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Selective Paralysis of Downward Saccades

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with bilateral lesions in the region of the thal-amd-subthalamic paramedian arteries [2,3]. The critical area includes the riMLF and the interstitial nucleus of Cajal. In most cases, both saccades and pursuit are involved. In some cases, detailed evaluation of the eye movements is not possible because of disturbed consciousness due to bithalamic infarctions. Selective deficit of downward saccades has been described [4, 6]. Sometimes the upward saccades are slowed down [2,6], as was observed in the present case. The lesions associated with paralysis of downward saccades are localized medially and

Downgaze paralysis is attributed to a bilateral lesion in the rostral interstitial nucleus of the medial longitudinal fascicle (riMLF) or its efferent pathways [1]. In most cases saccades and pursuit are both involved. We report a case with selective deficit of downward saccades.

A 78-year-old man was first admitted to another hospital because of apathy and disorientation. CO intoxication was suspected, but not confirmed. Data concerning eye movements are not available. Later on, an amnesic syndrome and vertical gaze paresis were noted.

The patient was examined 4 months later because of a short period of excessive somnolence. The memory was still poor. Eye movements were recorded on videotape and electro-oculographically. The horizontal eye movements were normal, including saccades, pursuit, and optokinetic and vestibulo-ocular reflexes. Downward saccades were absent, and upward saccades were slowed down (fig. 1). Upward and downward pursuits were normal (gain 0.97), as were vertical oculocephalic maneuvers. Optokinetic stimulation provoked a normal downward excursion with corrective upward saccades. Downward corrective saccades were absent. Bell's phenomenon was present. Convergence was almost absent. Magnetic resonance imaging visualized a bithalamic infarction, extending into the upper mesencephalon and involving the area of the riMLF (fig. 2). Selective deficit of downward eye movements is rare and has only been observed

Fig. 1. Vertical random saccades. Peak velocity/amplitude (Amp): absence of downward saccades, slowing down of upward saccades.

posteriorly to the upper pole of the red nucleus, an area including the riMLF. According to Pierrot-Deseilligny [2] paralysis of downward saccades is due to involvement of the efferent tract for downward saccades where it emerges from the riMLF. Slowing down of upward saccades could be explained by an additional partial involvement of the riMLF itself.

Our case confirms the existence of an isolated deficit of downward saccades with normal downward pursuit. The mesencephalic lesions were limited to a very small area, including the riMLF area on both sides.

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Fig. 2. Axial T₂-weighted spin echo image at the level of thalamus (a) and midbrain (b) and coronal T₂-weighted image through thalamus and midbrain (c). a A large hyperintense lesion (infarction) is visible in the left thalamus (open arrow); two smaller hyperintense lesions are seen anterolaterally in the right thalamus (black arrows). b Thalamic lesions extend caudally and join on the midline at midbrain level (arrows). Here the lesion is situated just under the third ventricle-cerebral aqueduct junction at the upper end of the MLF. c The lesions in the left (open arrow) and right (thick black arrow) thalamus are clearly visible. The caudal extension along the inferolateral wall of the third ventricle (3) can be followed on both sides (long black arrows). The lesions come together on the midline (white arrow) in an area including the riMLF.

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