Solution: Bilateral Internuclear Ophthalmoplegia (INO)

Last month’s case presented diplopia and brisk reflexes in a 40-year-old man.

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A 40-year-old man with recurrent episodes of transverse myelitis and optic neuritis gradually developed diplopia to lateral gaze bilaterally, which was not fatigable. Deep tendon reflexes (DTRs) including jaw jerk were brisk.

The following is (are) correct regarding the video findings:
1. Internuclear ophthalmoplegia (INO)
2. The side of the INO is named after the abducted eye.
3. Bilateral lesion of medial longitudinal fasciculus (MLF)
4. Pathognomonic of multiple sclerosis (MS)
5. A complication of treatment of MS

The correct responses are 1 and 3:
- INO is one of the most localizing signs in neurology. It is due to a lesion of MLF which connects the nuclei of the 6th and 3rd cranial nerves and is located in the dorsal part of the pons and midbrain.
- The most common cause of INO is cerebrovascular disease followed by multiple sclerosis. Other causes include tumors, infections, and trauma.
- INO presents with horizontal diplopia and examination reveals weakness of the ipsilateral adducted eye and nystagmus of the contralateral abducted eye.
- The cause of nystagmus is not clear. It may be an adaptive response to weakness of the adducted eye.
- Myasthenia may mimic INO. Medial rectus weakness is common in myasthenia gravis (MG) and adaptive response of the fatigable contralateral lateral rectus (LR) sometimes induces abnormal movement that mimics nystagmus.
  - In the presence of other manifestations of MS or MG, diagnosis is not difficult.
  - However, when these symptoms occur in isolation, the most important differentiating sign is sparing of convergence response in real INO due to the preserved integrity of the convergence center.
  - In peripheral medial rectus (MR) weakness however (third cranial nerve palsy, MG, etc.), such a response is affected.
- INO is named after the side of the adducted eye (medial rectus).