

Assignment of

Physiological psychology

Topic = Neurological Disorders

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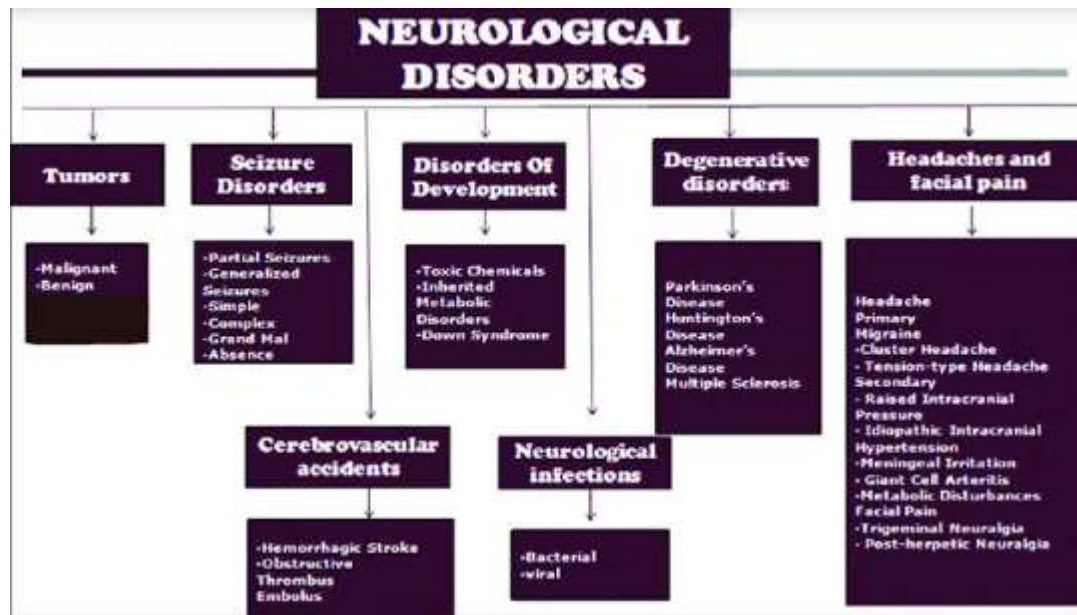
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Neurological Disorders

Neurological disorders include several brain disorders that lead to the disfunctioning of neurons in the brain. Major categories of neurological disorders that the brain can sustain are;



This chart shows the brief explanation of all neurological disorders.

1. Tumors

A mass of cells whose growth is uncontrolled and that serves no useful function is called tumor. A tumor may be of two types;

- **Malignant tumor**
 - A cancerous tumor that lack a distinct border and often give rise to metastases. A metastasis is a process by which cells break off a tumor, travel through the vascular system, and grow elsewhere in the body.
- **Benign tumor**
 - A non cancerous or harmless tumor that has a distinct border and can not metastasize.

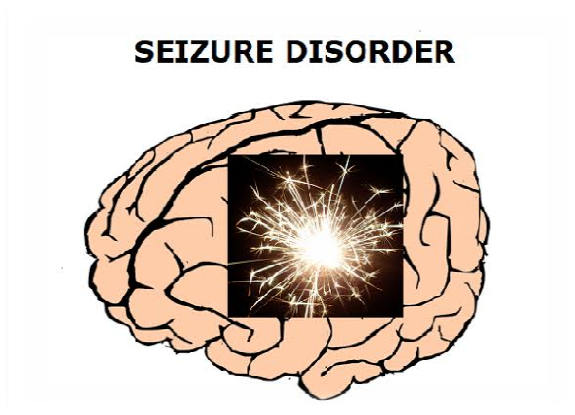
Some types of brain tumors are following ;

- ❖ **Gliomas**
- ❖ **Meningioma**

- ❖ Pituitary adenoma
- ❖ Neurinoma
- ❖ Metastatic carcinoma
- ❖ Angioma

2. Seizure Disorders

A seizure is a period of sudden, excessive activity of cerebral neurons. It is second most important category of neurological disorder. It is a preferred term of epilepsy.




The classification of seizure disorder is following ;

- I. Generalized seizure [with no apparent local onset]**
 - A. Tonic –clonic[grand mal]
 - B. Absence[petit mal]
 - C. Atonic[loss of muscle tone,temporary paralysis]
- II. Partial seizures[starting from a focus]**
 - A. Simple [no major change in consciousness]
 - 1) Localized motor seizure
 - 2) Motor seizure,with progression of movements as seizure spreads along the primary motor cortex.
 - 3) Sensory [somatosensory,visual,auditory,olfactory]
 - 4) Psychic[forced thinking,fear,anger etc]
 - 5) Autonomic[sweating,salivating etc]
 - B. Complex[with altered consciousness]
- III. Partial seizures[simple or complex]evolving to generalized cortical seizures.**


Children are especially susceptible to seizure disorders. Many of them do not have tonic-clonic episodes but instead have very brief seizures that are referred to as spells of absence.

Managing **SEIZURE DISORDERS** in children

Appropriately managing a child's seizure disorder depends on a number of factors, such as the child's age, general health, and the type of seizure occurring.




Treatments may include:




MEDICATIONS

There are a number of medications that can help keep a child's seizures under control. Consult a doctor to learn more.




KETOGENIC DIET

This high fat/protein diet produces ketones in the body, which can help control seizures. Consult a doctor before attempting.




VAGUS NERVE STIMULATION

A procedure in which a small battery is surgically implanted into the chest. When a child feels a seizure coming on, they can hold a magnet over the battery to help prevent the seizure.




BRAIN SURGERIES

Some children turn to brain surgeries when other management techniques fail. Consult a doctor for more information.




SEIZURE DOGS

Seizure dogs are trained to respond to seizures by alerting family members, protecting the child from harm during uncontrolled movements, or activating an alarm system. Some may also detect seizures.



OTHER SUPPORT AND CARE

To determine the best treatment options for your child, consult with qualified medical professionals. The safest and most effective seizure treatment options will vary greatly based on individual symptoms.



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Seizures can have serious consequences; most notably they can cause brain damage. Seizures have many causes. The most common cause is scarring, which may be produced by an injury, a stroke, a developmental abnormality in the brain, or the irritating effect of the growing tumor. Various drugs and infections that cause a high fever can also produce seizures. Genetic factors contribute to the incidence

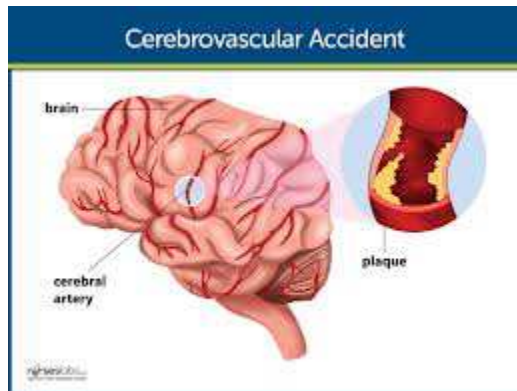
of seizure disorders. Thus ,they are treated with anticonvulsant drugs,many of which work by increasing the effectiveness of inhibitory synapses.

3. Cerebrovascular Accidents

Cerebrovascular accidents, or strokes, can produce impairments in perception, emotional recognition and expression memory and language. There are two types of strokes as ;

- **Hemorrhagic stroke**
 - A cerebrovascular accident caused by the rupture of a cerebral blood vessel.
- **Ischemic stroke**
 - A cerebrovascular accident caused by occlusion of a blood vessel.

A **thrombus** is a blood clot that forms in blood vessels, especially in places where their walls are already damaged. An **embolus** is a piece of material that forms in one part of the vascular system, breaks off, and is carried through the blood stream until it reaches an artery too small to pass through.



Atherosclerosis is a process in which the lining of the arteries develop a layer of plaque, deposits of cholesterol ,fats, calcium, and cellular waste products is a precursor to heart attacks and ischemic stroke, caused by clots that form around atherosclerotic plaques in cerebral and cardiac blood vessels.

4. Traumatic Brain Injury

Traumatic brain injury [TBI] is a serious health problem. It can be caused by a projectile or a fall against a sharp object that fractures the skull, causing the brain to be wounded by the object or a piece of the broken skull. There are two types of brain injuries ;

- ❖ **Penetrating Brain Injuries**
 - ✓ It is also known as open head injury , obviously affect the portion of the brain that is damaged by the object or the bone.
- ❖ **Closed Head Injury**
 - ✓ Can damage more than the cerebral cortex at the point of the coup and **contrecoup-in which brain recoil in the opposite direction and smash against the left posterior region of the skull. Contrecoup can produce more damage than the coup.**

TBI can greatly increase the likelihood of Alzheimer's disease. TBI results in increased levels of adenosine and glutamate in the traumatized brain tissue. Treatment with a drug that inhibits the release of glutamate can prevent this switch in the role of extracellular adenosine.

5. Disorders of development

There are following disorders of development ;

i. Toxic chemicals

A common cause of mental retardation is the presence of **toxins** that impair fetal development during pregnancy. In addition to the toxins produced by viruses, various drugs can adversely affect fetal development. **Fetal alcohol syndrome, is a birth defect caused by the ingestion of alcohol by a pregnant woman; include abnormal facial development and deficient brain development.**

ii.

iii. Inherited metabolic disorders

Several inherited "errors of metabolism" can cause brain damage or impair brain development. There are at least a hundred different inherited metabolic disorders that can affect the development of brain. The most common and best known is called **phenylketonuria [PKU], Tay-Sachs disease.**

iv. Down Syndrome

It is a congenital disorder that results in abnormal development of the brain , producing mental retardation in varying degree. It was described by John Langdon Down.

6. Degenerative disorders

Many disease processes cause degeneration of cells of the brain. Some of these conditions injure particular kind of cells , a fact that provides the hope that the research will uncover the causes of the damage and find a way to halt it, thereby preventing it from occurring in other people.

a) Transmissible Spongiform Encephalopathies

A contagious brain disease whose degenerative process gives the brain a sponge like appearance; caused by the accumulation of misfolded prion protein .

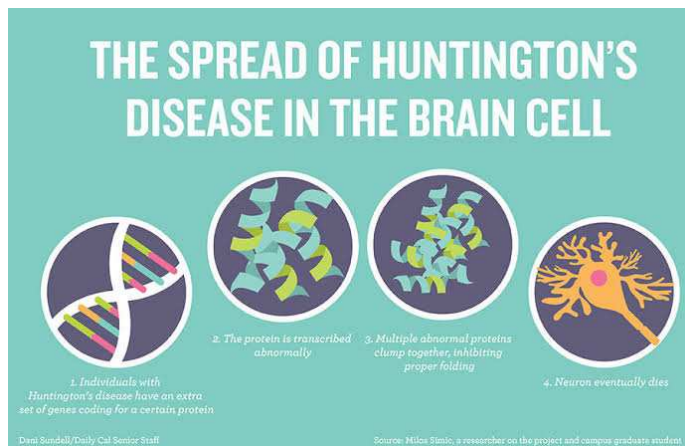
b) Parkinson's disease

An important degenerative neurological disorder, Parkinson's disease , is caused by degeneration of the nigrostriatal system- the dopamine secreting neurons of the substantia nigra that send axons to the basal ganglia. Parkin is a protein that plays very important role in this disease.



c) Huntington's disease

An inherited disorder that causes degeneration of the basal ganglia, characterized by progressively more severe uncontrollable jerking movements, writhing movements, dementia and finally death. Huntington is a protein and abnormal Huntington is the cause of the Huntington's disease.



d) Alzheimer's disease

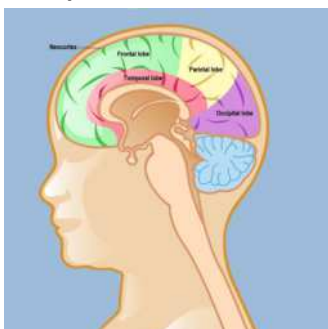
A common form of dementia is called Alzheimer disease. It is a degenerative brain disorder of unknown origin; cause progressive memory loss, motor deficits and eventual death.

e) Amyotrophic Lateral Sclerosis

ALS is a degenerative disorder that attacks spinal cord and cranial nerve motor neurons.

f) Multiple Sclerosis

It is an autoimmune demyelinating disease.



Disorders caused by infectious diseases

Several neurological disorders can be caused by infectious diseases, transmitted by bacteria , fungi or other parasites, or viruses. The most common are encephalitis and meningitis.

- ✚ **Encephalitis** is an infection that invades the entire brain. The most common cause of the encephalitis is a virus that is transmitted by mosquitoes, which pick up the infectious agent from horses, birds and rodents. It is also caused by **herpes simplex virus** .
- ✚ **Meningitis** is an inflammation of the meninges; can be caused by virus or bacteria.

References

Neil R. Carlson. [2006]. Foundations of Physiological Psychology ; Neurological disorders [8th edition]. University of Massachusetts,Amherst.

Thank you