Isolated Lateropulsion Caused by a Paramedian Midbrain Infarction

Koichiro Nakamura, Suguru Kadowaki, Nozomu Matsuda and Yoshikazu Ugawa

Key words: lateropulsion, paramedian midbrain infarction


An 84-year-old woman was admitted to our hospital due to gait disturbance. She had marked gait difficulty with body axis deviation to the left, but without any signs of weakness, cerebellar ataxia or sensory disturbances. Eye movements and pupil function were normal. Skew deviation, ocular torsion and head tilt were not observed. Brain MRI showed acute infarction in the paramedian rostral midbrain and right medial thalamus (Picture 1).

The symptoms of this patient are compatible with body, or axial lateropulsion. Four patients with lateropulsion due to an anteromedial midbrain lesion have been reported (1-3). All of these patients with a midbrain lesion including the present case had a lesion medial to the red nucleus. The interstitial nucleus of Cajal (INC) or rostral interstitial medial longitudinal fascicle (riMLF) was involved in two of the patients (1, 2), but they were not involved in the other two patients (2, 3) and in our case. This suggests that INC or riMLF involvement is not a requisite for the lateropulsion. Superimposition of all these lesions indicates that a site just medial to the red nucleus may be a responsible region for this symptom, and it supports the idea that the crossed vestibulothalamic tract goes through this position. The position of the ascending graviceptive pathway from vestibular nuclei to the contralateral “vestibular” thalamus is still unclear at the level of the rostral midbrain (4). The present case and some previous reports suggest that the ascending graviceptive pathway is positioned at just medial to the red nucleus in the midbrain.

The authors state that they have no Conflict of Interest (COI).

References