

What are the clinical consequences of this combined hierarchical and parallel organization of the motor pathways?

There are alternate pathways for producing many movements; this contributes to partial recovery after strokes and other traumatic injuries to the motor systems.

What are the major postsynaptic target neurons of Betz cells in the spinal cord?

Motor neurons and interneurons

What is the content of the various limbs of the internal capsule?

The corticobulbar tract descends in the genu, the corticospinal tract descends in the posterior limb. Thalamocortical projections are present in all components.

Through which portion of the internal capsule does the corticospinal tract descend?

Take a guess on this one.

Where in the basis pedunculi do axons of the genu and posterior limb descend?

Within the middle portion

Can you explain why internal capsule lesions often produce a more extensive deficit than cortical lesions?

Because axons are compacted into a small region in the internal capsule

Do the same branches of the middle cerebral artery supply the cortex and the internal capsule?

No, cortical branches supply the cortex whereas deep branches supply parts of the internal capsule.

What landmarks or neighboring structures seen in frontal sections allow one to distinguish anterior from posterior limbs of the internal capsule?

KEY: posterior limb of internal capsule is lateral to the thalamus

What is the structure located medial to the anterior limb of the internal capsule?

Caudate nucleus

What cranial nerve exits from the brain at the medial border of the basis pedunculi?

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Which other major descending tracts originate from structures located in the rostral midbrain?

Rubrospinal tract; tectospinal tract

What is the origin of fibers that cross in the pyramidal decussation?

Layer 5 of the cortex; mostly the cortical motor areas

What is the destination of fibers that do not cross?

Medial ventral horn

What are the differences between the signs of a capsular lesion and those of a transection of the corticospinal tract?

Strictly speaking, lesion of corticospinal axons only produces weakness/paralysis. Contrast, lesion of the internal capsule produces weakness/paralysis plus spasticity.

What are the physiological implications of the differential ventral horn terminations of the lateral and medial descending pathways?

The lateral pathways synapse on interneurons and motor neurons that control limb muscles. The medial pathways synapse on interneurons and motor neurons that control proximal muscles.