

Signs and symptoms of cerebellar disease

❖ A lesion in one cerebellar hemisphere gives rise to signs and symptoms that are limited to the same side of the body

Hypotonia: decrease in muscle tone: (Loss of the deep cerebellar nuclei, particularly of the interposed nuclei and fastigial nuclei)

Dysmetria (past pointing)

Ataxia (inaccuracy and disturbances of voluntary movement)

Tremors: ("intention tremor")

Postural changes and alteration of gait (wide-based gait) to compensate for loss of muscle tone. (related to hypotonia and spinocerebellar tracts)

➤ Failure of Progression

■ Dysdiadochokinesia (difficulty performing rapid alternating movements) due to failure to predict where the different parts of the body will be at a given time during rapid motor movements. (related to the cerebrocerebellum)

■ Dysarthria: Disorders of speech

➤ Nystagmus: rhythmic oscillations of the eyes. It occurs especially when the flocculonodular lobes of the cerebellum are damaged;

Basal ganglia lesions

Parkinson Disease

Progressive disease of unknown cause

Neuronal degeneration of dopaminergic neurons in the substantia nigra

Reduction in the release of the neurotransmitter dopamine within striatum

● signs and symptoms:

➤ Tremor (when the limbs are at rest)

➤ Rigidity

➤ Bradykinesia (difficulty in initiating movements)

Huntington disease

Inherited disease, single gene defect on chromosome 4.

Degeneration of the striatonigral inhibiting pathway

Signs and symptoms:

enlarged lateral ventricles

due to degeneration of the

caudate nuclei.

2- Progressive dementia

Lesions of the thalamus

Lesions affecting the sensory nuclei of the thalamus:

1-Damage to VPM and VPL:

Due to: Usually thrombosis or hemorrhage of one of the arteries supplying the thalamus.

Symptoms: loss of all forms of sensation, including light touch, tactile localization and discrimination from the opposite side of the body

Vascular lesion of the thalamus may also involve the midbrain and internal capsule and produce extensive motor and sensory deficits. (Symptoms overshadowed)

2-Dejerine-Roussy syndrome (thalamic Pain):

May occur as the patient is recovering from a thalamic infarct

Symptoms: Spontaneous pain occurs on the opposite side of the body

Lesions affecting the motor nuclei of the thalamus:

1-Abnormal Involuntary Movements:

Due to: vascular lesions of the thalamus.

Symptoms: Chorea (involuntary jerky movements, the extremities and twitching of the face) and athetosis (slow, involuntary, convoluted, writhing movements of the fingers, hands and toes)

Vascular lesion of the thalamus may also involve the neighboring caudate and lentiform nuclei (Symptoms overshadowed)

2-Thalamic hand:

The wrist is flexed, the metacarpophalangeal joints are flexed, and the interphalangeal joints are extended.

Fingers can be moved but slowly

Lesions of the hypothalamus

NUCLEUS	STIMULATION OF	LESION OF
Suprachiasmatic nucleus	Adjusts the circadian clock phase	Abolishes circadian rhythms
Supraoptic or paraventricular nuclei Produce ADH	Increased blood volume, blood pressure, and metabolism	Diabetes insipidus السكرى الكاذب Produces symptoms similar to diabetes but it isn't diabetes, it is an ADH deficiency
Lateral hypothalamic nucleus Feeding centre	Increased feeding	Decreased feeding
Ventromedial nucleus	Decreased feeding Satiety centre	Increased feeding
Dorsomedial nucleus Aggression	Sham rage	Decreased aggression and decreased feeding
Mammillary body	? Unknown or unexperimented	Short-term memory is not processed into long-term memory

Cerebrum

Frontal lobe

Destruction of the primary motor area (area 4) produces paralysis

Lesions of the secondary motor area (area 6) alone produce difficulty in the performance of skilled movements, with little loss of strength.

Clinical notes:

Expressive aphasia: Destructive lesions in the left inferior frontal gyrus (Broca's)

Receptive aphasia: Destructive lesions restricted to the Wernicke speech area

Global aphasia: Destructive lesions involving both the Broca and Wernicke speech areas

-Destruction lesions in the angular gyrus in the posterior parietal lobe produce:

-Alexia : inability to understand written words

-Agraphia: loss of writing ability

Meninges & blood supply of the brain:

Occlusion of middle cerebral artery:

contralateral paralysis and sensory deficits of face, arm, aphasia (language center)

Occlusion of anterior cerebral artery:

contralateral paralysis and sensory deficits in the leg/foot and perineum

Occlusion of posterior cerebral artery:

visual deficits

Epidural hematoma:

Tearing of meningeal a. (Middle meningeal a. torn in fracture of skull at pterion)

Arterial bleeding

Acute (rapid and profuse)

Patient lucid at first ___ can be fatal within hours

Biconvex disc or lens like

Doesn't cross suture line

Subdural hematoma:

Tearing of bridging vein

Venous bleeding

Slow bleeding

Chronic subdural hematoma can remain undetected

Crescent like

Cross the suture line

Subarachnoid hematoma:

Tearing of cerebral artery or aneurysm

If arterial can be rapid and fatal

Limbic system

Lesion of the hippocampus results in (anterograde amnesia) Also, it is related to navigation

The individual is unable to store long-term memory

Memory of remote past events before the lesion developed is unaffected

-First area to show damage in Alzheimer disease

-Kluver-Bucy syndrome: bilateral removal of amygdala

● Docility (it means compliance ,opposite to aggression).

● Show no evidence of fear or anger

● increased sexual activity

● Hyperphagia

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