Supranuclear Paralysis of Downgaze
Eye Movements

- Global paralysis of downgaze
- Absent convergence
- Slow saccades on upgaze
- Deviation of the eyes up under forced eye closure (Bell phenomenon)
- Horizontal gaze nystagmus to the right
Eye Movements

Optokinetic nystagmus absent with vertical rotation of the drum
Normal vertical oculocephalic reflex
Skew deviation, right hypertropia
Left head tilt – left ocular tilt reaction
Figure 1. Anatomical variants of the origin of the paramedian thalamic arteries form the basilar communicating arteries. Types IIa and IIb are those associated with bilateral paramedian thalamic infarction (adapted from Percheron [3]).
Post-Stroke
Post-Stroke
Figure 2. Cut surface of bilateral rostral midbrain infarcts, x2.5.
Figure 5. Transverse section through caudal to infarcts demonstrating the sparing of 3\textsuperscript{rd} nerve nucleus and the interstitial nucleus of Cajal.
Figure 6. Transverse sections through mesodiencephalic junction demonstrating bilateral infarcts outlined with stippling as described in the text. This section demonstrates the largest extent of the lesions. Hematoxylin and eosin plus luxol fast blue, x 4.5.
List of abbreviations for figures

A = Cerebral aqueduct
BIS = Brachium of the inferior colliculus
CM = Centromedianum
CP = Cerebral peduncle
EW = Edinger Westphal nucleus
FR = Fasciculus retroflexus
H = Habenula
IS = Interstitial nucleus of Cajal
MB = Mammillary body
MD = Medial dorsal nucleus
MG = Medial geniculate nucleus
ML = Medial lemniscus
MT = Mammillothalamic tract
P = Pretectum
PC = Posterior commissure and its nuclei
PIC = Posterior limb of internal capsule
PN = Pulvinar nuclei
RN = Red nucleus
SC = Superior colliculus
SNI = Substantia nigra
SNu = Substantia nucleus
ZI = Zona incerta
III = Third nerve nucleus
III V = Third ventricle
Figure 7. Transverse section through ventral diencephalon. The bilateral infarcts have nearly disappeared. Hematoxylin and eosin plus luxol fast blue, x 4.5
Figure 8.
Figure 9. Four lesions giving rise to upward gaze paralysis superimposed on a sagittal section of the human brain. The enlargement of the lesions on the right shows that the common areas involved (stippled) include iC, nD and fibres of the posterior commissure. All lesions shown here are unilateral (see text).
Figure 10. Case Hu. A sagittal view of the brain. Cross-hatched area denotes the total lesion which gave rise to paralysis of smooth pursuit and fast upward and downward eye movements. Lesion on the right is indicated by horizontal lines, the left by vertical lines. The overlapping area represents the region bilaterally destroyed. iC and nD were almost completely spared by this lesion.
Figure 12.
Figure 13.
Figure 14.
Figure 15.
Figure 16. Five unilateral or bilateral lesions giving rise to upward and downward gaze paralysis superimposed on a sagittal section of the human brain. The enlargement on the right shows that the common areas involved (striped) include rostral iMLF (nMLF), iC, and nD.
Figure 17. Sagittal section through the human brain on which the bilaterally destroyed areas in the six cases of downward gaze paralysis are superimposed. The enlargement of the lesions on the right shows that the common areas destroyed in these cases (stippled) ties above the red nucleus at the level of tractus retroflexus (TR), that is around aD and rostral iMLF (nMLF).