Epilepsy
EPILEPSY

- Aetiology
- Diagnosis
- Treatment
- Differential diagnosis
- Pseudo seizures
- Psychiatric disorders
Epilepsy

Is an intermittent derangement of the nervous system due to a sudden excessive disorderly discharge of cerebral neurones.

Hughlings Jackson
Epilepsy

Epilepsy +
Reasons

‘Genetic’
Immunological
Structural
Immunological

- 12% of people with epilepsy have voltage-gated K/Ca channel or anti GAD antibodies
- Specific antibodies are beginning to be linked with specific phenotypes
- Antibody levels alter following treatment and can be related clinical status
Structural

- Brain malformations
- Brain damage
  - Cellular level
  - Macroscopic damage
Hippocampal Sclerosis
DNET
Focal Cortical Dysplasia
Low grade brain tumour
When does Epilepsy start?

• Any age
• 7% lifetime prevalence
• 1:20 have a seizure during their life
• Peak ages onset
  – Infancy/childhood
  – Old age
Age-related seizure disorders

• Onset < 25yrs – more likely to be genetic
  – Generalised epilepsies
    • Seizure disorders beginning in infancy
    • Childhood absence epilepsy
    • Juvenile myoclonic epilepsy
  – Localisation related epilepsies
    • Benign rolandic epilepsy

• All ages and >25yrs
  – Localisation related epilepsy
DRIVING

• Single seizure – 6 months seizure free
• Epilepsy – 1 year seizure free +/- treatment
• Simple partial seizures (auras) & myoclonic jerks count as seizures
Epilepsy

Clinical Diagnosis

Based on eyewitness description
Epilepsy Syndromes

• Generalised epilepsies
  – Juvenile absence epilepsy
  – Juvenile myoclonic epilepsy
  – Tonic clonic seizures on awakening

• Localisation related epilepsies
Investigations

- EEG
- ECG
- Basic bloods including calcium
- MRI
- Others as clinically indicated
Role of EEG

• Syndromic classification

• Suitability for surgery

• Diagnosing dissociative seizures
10-year-old patient with staring spells

Right centrotemporal sharp waves (open arrow) and generalized epileptiform discharges
Symptomatic Generalised Epilepsy

Characterised by:-

• Seizures
  – myoclonic, atypical absence
  – atonic/tonic spasms
  – tonic clonic
  – EEG abnormalities (slow spike-wave)

• Slowing and plateauing of cognitive development
Generalised Epilepsy

- Sodium Valproate
- Lamotrigine
- Levetiracetam
- Second line drugs
  - Topiramate
  - Clobazam
  - Zonisamide
  - Rufinamide
Localisation-related Epilepsy

Seizures

- Simple partial
- Complex partial
- Tonic clonic
24-year-old patient with abdominal auras and automotor seizures

EEG with sphenoidal electrodes shows a left anterior mesial temporal spike
Localisation related Epilepsies

- Frontal lobe (20-30%)
- Temporal lobe (60-70%)
- Parietal lobe (1%)
- Occipital lobe (8%)
Simple Partial Seizures (90%)

- Ascending epigastric aura (MTLE)
- Complex internal sensations
  - Fear (MTLE)
  - Déjà vu / jamais vu
- Auditory hallucinations/illusions eg voices, music
- Olfactory / gustatory hallucinations
- Other symptoms including autonomic disturbances
Complex Partial Seizures

- Consciousness impaired
- Automatisms
- Autonomic disturbances
- Speech disturbances
- Head & eye deviation / dystonic posturing
- Motor arrest with staring
- Ictal paresis
Post Ictal Symptoms

- Fatigue
- Drowsiness
- Confusion
- Headache
- Commoner in TLE compared extra temporal epilepsy
- May last hours
## Localisation-related Epilepsy

- **First line drugs**
  - carbamazepine
  - sodium valproate
  - Lamotrigine
  - levatiracetam
- **Second line drugs**
  - topiramate
tiagabine
gabapentin
oxcarbazepine
clobazam
Pregabalin
zonisamide
eslicarbazepine
Lacosamide
Rescue Medication

- Oral clobazam
- Buccal midazolam
- (Rectal diazepam)
AED Levels

- Waste of time in most people
- If seizure free, level is irrelevant

Useful to check
- Adherence
- When increasing dose near top of therapeutic range
- (side effects)
Reviewing Medication

• Seizure frequency including minor attacks
• Any side effects
• Childbearing age
  – Prepregnancy counselling
• Bone health
• Any psychological problems / concerns

THE NORM IS SEIZURE FREEDOM
Sudden Epileptic Death

• Risk 1:1000/yr

• Risk factors
  – Male
  – Poor compliance with treatment
  – (nocturnal) tonic clonic seizures
  – Learning disability
CONTRACEPTION

Hepatic microsomal inducing AEDS
(barbiturates, phenytoin, carbamazepine) – use non hormonal contraception

Non inducing AEDs - normal dosage OC pill

Lamotrigine/valproate / OC pill interaction
Teratogenicity of anti epileptic drugs

- Foetal anticonvulsant syndrome
- Major malformations
- Slower child development (sodium valproate / >5 TC convulsions)
## Teratogenicity of AEDs: risk of major malformations

<table>
<thead>
<tr>
<th>Medicine</th>
<th>UK</th>
<th>Australia</th>
<th>Sweden</th>
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<tbody>
<tr>
<td>Valproate</td>
<td>6.0%</td>
<td>16.1%</td>
<td>9.7%</td>
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<tr>
<td>Carbamazepine</td>
<td>2.3%</td>
<td>4.0%</td>
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</tr>
<tr>
<td>Lamotrigine</td>
<td>2.9%</td>
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<td></td>
</tr>
<tr>
<td>Levetiracetam</td>
<td>low</td>
<td></td>
<td></td>
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<tr>
<td>Topiramte</td>
<td>high risk</td>
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</table>
Non-Pharmacological Treatment

• Vagal nerve stimulator
• Epilepsy surgery
• Ketogenic / Atkins diet
Diagnosis of Epilepsy

• New presentation
• Established diagnosis
  – History
  – Eyewitness description
  – Investigations
History of Episode

What happens:

• Before
• During episode
• After
Differential Diagnosis

- Vasovagal syncope
- Cardiac syncope
- (TIA)
- Transient global amnesia
- Non organic attacks
- Drop attacks
- Hypoglycaemia / metabolic causes
- Alcohol / drugs
- Sleep disorders
- Delirium
Spectrum

Syncope ← ------------→ Epilepsy
Alcohol-Related seizures

- Gamma GT/ LFT
- Blood alcohol
- MCV
TIA

- Frequently muddled
- TIA / CVA - negative phenomena
- Epilepsy - positive phenomena except speech arrest
Transient Global Amnesia

- Clear consciousness
- Failure short term memory
- Lasts hours
- Usually only 1 episode
- Keep asking same questions
- DVLA allows to drive
Sleep Disorders
NREM sleep disorders

- Periodic limb movement disorder
- Nocturnal paroxysmal dystonia
Dementia

- x3 incidence epilepsy
- End stages disease
- 2/3 had < 3 seizures
- 17% Alzheimer’s disease patients have a seizure
NEAD- Suspicious Patients

- Frequent episodes with normal EEG
- Non responders to treatment
Dissociative seizures

- 10-20% patients diagnosed as having epilepsy
- 10% ‘status epilepticus’
- 30-50% ventilated in ITU for ‘status’
Dissociative seizures

- Often begins in teens
- 75% women
- Large case notes
- Multiple referrals – few organic diagnoses
- Other psychiatric diagnoses
Dissociative seizures

• It is assumed that most are dissociative in that patients are
  – Compliant with AEDs
  – Have seizures on VT
• Munchausen’s syndrome
• Malingering
Dissociative seizures

- Clinically
  - No definite features differentiate epilepsy and dissociative seizures

- Suspect
  - Frequency episodes
  - Normal inter ictal EEG
  - Poor response to AEDs
  - Features of episode
Dissociative seizures

- Frequent ‘seizures’
- Prolonged shaking
- ‘thrashing around’
- Back arching
- Abrupt recovery
Dissociative seizures

• Suspect
  – Most pure dissociative seizures
  – Approx 20% epilepsy and dissociative seizures

• Investigate
  – (EEGs)
  – Videotelemetry
  – (Prolactin)
Treatment / Outcome

- Psychotherapy / CBT
- Many have been abused in childhood
- 3 yrs later 70% still have dissociative seizures
- 50% receive DLA
- Poor prognosis
  - long delay before diagnosis
  - Co-morbid psychiatric disorders
# Epilepsy and Psychiatric disorders

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Epilepsy</th>
<th>General population</th>
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<tbody>
<tr>
<td>Depression</td>
<td>11-80%</td>
<td>5-17% (major depression)</td>
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<tr>
<td>Psychosis</td>
<td>2-9%</td>
<td>1% schizophrenia</td>
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<tr>
<td>GAD</td>
<td>15-25%</td>
<td>5-7%</td>
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<tr>
<td>Panic</td>
<td>5-21%</td>
<td>0.5-3%</td>
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<tr>
<td>ADHD</td>
<td>12-37%</td>
<td>4-12%</td>
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Epilepsy and Psychiatry

• Learning disability (25%)
  – Increased incidence with increased severity
• Autism
• Depression
• drugs- lower seizure threshold
  – TC/SSRI
  – Antipsychotics
  – BZP withdrawal
• Alcohol and drug abuse
AEDs and Psychiatric disorders

• Precipitate depression
  – Topiramate
  – Vigabatrin
  – Levetiracetam
  – barbiturates

• Chronic encephalopathy - valproate
Epilepsy and Psychosis

- Interictal
- Ictal
- Post ictal
- Forced normalisation
- Iactrogenic
- After epilepsy surgery
Interictal Psychosis

- Tends to have absence of negative symptoms
- Better day-to-day function
- Rare personality deterioration
  - Episodic psychosis (TLE) linked to seizure control
  - Chronic psychosis
Postictal psychosis (25%)

- Initially described in antiquity
- Delayed onset approx 24hrs after seizure
- Short duration psychotic symptoms – rare >5/7
- Affect laden symptomology
- Onset after have epilepsy >10yrs
- Prompt response to low dose neuroleptic or BZP therapy
- Usually bilateral epileptic foci
- Treat with low dose neuroleptic medication (1-2mg risperidone) at 1st signs
Ictal Psychosis

- Can be 2º to non convulsive status (EEG)
Forced normalisation / Alternate psychosis

• Follows seizure suppression

• Manage by decreasing AEDs till optimum seizure frequency
Iactrogenic Psychotic Disorders

• Side effect of most AEDs especially Topiranate, levetiracetam and vigabatrin

• Rarely 2º to discontinuation of AEDs especially mood stabilisers
Epilepsy and Anxiety

- Anxiety can be
  - Seizure related
  - Inter ictal
- Common manifestation of temporal lobe partial seizures
- Differential diagnosis - panic attacks
- Can co-exist
- Phobic disorders common
Epilepsy and Anxiety: Prevalence

48% Adults
- mild 25%: moderate 16%; 7% severe
  - (HAD, QUALIE10 - Cramer et al 2005)
  - Correlation with higher seizure frequency & lack of treatment
    (Togo and Benin) (Nubukpo et al 2004)

• 33% children
  - Related to age, verbal IQ, school problems and seizure type
    (Caplan et al 2005)

• 31% adolescents
  - Related to uncontrolled seizures, polytherapy and felt stigma
    (Nigeria)(Adewuya et al 2005)
Depression

- History of ‘depression’ prior to onset of epilepsy x4-17 compared to controls
- Bidirectional relationship: they share common pathogenic mechanisms
- First described by Hippocrates
Epilepsy

• Increased risk of suicide

• Exposure to AEDs – meta analysis of randomised clinical trials of 11 AEDs
  – Suicidality 4.3/1000 cf to 2.2/1000 controls
    • Suicidal ideation 68%
    • Suicide attempts 27%
    • Completed suicide 3%
Suicide

Use of AEDs in

Odds Ratio suicidality

Epilepsy  3.53
Psychiatric disorders  1.51
Other disorders  1.87
Epilepsy

- Common disorder
- Many different types
- Often wrongly diagnosed
- Pre pregnancy counselling needed for women
- High incidence of psychiatric problems