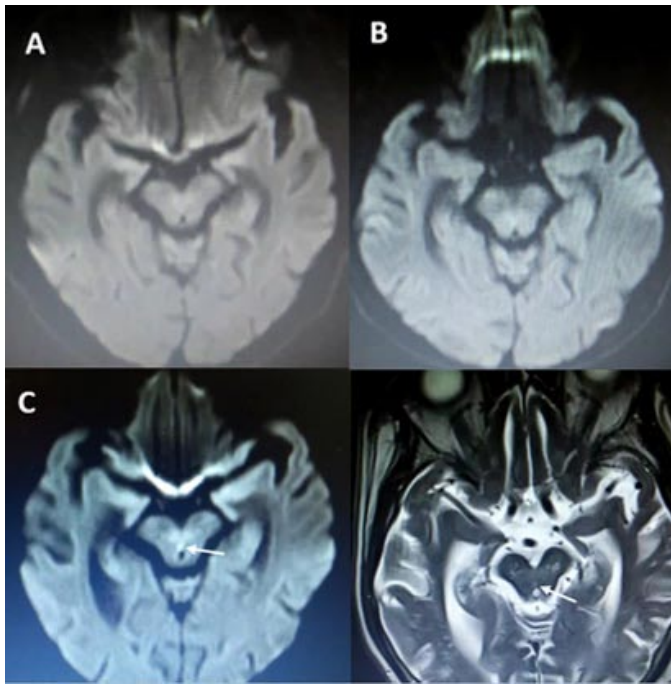


Figure 1. DWI result.

A, Initial DWI, performed 10 hours after clinical onset, showing normal appearance. B, Second DWI, performed 13 hours after the clinical onset, showing normal findings. C, DWI and T2-weighted sequences, performed on the 4th day of presentation, showing ischemic lesion in the inferior midbrain, just anterior to the cerebral aqueduct (arrows).

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 PCA, SCA, or severe proximal BA stenosis or occlusion[1]. However, the stroke etiology in our patient was determined as cardioembolic, expanding the underlying pathogenesis in this syndrome.

In conclusion, herein, I present a rare patient with false negative DWI at whom clinical presentation constituted a strictly

challenging issue in the emergency department. Based on this rare illustration, first, I draw attention to the importance of multimodal evaluation of the patients with stroke pre-diagnosis and avoid MRI based evaluation as DWI may be insufficient to detect ischemic lesion in early phase, particularly in the posterior circulation and minor stroke syndromes[4]. In addition, I point out this rare manifestation of isolated INO due to ischemic stroke which should be kept in mind among emergency practice for avoiding under-diagnosis. This case may also give crucial perspectives pointing out the importance of repeating DWIs in stroke like clinics with negative initial DWI results. I particularly suggest to repeat DWI, even multiple times, as negative DWI results is not rare in this rare manifestation of INO from ischemic origin[2].

Conflict of interest statement

The authors declare that there is no conflict.

References

- [1] Kim JS. Internuclear ophthalmoplegia as an isolated or predominant symptom of brainstem infarction. *Neurology* 2004; **62**(9): 1491-1496.
- [2] Eggenberger E, Golnik K, Lee A, Santos R, Suntay A, Satana B, et al. Prognosis of ischemic internuclear ophthalmoplegia. *Ophthalmology* 2002; **109**(9): 1676-1678.
- [3] Ogawa E, Sakakibara R, Kishi M, Tateno F. Pure isolated internuclear ophthalmoplegia. *Intern Med* 2011; **50**(16): 1785.
- [4] Edlow BL, Hurwitz S, Edlow JA. Diagnosis of DWI-negative acute ischemic stroke: A meta-analysis. *Neurology* 2017; **89**(3): 256-262.

CORRIGENDUM

Corrigendum: Triazinone herbicide metribuzin induced acute liver injury: A study of animal model

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In the article titled, "Triazinone herbicide metribuzin induced acute liver injury: A study of animal model", of Journal of Acute Disease, the second author's name is written incorrectly as "Rezzag Mohcen Om Selma" instead of "Rezzag mohcen Om Selma", and "Selma RO" should be written correctly as "Om Selma RM" in How to cite the article.

The legend of table 3 is written incorrectly as "Liver oxidative stress parameters of fetal rabbits" instead of "Transaminases (GOT and GPT) activities in control and experimental animals"; "oxalacetic" in abstract should be written correctly as "oxaloacetic"; "statistical analysise" in materials and methods should be written correctly as "statistical analysis"; "Stress oxidative parameters" in results should be written correctly as "Oxidative stress parameters".

doi:10.4103/2221-6189.241016

Reference

Samir D, Om Selma RM, Asma S. Triazinone herbicide metribuzin induced acute liver injury: A study of animal model. *J Acute Dis* 2018;7(4):152-157.

Corrigendum: Formulating one health policy for Nipah Outbreak in India: A neglected agenda

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In the article titled, "Formulating one health policy for Nipah Outbreak in India: A neglected agenda", of Journal of Acute Disease, the first affiliation is written incorrectly as "RM University, Chennai, India" instead of "SRM University, Chennai, India".

Second affiliation is written incorrectly as "SR, Department of Hospital Administration, PGIMER, Chandigarh India" instead of "Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Dehradun, India".

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Reference

Thiyagarajan A, Bhattacharya S. Formulating one health policy for Nipah Outbreak in India: A neglected agenda. *J Acute Dis* 2018;7(4):178-179.