

imagine voices, music & other sounds.

(6)

Other types of seizures cause confusion
Emotional distress.

2) Generalized tonic clonic seizures: Grand mal

Begins \bar{c} loud cry before loss of consciousness
and falls to the ground

Muscles become rigid for about 30 seconds
during tonic phase & alternately contract
and relax during the clonic phase last for
30-60 sec

Person may bite his tongue

lose bowel or bladder control
 \bar{c} breathing disturbances.

Grand Mal Epilepsy lasts for 2 to 5 min

- Pat may be confused / Have trouble in talking
when he regains consciousness.

- May complain of Headache / Muscle aches
Weakness in arms or legs

before falling into deep sleep. (7)

3) Absence seizures or Petit mal Epilepsy

- * Seizures generally begin at age of 4 and stop by the time the child becomes adolescent.
- * Petit mal Epilepsy: begins with loss of consciousness (1 to 10 sec)
- * Becomes quiet, stare blankly, roll his eyes
- * It lasts for 15-20 sec.
When it ends he may not realize what he is doing before the seizure ~~again~~ begins
- * Petit mal when untreated may progress to Grand mal Epilepsy.

4) Myoclonic seizures :

Characterized involuntary spasms of muscles of face, arms or legs

Jacksonian seizure : It is a partial seizure
↳ tingling, stiffening or Jerking of an arm or leg.

Loss of consciousness is rare

5) Partial seizures :

Simple partial seizures

Do not spread from focal area

Pat. remains conscious during attack

Sleep disturbances are seen :

6) Complex partial seizure :

Start as simple partial but

Move beyond focal area & loss of consciousness.

May not remember the attack

Unusual sensation, smell taste called aura May progress

→ The start of partial seizure.

Etiology : 50 - 70% of all cases of Epilepsy are Hereditary.

- Sometimes it is the result of leucemia at birth.
 - due to insufficient O₂ to brain
 - Head injury during delivery (forceps)
 - Heavy bleeding
 - incompatibility b/w woman's blood & her newborn baby.
 - Infection before, after or at time of birth.

Other causes like

- Head Trauma
 - Car accident
 - Gunshot-wound
 - Alcoholism
 - Brain abscess
 - Inflammation of Membranes covering the brain & spinal cord.

- Infections diseases like
 - Measles
 - Mumps
 - Diphtheria
 - Lead poisoning
 - Mercury "
 - CO poisoning
 - Ingestion of poisonous substances
 - Genetic factors

Pathophysiology :

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In Normal brain

Inhibitory circuits limit synchronous discharge. GABA has this role.

When GABA Receptors are blocked

↓
Rhythmic & Repetitive Hypersynchronous discharge of neurons

↓ causes

seizures.

→ Excitatory Neurotransmitters, Acetylcholine involved to develop seizures

→ Intracellular recordings show burst of Rapid action potential firing & reduction of transmembrane potential

↓ red inhibitory system + ↑ sed excitation →

causes genesis of seizures.

Abnormalities in Ion channel (Na, K, Ca) cause seizures.

(11)

Pathophysiology of Epilepsy

Abnormalities in ion channels (Na^+ , K^+ , Ca^{2+})

Decreased ^{or} inhibitory activity / inactivation of ^{direct} inhibitory activity

↓
Increased Excitatory activity

↓
Rhythmic or repetitive hypersynchronous discharge of Neurons

↓
Seizures foci

↓
Seizures

↓
Repeated seizures

↓
Epilepsy

Diagnosis:

- Symptoms like fainting
- Small strokes
- TIA
- Sleep attacks

EEG → Electroencephalogram

↳ Diagnostic test

→ Electrodes are placed on skull to record brain's electrical activity & pinpoint the exact location of abnormal discharges.

→ MRI Magnetic Resonance Imaging

↳ provides detailed images of brain

Functional MRI → Performed while the patient does various tasks

↳ which then measure

- Shifts in electrical intensity

- Blood flow and indicate

which brain region is affected.

→ PET : Positron Emission Tomography

→ SPECT : Single photon Emission Tomography

} Monitor bloodflow

& chemical activity in brain being tested.

Treatment :

Long term anti convulsant therapy is most common form of Epilepsy treatment

- Phenyloin
- Carbamazepine
- Phenobarbital
- Primidone
- Valproic acid
- Sodium Valproate
- Ethosuximide.

} Needed to control some symptoms.

- Dilantin
- Tegretol
- Mysoline

} used to manage or control tonic clonic & partial seizures.

- Gabapentin
- Lamotrigine
- Topamax

} To treat Adult & Partial seizures & Grand mal seizures.

Status Epilepticus → Treated with Valium, Dilantin, Barbiturate

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Surgery is used to treat seizures which arise due to small focal lesions which reduce parts ability to function dulling the parts senses.

Prevention :
Eating properly & Enough sleep
Controlling stress & fevers can help
Prevent seizures.

- Person who experiences attack of Epilepsy should find a safe place to lie down & stay there until the seizure passes.
- Anticonvulsant Medication should not be stopped suddenly.
- In some conditions such as severe head injury brain surgery or subarachnoid Haemorrhage → Anticonvulsant Medication may be given to prevent seizures.

Stroke

①

stage when: blood flow to brain stops
↓
brain cells begin to die.

2 kinds of stroke
1. commonly seen: Ischemic stroke

Caused by blood clot

2. Hemorrhagic stroke: Due to blood vessel rupture
↓
bleeds into the brain

TIA → Transient Ischemic Attacks

occur when blood supply interrupted to brain for some time.

The affected brain due to stroke depends on

where the stroke occurs in brain

How much the brain is damaged

Minor stroke → Have minor problems such as
Temporary weakness of arm / leg

②
If Major stroke \rightarrow Permanently & paralyzed on one side of their body / lose their ability to speak.

People recover completely from stroke
But - More than $2/3$ of survivors have some type of disability.

Epidemiology :

Annually 15 million worldwide suffer
5 million die & 5 million are permanently disabled.

Globally stroke is second leading cause of death.

WHO estimated that the stroke occurs for every 5 seconds.

Recurrence of stroke

2% at 7 days

4% at 30 days.

12% at 1 yr

29% at 5 yrs.

Incidence varies 5.1 in women
5.3 in men.

Symptoms

Trouble in speaking, walking. (3)
Paralysis / Numbness of face arm & leg
Sudden: onset of Numbness / weakness of
face arm / leg.
Loss of balance or coordination.

Pathophysiology

Leakage of platelets due to leakage
of blood from arteries & formation of
clot in
arteries.

↓
Resulting Ischemia of brain
due to interruption of O₂ supply.

↓
So neurological deficit arises
Result in coma
Hemiplegia
Speech impairment
Sensory "

If leaked from vessels

↓
Put pressure on brain cells & damages.
it also reduces blood supply after point
of H₂O₂ age.
Blood also sweeps into space b/w

brain & skull

(4)

Treatment : Depends on type of stroke.

If Ischemic stroke : Tissue plasminogen activator is given IV which works by dissolving the clot & improves blood flow but should be given within 3hrs.

Small mechanical devices are used to remove or blood clots.

Haemorrhagic stroke :
Anti hypertensives
Anti diuretics
clipping of dilated vessels.