Lesions of the Brain and Presentations

Lesions of the brain refer to any damage or injury that disrupts the normal function of the brain tissue. These can be caused by a range of factors including stroke, traumatic brain injury, tumors, infections, and degenerative diseases. The presentations of brain lesions can vary depending on the location and severity of the lesion. Common presentations include motor deficits, sensory deficits, cognitive deficits, speech and language deficits, and visual deficits.



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Lesions of the Brain and Presentations

Frontal Lobe
Captain-at-front
A Frontal Lobe lesion presents with apathy, lack of spontaneity, delayed initiation, contralateral hemiparesis, bladder incontinence, and gait apraxia. If the lesion affects the left lateral frontal lobe in Broca's area, it causes difficulty speaking, also known as expressive aphasia. If the anterior cerebral artery causes the lesion, it affects the contralateral lower extremity more than the upper. If the middle cerebral artery causes the lesion, it affects the contralateral upper extremity more than the lower.

Parietal Lobe
Pirate-navigating
A Parietal Lobe Lesion presents with contralateral hemisensory loss, difficulty judging distances, difficulty with spatial awareness, loss of coordination, and a loss of vision in a quarter of the visual field (quadrantanopia). If the lesion is caused by the anterior cerebral artery, it affects the contralateral lower extremity more than the upper. If the lesion is caused by the middle cerebral artery, it affects the contralateral upper extremity more than the lower.

Temporal Lobe
Temple
A Temporal Lobe lesion in the Wernicke’s area on the left will cause difficulty understanding spoken or written language, also known as receptive aphasia. Other symptoms include forgetfulness, memory loss, vision problems, problems with hearing, difficulty identifying objects, and seizures.

Occipital Lobe
Octopus
An Occipital Lobe lesion presents with contralateral blindness, a loss of vision in a quarter of the visual field (quadrantanopia), bilateral cortical blindness, poor visual recognition of familiar objects, writing issues, hallucinations, and difficulty recognizing faces (prosopagnosia).

Brainstem
Brain-stem
Patients with Brainstem Lesions typically present with contralateral hemiparesis, contralateral loss of sensation, vertigo, nystagmus, dizziness, nausea and vomiting, ataxia, dysarthria, dysmetria, dilated pupils, loss of consciousness, coma, and even death.

Cerebellum
Silver-cerebellum-bell
A Cerebellum Lesion presents with contralateral hemiparesis, contralateral hemisensory loss, vertigo, nystagmus, dizziness, nausea, vomiting, ataxia, dysarthria, dysphonia, dysphagia, dysmetria, horner's syndrome, tinnitus, and deafness.

Main TBI Lesions

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Epidural Hematoma

E-pick-durex Blood-tomato

An Epidural Hematoma is a traumatic brain injury caused by a skull fracture. An Epidural Hematoma is a bleed into the epidural space causing compression below the bleed. It presents on CT imaging as a lens shape. Signs and symptoms of this injury include confusion, loss of consciousness, drowsiness, headaches, dizziness, insomnia, fatigue, gait disturbances, nausea, vomiting, blurred vision, seizures, irritability, depression, anxiety, and sleep disturbances. Patients with these symptoms after a head injury should be evaluated by a medical professional.

Subdural Hematoma

Sub-durex Blood-tomato

A Subdural Hematoma is a bleed that occurs beneath the dura but outside of the brain, occurring on the lateral cerebral hemispheres. Acute Subdural Hematoma is caused by trauma, usually in young adults or children. Symptoms of Acute Subdural Hematoma include dilation of the pupils, limb weakness, stupor, and coma. Chronic Subdural Hematoma affects the elderly and can happen without trauma or with minimal trauma. Symptoms of Chronic Subdural Hematoma include headache, an altered mental status that progressively declines, and focal neurologic signs.

Contusion/ Parenchymal Hemorrhage

Bruised Pear Hammer-hemorrhage

A Contusion or Parenchymal Hemorrhage is a traumatic brain injury that causes shearing to the parenchymal vessels. The general presentation of the injury may differ depending on the location of the hemorrhage; however, the frontal and temporal lobes are the most common injury sites. This shearing damage to the frontal and temporal lobes results in the presentation of a stupor progressing to coma, dilated pupils, progressive hemiplegia, and spasticity.

Intraventricular Hematoma

In-vent Blood-tomato

An Intraventricular Hematoma is caused by shearing to the parenchymal vessels, causing damage by blood pooling into the lateral and third ventricles. This damage causes signs of hydrocephalus, such as headaches, nausea, vomiting, and gait impairments, and requires shunting to address.

Subarachnoid Hemorrhage

Sub-arachnid Hammer-hemorrhage

A Subarachnoid Hemorrhage is bleeding between the arachnoid and pia mater caused by a TBI or an aneurysm. Symptoms include a headache described as the "worst headache of my life," nausea, vomiting, and loss of consciousness. On a CT scan, a Subarachnoid Hemorrhage looks like a star as blood pools between the pia and the arachnoid between each lobe of the brain.

Diffuse Axonal Injury

D-fuse Axon-olotl Injury

A Diffuse Axonal Injury is a TBI caused by a rotational force or deceleration force tearing the long connecting nerve axons in the brain. This type of injury is usually caused by a motor vehicle accident, but even collisions such as those in contact sports may result in axonal injury. Symptoms include coma, posturing, and an MRI indicating small evolving deep contusions.

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