RESIDENT & FELLOW SECTION

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Mystery Case: Don't fall for pseudo-INO!

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A 31-year-old woman with a 4-day history of diplopia showed slow adducting saccades in the left eye (pseudo–internuclear ophthalmoplegia [P-INO][1,2]; see video 1 at Neurology.org), left inferior rectus muscle weakness, and upper limb fatigability. Edrophonium testing with transient resolution of P-INO led to a diagnosis of myasthenia gravis (MG) (see video 2), which was later confirmed by positive acetylcholine receptor antibodies.

In a young woman, the slow adducting saccade could easily be mistaken for true INO due to a demyelinating lesion of the medial longitudinal fasciculus (MLF) indicating multiple sclerosis, unless additional signs suggestive of myasthenia are sought. These include ptosis, lid twitch, bulbar signs, and fluctuation of symptoms.

AUTHOR CONTRIBUTIONS

G.L. Traber examined the patient, recorded the videos, and wrote the manuscript. Y. Valko acquired the eye movement data and revised the manuscript. R. Gulik examined the patient and revised the manuscript. K.P. Weber designed the study, processed the videos, and revised the manuscript.

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DISCLOSURE

G. Traber, Y. Valko, and R. Gulik report no disclosures relevant to the manuscript. K. Weber acts as an unpaid consultant and has received funding for travel from GN Otometrics. Go to Neurology.org for full disclosures.

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MYSTERY CASE RESPONSES

The Mystery Case series was initiated by the *Neurology*® Resident & Fellow Section to develop the clinical reasoning skills of trainees. Residency programs, medical student preceptors, and individuals were invited to use this Mystery Case as an educational tool. Responses were solicited through a group e-mail sent to the American Academy of Neurology Consortium of Neurology Residents and Fellows and through social media. We received 197 responses including partial and complete responses. Most respondents (73%) were newly in practice (1–4 years) and 42% of respondents reported working in an academic-based setting. The next highest reported primary work setting was hospital-based at 34%. Sixty percent were residents/fellows while 26% were faculty/board-certified physicians and 12% were medical students. Sixty-seven percent report a primary residence outside the United States.

Video 1 demonstrates a left internuclear ophthalmoplegia, which is ultimately revealed to be a pseudo-INO as it is the result of MG, rather than a lesion of the MLF. Nineteen percent of respondents identified a left INO and 29% reported the finding was pseudo-INO. Eleven percent also identified slow saccades. Forty percent subsequently answered that the lesion localizes to the neuromuscular junction. The top 2 differential diagnoses in this case were MG (53%) and demyelinating disease (35%). Sixty-two percent of respondents correctly stated that an edrophonium test was performed in the middle of video 1, resulting in dramatic improvement in symptoms.

Ocular findings are a common presentation in MG and can sometimes closely mimic demyelinating disease or cranial nerve palsies. MG should be considered in patients with pupil-sparing ocular movement abnormalities especially if these findings are not consistent with a defect in a single cranial nerve or if there are signs of fatigability or diurnal variance.[1] One small study suggested distinguishing between INO and pseudo-INO can be made by the peak velocity of saccades where, in pseudo-INO, peak velocity is similar to that of controls; this finding has not been replicated, however.[2] Edrophonium testing can be

Supplemental data at Neurology.org

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used to diagnose MG; however, it may be negative in up to one third of patients with diplopia.[1]

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