Epilepsy & other attack disorders

Overview

Is it epilepsy?
- Common attack disorders
- How to differentiate between them

Medical treatment of patients with epilepsy
- Choosing appropriate treatment for focal or generalised epilepsy
- Management strategies

What to do when medical treatments for epilepsy fail
- Epilepsy surgery
- Vagus nerve stimulation

Is it epilepsy?

Differential diagnosis

- Blackouts
- Problem with blood circulation (Syncope)
- Disturbance of brain function
- Related to the heart
- Low blood pressure
- Epileptic seizures
- Stroke-related (non-epileptic seizures)
- Status epilepticus generalised
- Unclassifiable epilepsy
- Focal epilepsy

Definition

Epileptic Seizure

Paroxysmal event in which changes of behaviour, sensation or cognitive processes are caused by excessive, hypersynchronous neuronal discharges in the brain.

Characteristics

Epileptic Seizures
- Duration: 30 – 120 seconds
- “Positive” ictal symptoms
- Postictal symptoms
- Stereotypical seizures / syndromal seizure types
- May occur from sleep
- May be associated with other brain dysfunction
- Typical seizure phenomena: lateral tongue bite, déjà vu etc.
Epilepsy & other attack disorders

Example

Secondary generalised seizure

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Example

Partial seizure: temporal lobe epilepsy

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Definition

Syncope

Paroxysmal event in which changes in behaviour, sensation and cognitive processes are caused by an insufficient blood or oxygen supply to the brain.

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Characteristics

• Situational
• Typically from sitting or standing
• Rarely from sleep
• Presyncopal symptoms
• Duration 5-30 seconds
• Recovery within 30 seconds
• Cardiogenic syncope: less warning, history of heart disease

Epilepsy & other attack disorders

Example

 Partial seizure: frontal lobe epilepsy

Epilepsy & other attack disorders

Example

Syncope

Syncope

Syncope

Syncope

Syncope

Syncope

Syncope
Nonepileptic seizure

Paroxysmal event in which changes in behaviour, sensation and cognitive function caused by mental processes associated with psychosocial distress.

Nonepileptic seizures (NES)

- Situational
- Duration 1-20 minutes
- Dramatic motor phenomena or prolonged atonia
- Eyes closed
- Ictal crying and speaking
- Surprisingly rapid or slow postictal recovery
- History of psychiatric illness, other somatoform disorders

Example


<table>
<thead>
<tr>
<th></th>
<th>Hoefnagels 1991</th>
<th>Sheldon 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tongue biting</td>
<td>Sens 0.41 Spec 0.94 OR 16.5</td>
<td>Sens 0.45 Spec 0.97 OR 15.5</td>
</tr>
<tr>
<td>Head turning</td>
<td>NR Spec 0.45 OR 7.5</td>
<td>NR Spec 0.42 OR 7.5</td>
</tr>
<tr>
<td>Muscle pain</td>
<td>NR Spec 0.18 OR 9.5</td>
<td>NR Spec 0.18 OR 9.5</td>
</tr>
<tr>
<td>Loss of consciousness &gt;5 min</td>
<td>Sens 0.68 Spec 0.56 OR 1.8</td>
<td>Sens 0.73 Spec 0.54 OR 1.6</td>
</tr>
<tr>
<td>Cyanosis</td>
<td>Sens 0.29 Spec 0.98 OR 16.9</td>
<td>Sens 0.33 Spec 0.94 OR 5.8</td>
</tr>
<tr>
<td>Postictal confusion</td>
<td>Sens 0.85 Spec 0.83 OR 3.0</td>
<td>Sens 0.84 Spec 0.89 OR 3.0</td>
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</tbody>
</table>

**Epilepsy vs. NES**

<table>
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<th>Feature in the history suggesting NES</th>
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<tr>
<td>Pelvic thrusting, no ictal injury, no seizures from sleep, no incontinence or tongue biting</td>
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<tr>
<td>Long duration, closed eyes/mouth during tonic-clonic movements, no cyanosis</td>
</tr>
<tr>
<td>Pre-ictal anxiety symptoms, ictal crying, ictal weeping, vocalisation during tonic-clonic phase</td>
</tr>
<tr>
<td>Unusually rapid or slow recovery, change in amplitude but not frequency of motor activity, reactivity</td>
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Differentiate but not noticed / described reliably

Depending on observations of a seizure witness

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**Common diagnostic mistakes**

- 26.1% of patients referred to an epilepsy clinic for specialist management of refractory seizures did not have epilepsy
- Most commonly made mistakes:
  - Incomplete history, lack of witness account
  - Misinterpretation syncopal, myoclonic jerks
  - Misinterpretation of EEG-changes
- Consequences of misdiagnoses:
  - 100% treated with anticonvulsants
  - 39% unemployed
  - 41% barred from driving

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**Part 2**

**Medical treatment of patients with epilepsy**

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**Starting treatment for patients with epilepsy**

- Is it epilepsy?
- Is treatment indicated?
- What type of epilepsy is it?
- What is the most appropriate drug of first choice?
Epilepsy syndromes

Focal epilepsy

- Associated with focal brain abnormality, may start at any age
- Seizure types:
  - Partial seizures without impairment of consciousness. (e.g.: Jacksonian seizures, Déjà vu)
  - Partial seizures with impairment of consciousness (e.g.: Psychomotor seizures)
  - Secondary generalised seizures
- First line treatment: Carbamazepine or lamotrigine

Hippocampal sclerosis (mesial temporal epilepsy)

Idiopathic (primary) generalised epilepsy

- Myoclonic seizures (e.g.: in juvenile myoclonic epilepsy)
- Absence seizures (e.g.: childhood absence epilepsy, juvenile absence epilepsy)
- Primary generalised tonic clonic seizures (e.g.: Grand mal on awakening)
- First line treatment: Valproate or lamotrigine
Epilepsy & other attack disorders
Generalised epilepsy

Genetic (primary) generalised epilepsy

- Valproate
- Lamotrigine
- Topiramate
- Levetiracetam
- Zonisamide
- Felbamate
- Phenytoin
- Primidone
- Lacosamide
- Perampanel

- Ethosuximide (absence only)
- Rufinamide

Focal & generalised

- Carbamazepine
- Oxcarbazepine
- Eslicarbazepine
- Phenobarbital
- Vigabatrin
- Gabapentin
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Focal & generalised
Using antiepileptic drugs (AEDs)

- Monotherapy: increase to lowest possible effective dose
- Monotherapy: increase to fully effective / maximum tolerated dose
- Consider alternative monotherapy / combination therapy
- Consider epilepsy surgery (vagal nerve stimulator)
- Consider reduction to monotherapy in very refractory epilepsy

Medical treatment of epilepsy

Part 3

What to do if medical treatments for epilepsy fail
Outcomes of epilepsy surgery

- **Tonini et al. 1997, meta-analysis, focal epilepsy, 1987-1996:**
  - Engel Class I: 59%
  - Engel Class II: 15%
  - Engel Class III: 12%
  - Engel Class IV: 12%
  - Frontal lobe (EC I): 40%

- **Wiebe et al. 2000, randomised, ant. temporal lobectomy vs. AED, complete seizure remission at one year:**
  - Epilepsy surgery: 38% (ITT analysis, otherwise 64%)
  - AEDs: 8%

Vagal nerve stimulation

- **Evidence:**
  - 28% mean seizure reduction
  - 1/3 of patients >50% reduction
  - Very few patients seizure-free

Summary

- **Diagnosis**
  - Misdiagnosis is common
  - Epilepsy is overdiagnosed
  - Patient and witness history are essential
  - Consider syncope and NES

- **Medical treatment**
  - 70% of patients should become seizure-free with AEDs
  - New AEDs are no more effective than conventional AEDs but have fewer side-effects

- **Other treatments**
  - Epilepsy surgery is very effective if feasible
  - Vagus nerve stimulation is a palliative treatment option for refractory epilepsy

The End