Pyramidal tract

The pyramidal tracts include both the corticospinal tract and corticobulbar tracts. These are aggregations of upper motor neuron nerve fibres that travel from the cerebral cortex and terminate either in the brainstem (corticobulbar) or spinal cord (corticospinal) and are involved in control of motor functions of the body.

From:http://www.csuchico.edu/~pmccaffrey/syllabi/CMSD%20320/images/U10Pyramidal.JPG

The corticospinal tract conducts impulses from the brain to the spinal cord. It is made up of a lateral and anterior tract. The corticospinal tract is involved in voluntary movement. The majority fibres of the corticospinal tract cross over in the medulla, resulting in muscles being controlled by the opposite side of the brain. The corticospinal tract also contains betz cells (the largest pyramidal cells), which are not found in any other region of the body.

The pyramidal tracts are named because they pass through the pyramids of the medulla.

The myelination of the pyramidal fibres is incomplete at birth and gradually progresses in caudo-cranial direction and thereby progressively gaining functionality. Most of the myelination is complete by two years of age and thereafter it progresses very slowly in cranio-caudal direction up to twelve years of age.

Assessment

see Upper motor neuron syndrome

The effect of a lesion to the CST causes more than just muscle weakness. It also affects synergistic movement patterns that affect things such as dexterity, ambulation and activities of daily living.

There are a number of outcome measures that can be used dependent on what you want to assess. These include:

Fugl-Meyer Assessment of Motor Recovery after Stroke (FMA) Oxford Muscle Grading System Stroke Rehabilitation Assessment of Movement (STREAM) Action Research Arm Test (ARAT) Cherokee Arm and Hand Activity Inventory Functional Ambulation Category Motor Assessment Scale Rivermead Mobility Index

Rivermead Motor Assessment

ASIA (Spinal Cord)

Stinear et al (2007) suggested that Corticospinal Tract integrity could be used to identify the likely extent of motor recovery and may enable appropriate selection of rehabilitation strategies for individuals recovering from stroke . In a further study conducted by Stinear et al (2012) they trialed the use of the PREP(predicting motor recovery) algorithm to assess the likelihood of upper limb recovery. By utilising the SAFE score (sum of the shoulder abduction and finger extension) 72 hours

after stroke, Transcranial magnetic stimulation, motor evoked potentials in affected upper limb or the Asymmetry Index (measured with diffusion-weighted MRI) they were able to predict whether there could be a complete- no recovery. It was suggested from these findings that clinicians using the PREP algorithm may be able to predict the likely extent of upper limb recovery and may be able to therefore manage of patient expectations from an earlier period.