Direction and magnitude of head tilt alter postrotatory nystagmus

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TO THE EDITOR: We read the article by Wang and Lewis (2016) with a great interest. In this study, using the axis shift and dumping index, they found that the “residual sensory conflict” correlates with motion sickness susceptibility in patients with vestibular migraine. This could explain the motion intolerance and episodic vertigo that characterize vestibular migraine based on dysfunction of the cerebellar nodulus and uvula or their projections to the vestibular nuclei, since the canal and otolith signals are first integrated there. However, the time constant (TC) and dumping index did not differ among the three groups of normal subjects, patients with migraine, and patients with vestibular migraine. These findings are in contrast to those observed in our previous study that found increased TC of the vestibulo-ocular reflex and greater suppression of the postrotary nystagmus with forward head tilt in patients with vestibular migraine, compared with normal controls and patients with migraine (Jeong et al. 2010). These contradictory results may be ascribed to different methods of tilt suppression. Wang and Lewis (2016) adopted tilting of the head 45° in the roll plane, whereas our patients had pitched their head forward about 90°. A previous study found that the direction and angle of active head tilts affect inhibition of the postrotatory nystagmus, probably by influencing the Purkinje cell activities (Schrader et al. 1985a). Suppression of postrotatory nystagmus is less when the head is tilted toward the shoulder than when tilted forward. A smaller degree (45°) of head tilt about the roll axis, which was adopted in this study, leads to even weaker inhibition (28.5%) than the 90° tilt (Schrader et al. 1985a).

Furthermore, the stronger reduction of TC is observed after contralateral compared with ipsilateral head tilt (Schrader et al. 1985b). In this study, Wang and Lewis (2016) appear to have adopted ipsilateral head tilt, which would have resulted in the least degree of tilt suppression among the subjects. Indeed, the mean dumping or tilt suppression index appears to be smaller than that found in our previous study (about 28.5% vs. 42.2%) in normal controls, and this difference may explain the contradictory results, at least in part.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the authors.

AUTHOR CONTRIBUTIONS


REFERENCES


