Epilepsy and epileptic seizures II. Classification and treatment

József Janszky

Department of Neurology, Univ Pécs

Epileptic seizure ≠ Epilepsy

Classification of epileptic seizures

- Partial
  - Simplex
    - Motor (cloni, version)
    - Sensory (auras: somato-sensory, temporal auras)
  - Complex (loss of consciousness with oral and manual automatisms)
- Generalized
  - Absence
  - Myoclonic
  - Generalized tonic-clonic (grand mal seizure)

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Sensory auras

- Simplex:
  - Somatosensory
  - Visual
  - Olfactory
  - Auditory (very rare)
  - Vertigo (very rare)
- Complex (usually temporal)
  - Gastric aura
  - Affective (positive or negative)
  - Dysmnestic (de ja vu, jamais vu)

Complex partial seizures /psychomotor seizures/

- Occurs in temporal lobe epilepsy
- Preceded by „temporal” aura (gastric sensation, de ja vu., Olfactory auras)
- Consists of:
  - Loss of consciousness
  - Oral automatisms (swallowing, biting, munching)
  - Manual automatisms

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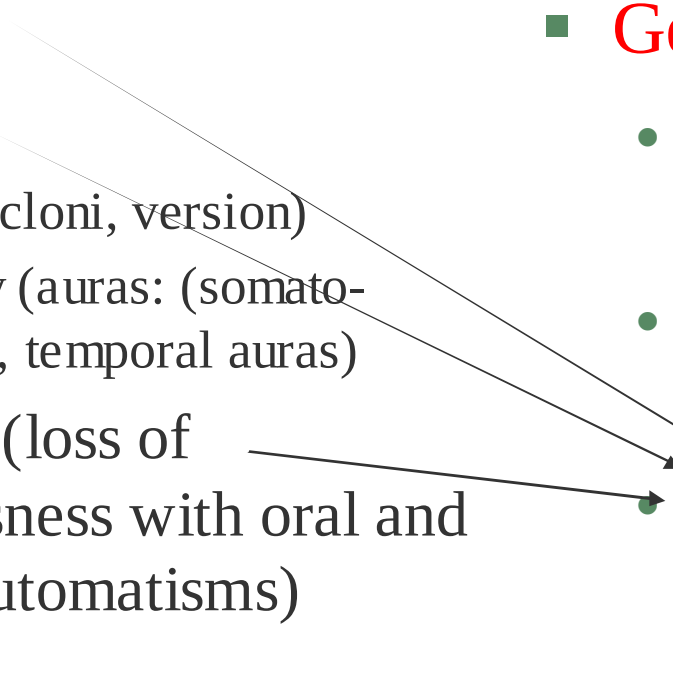

Generalized tonic-clonic seizure:

- **it may be primer,**
- **But can be preceeded by any other seizure types. („secundarily generalized seizure”: final common pathway)**
- **sequence: vocalisation, tonic phase (with apnea), clonic phase,**
- **postictal confusion or postictal sleep**
- **Postictal examination (not obligate signs):**
  - **tongue biting,**
  - **enuresis,**
  - **muscle pain**
  - **trauma,**
  - **Todd paresis**: transient paresis due to exhaustion (only after some focal onset grand mal seizures)

Epilepsy syndrome = a chronic condition with a typical symptoms

- Typical seizure type
- Typical etiology (genetics vs. Acquired)
- Typical localisation of the seizure focus in the brain (circumscribed or non-localisable)
- Typical age at onset

Classification of epilepsy syndromes

Two main axis:

- Genetical (=idiopathic) or acquired
- Focal (localisation-related) or generalized

	Focal epilepsy	Generalized epilepsy
Idiopathic (genetical) epilepsies	1. Benign centro-temporal epilepsy	1. Absence epilepsy 2. Juvenile myoclonic epilepsy 3. Grand mal epilepsy on awaking
Non-idiopathic epilepsies (symptomatic, cryptoenic)	1. Temporal lobe epilepsy 2. Fontal lobe epilepsy 3. Parietal lobe epilepsy 4. Occipital lobe epilepsy	1. West syndrome 2. Lennox-Gastaut syndrome

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Temporal lobe epilepsy

- Start: 5-18 y
- Auras: usually gastric sensation but psychic (affective), dysmnestuc (de ja vu) or smell auras are also common
- Auras can be isolated but usually followed by complex partial seizures (LOC, automatisms) Grand mal seizures are rare
- Memory disturbances are characteristics
- EEG: temporal lobe epileptic focus
- MRI: usually hippocampalis sclerosis, occasionally: tumor or dysgenesis
- 50% of patients had febrile convulsions in childhood

Idiopathic generalized epilepsy

1.generalized seizure without focal features:
- •Absence: Childhood Absence epilepsy
- •Myoclonic and grand mal seizures: Juvenile myoclonic epilepsy
- •Pure Grand mal seizures: Grand mal on awaking epilepsy

2. Sleep deprivation and alcohol can provoke seizures
3. Often (not always) positive family history of seizures
4. Typical age at onset (Juvenile myoclonic epilepsy: 13-16 ys)
5. Normal intelligence
6. EEG: 3 Hz- spike and wave complex
7. Normal brain MRI
8. Seizures responds to valproic acid in > 90% of patients

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Focal epilepsy

Generalized epilepsy

1. Benign centro-temporal epilepsy

Focal drugs

1. Absence epilepsy

2. Juvenile myoclonic epilepsy

3. Grand mal epilepsy on awaking

Idiopathic (genetical) epilepsies

Broad-spectrum drugs

Non-idiopathic epilepsies (symptomatic, cryptoenic)

Focal drugs

1. West syndrome

2. Lennox-Gastaut syndrome

1. Temporal lobe epilepsy
2. Fontal lobe epilepsy
3. Parietal lobe epilepsy
4. Occipital lobe epilepsy

Surgery

Antiepileptics: 60-70% of epileptic patients become seizure-free on chronic drug treatment

- **Focal drugs**:
  - 1. ***Carbamazepine***
  - Oxcarbazepine
  - Phenytoin
  - Gabapentin
- **Broad spectrum drugs**:
  - ***1. Valproic acid***
  - Lamotrigine
  - Benzodiazpines
  - Phenobarbital
  - Levetiracetam

Almost all antiepileptic drugs should be started with low doses and titrated slowly

Status epilepticus

- Definition:
  - If the seizures reoccurs and the patient is not conscious between two seizures

  OR
  - Seizures occurred in > 30 minutes

- Status epilepticus can be developed from any seizure types

Status epilepticus is dangeous

- Life treatening conditions:
  - grand mal status epilepticus
  - status epilepticus accompanied by extended motor phenomena (cloni)
- without adequate treatment patients may die due to
  - Aspiration
  - Aspiration-related infections
  - Cardiopulmonal insufficiency

Status epilepticus - treatment

- If an epileptic patient has a seizure, no additional treatment (no hospital, no acute medication) is needed if there is no injury
- status epilepticus: should be treated immediately and the patient should be transported to neurological department, neurointensive units

Status epilepticus – treatment 2

- ABC (free airways)
- FIRST STEP: iv benzodiazepine (20 mg diazepam vagy 2-3 mg clonazepam iv., or lorazepam)
- It can be repeated many times
- Benzodiazepine should be given very slowly beacause it can cause breathing stop
- Intramuscular benzodiazepine: no sense and should be avoided
- If there is no vein: 20-30 mg rectal diazepam

Status epilepticus – treatment 3

- If the status epilepticus occurs in a patient without known epilepsy, then iv. glucose, vitamine B1 iv. should also be given immediately
- By adequate treatment the mortality of status epilepticus is low unless there is a serious underlying disorder (meningitis, encephalitis, stroke, SAH, tumor cerebri, CNS injury, delirium tremens)

Refractory status epilepticus

- Repeat benzodiazpines
- Iv. phenytoin or valproic acide (start of action is late! After 15-60 min)
- Further seizures: full narcosis with short-acting barbiturates or midazolam or propofol

Epilepsy surgery

- Localisation-related epilepsy *and* which is refracter to 2-3 antiepileptic drugs

- Epilepsy surgery should be considered
  - Epilepsy surgery can be performed
    - if the epileptic focus can be localised (MRI, video-EEG, neurpsychological investigations)
    - and the focus can be removed without neurological, neuropsychological consequences
  - Generally 60-90% of patients became seizure free after well-indicated surgery

Treatment of Temporal lobe epilepsy

- Bad pharmacological prognosis:
  - In 75-90% pharmacoresistant
- Good surgical prognosis:
  - 75-90% of patients become long-term seizure-free
- Surgery: partial anterior temporal lobectomy

EEG in epilepsy

- Rutine, scalp-EEG with hyperventilation
- Sleep-EEG
- long-term EEG
  - „Holter-EEG”
  - Video-EEG monitoring

Idiopathic generalized epilepsy

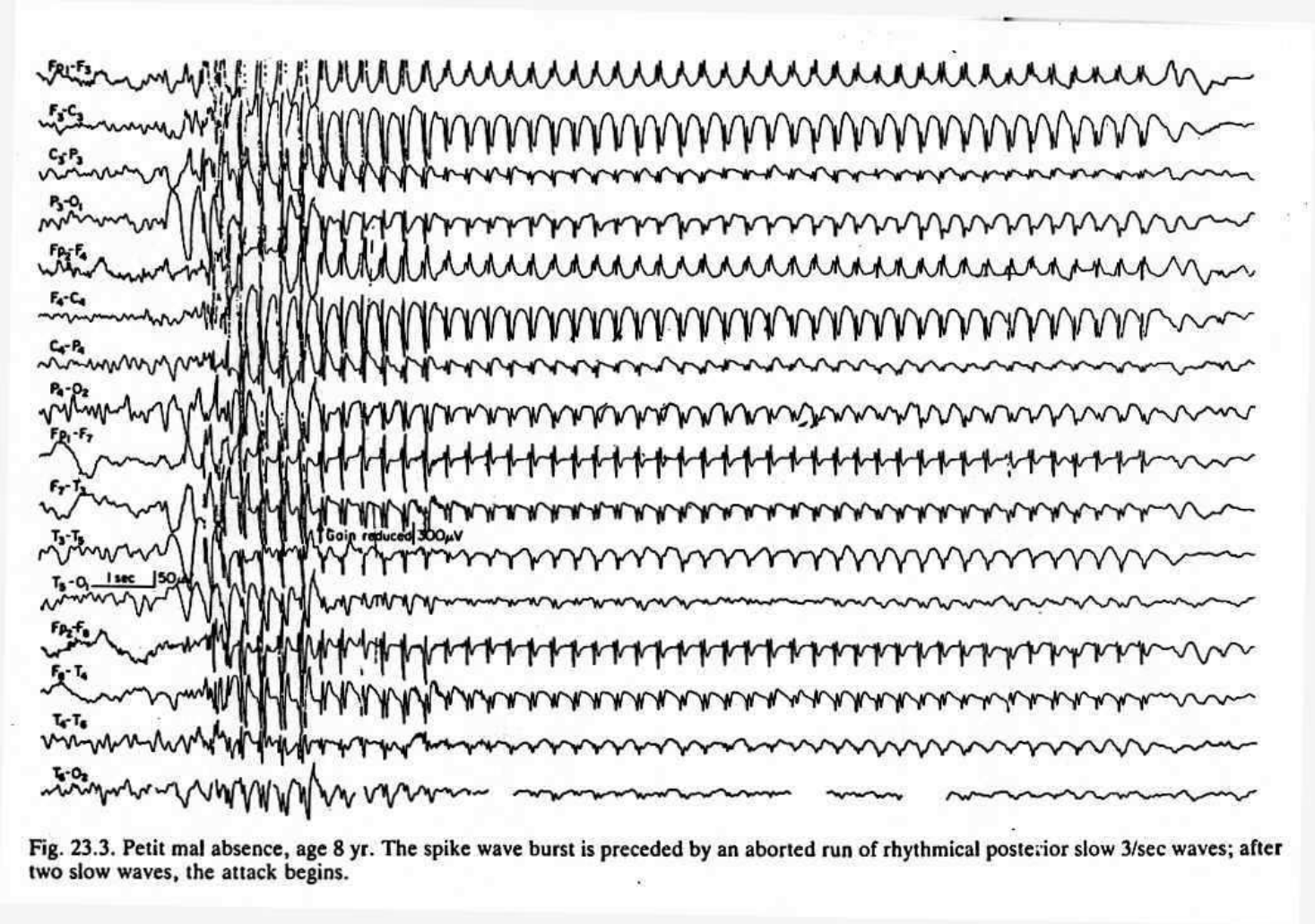

Fig. 23.3. Petit mal absence, age 8 yr. The spike wave burst is preceded by an aborted run of rhythmical posterior slow 3/sec waves; after two slow waves, the attack begins.

Temporal lobe epilepsy

Sensitivity of routine EEG:

- Absence 92%
- Other Idiopathic generalized epilepsy 58%
- Focal epilepsy: 30%

Normal EEG does not exlude and the abnormal EEG does not prove epilepsy: Epilepsy is a clinical diagnosis

MRI

In all epilepsies beginning in adulthodd MRI examination is obligatory

Post-stroke

brain tumor

Vascular malformations of the brain

Post-encephalitis

Malformations of cortical development (dysgeneses)

Posttraumatic

Hippocampal sclerosis