Status Epilepticus

- SE :
  - Continues seizures occurring 30 minutes (epilepsi foundation)
  - More than 30 minutes of continues seizures activity or 2 or more sequential seizures without full recovery of consciousness between seizures (Dodson, 1993).
• Systemic and primary brain changes → related to morbidity and mortality rates
  – Decreasing GABA inhibition.
  – Increasing blood pressure (early stage) → decreasing
    – Acidosis (+)
    – Pulmonary edema
    – Hyperthermia
    – Mild leukocytosis
    – GABAergic mechanism fails

• Goal of therapy: to treat the epilepsy and to minimalise the side effects

Principal therapy:
• Monotherapy is better than polypharmacy
• Dosage is increased until the therapeutic effect or toxicity effect are met.
• Polypharmacy is introduced when monotherapy does not work
• Avoiding the sudden withdrawal
Treatment flowchart for status epilepticus

- Intubate if required
- Control hypothermia
- 1 L of 50% dextrose (D50) IV pushed
- Start anticonvulsant:
  - Diazepam 0.15 mg/kg IV over 5 min
  - Lorazepam followed by fosphenytoin
    20 mg PE/kg IV @ maximum rate of 100 mg PE/min
  - If seizures continue after 20 min, give an additional 10 mg PE/kg of fosphenytoin
  - If seizures continue after another 20 min, give phenobarbital 15 mg/kg IV
  - If seizures continue, administer general anesthesia

Medications

- Fenitoin
- Karbamazepin
- Lamotrigin
- Glutamate
- Ca
- GABA
- Barbiturat
- Benzodiazepin
- Asam valproat
- Gabapentin
- Fenitoin
- Karbamazepin
- Asam valproat
- Etosuksimid
<table>
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<th>Partial</th>
<th>Petit mal</th>
<th>Grand mal</th>
<th>Atonik, Mioklonik</th>
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<td><strong>First line</strong></td>
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<td>Etosuximid</td>
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<td><strong>Alternative</strong></td>
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<td>Klonazepam</td>
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**Parkinson disease**

- A progressive neurodegenerative disorder associated with loss of dopaminergic nigrostriatal neurons.

- Distinctive features:
  - Resting tremor, rigidity, bradikinetia, and postural instability
**Principle therapy**

**To facilitate action of dopaminergic**

- Increasing the synthesis and release of dopamine (L-dopa+karbidopa, amantadin)
- Inhibiting dopamin metabolism (selegilin/deprenil)
- Activating dopamine receptor (bromocriptine, pergolide)

**To suppress action of cholinergic**

- Blocking muscarinic/cholinergic receptor (trihexiphenidile, benzathopine, diphenhidramine)

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**Protocol of therapy**

1. Anti cholinergic Amantadine
2. L-dopa+karbidopa
3. Dopamine agonists drugs MAO B inhibitors
L-dova (levodopa)
- Dopamine precursor → inactive form
- Activated by decarboxilase enzyme;
  - Brain
  - Liver & kidneys → can not pass through BBB → bioavailability ← countered by karbidopa/benserazide.

- On/off phenomenon (+) after 3-5 years application → mechanism ??? Desensitization of dopamine receptor
- Not a first line therapy

Headache/Cephalgia
- Migraine
- Tension headache
- Cluster headache
Migraine

- Mechanism:
  - Genetic
  - Vascular
  - Neural
    - Neurotransmitter serotonin
    - Neurotransmitter dopamine
    - Activation of sympathetic nervous system

- NSAIDs + caffeine
  (asetaminophen, acetic salicilic acid, etc)

- Serotonin receptor agonists (ergotamine, dihydroergotamine, sumatriptane, naratriptane, rizatriptane, zolmatriptane)

- Dopamine antagonist
  (metochlopramide, CPZ, proCPZ)

Protocol of therapy

- Mild migraine: NSAIDs, or Serotonin receptor agonist (oral)
- Moderate migraine: Serotonin receptor agonists (oral/nasal/SC), or Dopamine receptor antagonist (oral)
- Severe migraine: Serotonin receptor agonists (SC/IM/IV), or Dopamine receptor antagonist (IM/IV)
**NSAIDs**
- SE: dispepsia

Stimulator of serotonin (5-HT₁) receptors:
1. ergotamine, dihydroergotamine
   - Non selective 5-HT₁ receptor agonist
   - Contra indication: CHD, pregnancy, peripheral blood vessel constriction, level and kidney disorders.

**Dopamine antagonists**
- Adjuvant therapy
- Increasing gut motility
- Also could treat: Nausea & vomit

**Prevention**
- 3 times per month
- Beta blockers (propanolol, timolol)
- Anti convulsive agents (valproic acid)
- MAO inhibitors (phenelzine, isokarbosazide)
- Serotonergic agents (metisergide, siproheptadine)
- Ca antagonist (verapamil)
**Tension headache**

- Usually bilateral
- Usually following anxiety or depression
- Therapy:
  - NSAIDs + caffeine
  - Muscle relaxant agents
- Prevention: amitriptiline a.n

**Cluster headache**

- Periorbital pain (temporal bone pain)
- Some signs and symptoms related to eyes
- Mechanism: ??? May be serotonergic transmission disorder
- Therapy:
  - Prednison
  - Lithium
  - Metisergid
  - Ergotamine
  - Na valproic
  - Verapamil