

Neurological Disorders

Allodynia

(e.g. trigeminal neuralgia) A condition in which a gentle stimulus which does not normally provoke pain, such as a breeze or the touch of clothes, causes intense pain.

Brown Sequard Syndrome

Hemisection of the spinal cord. Loss of pain and temperature below and contralateral to the lesion and loss of fine touch and proprioception below and ipsilateral to the lesion site.

Syringomyelia

Syrinx formation in central canal of the spinal cord disrupts decussating fibres (in the ventral commissure) of anterolateral system. Bilateral loss of pain and temperature below the site of the lesion.

Tabes Dorsalis

Tertiary syphilis. Bilateral loss of dorsal columns – bilateral absence of touch and proprioceptive feedback below the lesion (characteristic stamping gait due to proprioceptive loss)

Agnosia

(lesion of parietal association areas) Inability to interpret sensations correctly although the sense organs and nerves from organs to the brain are correctly functioning. E.g., can see or feel an object and describe its physical features in detail yet they cannot name the object nor say what it is used for. Can be specific e.g. prosopagnosia (see later)

Apraxia

(lesion of parietal association areas) Inability to make skilled movements with accuracy. Due to the inability to organise complex movements rather than clumsiness due to weakness, sensory loss or cerebellum malfunction. E.g. can see scissors, say what they are used for but unable to manipulate them to use them

Ataxia

(cerebellar damage) inability to carry out a movement accurately and at the right speed (dysmetria) A deficit in motor control as if the agonist/antagonist muscles are not cooperating and time delays in negative feedback are not being dealt with – oscillation and tremor. Also motor learning is compromised (prism goggle experiment)

Paresis

(lesion of the primary motor cortex) Lesions, as in stroke, cause initial paralysis, but some function returns. However, there is a weakness, lack of skill or delicacy, and reluctance to use the affected part of the contralateral body.

Nystagmus

(lesion of the flocculus, vestibular apparatus) rapid involuntary ‘sawtooth’ movements of the eye – drift – flick, drift – flick ...

Dysdiadochokinesia

(cerebellar hemisphere lesion) sequences of movements, and movements that require cooperation of several joints break up into separate inaccurate jerky movements. Repetitive movements break down

Hypokinesia

Overactive GPi due to increased excitation from subthalamic nucleus or inhibited inhibition from striatum. Movements generally inhibited. (e.g. parkinsons) May find it difficult to walk from one side of the room to the other (voluntary) unless a line on ground to guide (external object) i.e. SMA vs LPM

Hyperkinesia

Extra unwanted activity – e.g. repetitive thrashing of contralateral limb – hemiballismus, following STN damage. Chorea – repetitive jerky movements of limbs in strange sequences.

Ocular System Lesions

Emmetropia

Object at infinity sharply focused on retina

Myopia

Short sightedness. Lens too powerful when observing objects at distance which are thus focused in front of the retina. ?genetic/environmental factors (e.g. reading when young causes eyes to focus at short distances) Corrected with a diverging lens. Predisposes to glaucoma, retinal degeneration and detachment.

Hypermetropia

Long sightedness. Lens is too weak to allow objects at short distance to be focused onto the retina, and hence they are focused behind the retina. Corrected with a converging lens.

Presbyopia

Decrease in the lens elasticity with age leading in a reduced accommodating power and hence reduced ability to focus objects close to the eye.

Protanopia – dichromacy with no red cones

Deuteranopia – dichromacy with no green cones

Tritanopia – dichromacy with no blue cones

Anomalous trichromacy

Green and red cones with shifted absorption spectra

Rod monochromat

No cones, hence no colour vision. Sees only with shades of black and grey

Lesions of nerves from retina to V1

Monocular blindness, bitemporal hemianopia, homonymous hemianopia, quadrantanopia, scotopia

Amblyopias

Permanent defects in cortical function in the absence of eye defect. Can be due to conditions during the 'critical period' of development, e.g. astigmatism, uncorrected strabismus, wearing eye patch.

Akinetopsia

Lesion of MT – dorsal 'where'. Inability to see movement – movement agnosia.

Achromatopsia

Lesion of V4 – ventral 'what'. Cortical colour blindness

Prosopagnosia

Lesion of IT – ventral 'what'. Inability to recognise faces

Aphasia

Lesion of Wernikes area of dominant hemisphere. Inability to comprehend speech.

Lesion of Brocas area

Specific loss of the ability to organise and articulate words. E.g. can describe a big red vehicle, public transport ... but cant actually say it is a 'bus'