Epilepsy

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Epilepsy is different

• **Chronic disorder**
  – Intermittent
  – Collection of symptoms
  – Likely at any age

• **Neurological disorder**
  – Common and treatable
  – Not progressive
  – Tests may be unhelpful
Definitions

A disorder of the brain characterised by an enduring predisposition to generate epileptic seizures

“An epileptic seizure is a transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain”

Practically - two unprovoked seizures >24 h apart

But also - one unprovoked seizure and a recurrence risk of at least 60%; diagnosis of an epilepsy syndrome
Diagnosis wrong

• Misdiagnosis of up to a fifth of people

• No test for epilepsy

• No test for control / deterioration
Verbal

• Witness
  – A blackout is indescribable

• Silent witnesses

• Verbal diagnosis
  – Yet difficult to articulate
Age-related incidence of epilepsy in industrialised countries. Banergee & Hauser (2007)
Epilepsy prevalence and socioeconomic deprivation in England

*Samuel Steer, ††William O. Pickrell, §§Michael P. Kerr, and ††#Rhys H. Thomas

doi: 10.1111/epi.12763

Figure 1.
Maps to illustrate (A) epilepsy prevalence (decile rank) (B) variability in deprivation (IMD decile rank). The area shown top right is the City of London in detail.
Figure 2.
Scatter graphs to show epilepsy prevalence with respect to (A) IMD score; (B) income score; (C) employment score; (D) health deprivation and disability score; (E) education skills and training score; (F) crime score; (G) living environment; and (H) barriers to housing and services score.
Figure 1.
Maps of Wales showing each LSOA (areas with population of around 1,500); Yellow areas represent with low data coverage (<5% of the population) and are not shown. (A) Deprivation measured by WIMD decile, (B) epilepsy prevalence, and (C) epilepsy incidence. Enlarged areas represent the densely populated areas of the cities of Swansea, Cardiff, and Newport (left to right).
Treating epilepsy

1. Are these events seizures?
   – If so what type?

2. Is there an important underlying cause?
   – Structural or syndrome?

3. What affect are they having on quality of life?
   – Sleep, memory, stigma, injury..?

4. Drug choices
Genetic
Idiopathic
Presumed genetic
Onset in childhood
Photosensitive
Sleep sensitive
May remit
Valproate
Levetiracetam
Clobazam

Focal
Partial
Presumed acquired
Onset in adulthood
Seizures may be bizarre
Surgery is possible
Likely lifelong
Lamotrigine
Carbamazepine
Levetiracetam
Focal epilepsy

Marson AG, et al.
The SANAD study of effectiveness of carbamazepine, gabapentin, lamotrigine, oxcarbazepine, or topiramate for treatment of partial epilepsy: an unblinded randomised controlled trial.
Genetic generalised epilepsy

Marson AG et al.
The SANAD study of effectiveness of valproate, lamotrigine, or topiramate for generalised and unclassifiable epilepsy: an unblinded randomised controlled trial.
Lancet.2007;369(9566):1016-26
Treating epilepsy

Guidelines

Don’t start medication after a single seizure
  • Unless high chance of recurrence – tumour

Don’t use a trial of medication as a ‘test’
  • Drugs harder to stop than to start

Start low and go slow
  • Reduces side effects

Use a diary and an informant for seizure frequency
### Women

<table>
<thead>
<tr>
<th>Antiepileptic Drug</th>
<th>No. of Children</th>
<th>Mean IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High dose</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>47</td>
<td>97</td>
</tr>
<tr>
<td>Lamotrigine</td>
<td>52</td>
<td>100</td>
</tr>
<tr>
<td>Phenytoin</td>
<td>28</td>
<td>98</td>
</tr>
<tr>
<td>Valproate</td>
<td>22</td>
<td>87</td>
</tr>
<tr>
<td><strong>Low dose</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>46</td>
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</tr>
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</tr>
</tbody>
</table>

Mean IQ at Age 3 Yr (95% CI)
Concealment

- Poorly understood
- Driving law
- Lack of role models
Co-morbidities

• Depression
  – 20-30%
  – Higher in poorly controlled epilepsy
  – Can present atypically
  – Suicide 5-11 times greater risk \( ?25 \) x in TLE

• Anxiety
  – In common with many paroxysmal conditions
Post-ictal psychosis

• Not immediate – within 24 hours to a week
  – 2-7% of patients?

• May last days
  – 15 hours to 3 months

• Best treated in safe environment, may need short-term anti-psychotic treatment
Cognitive impairment

- TLE
- Accelerated forgetting
- Transient epileptic amnesia
Key search

Ecological validity

Enter (3), exit (3)
Continuous line (1)
Parallel (1), vert/horiz (1)
Patterns (5)
Cover the ground (1)
Found the keys (1)

Time
Score – 16
Over time
FSIQ 90
Score -11

EPQ  Neuroticism 42
     Extrovertism 20

FSIQ 94
Score – 6

FSIQ 112
Score – 15

HADS Anx 10
Dep 7

EPQ
Neuroticism 41
Extrovertism 28

DEX Self 21
DEX Other 41
Score – 6

EPQ
Neuroticism 20
Extrovertism 42

FSIQ 117
Score – 6

FSIQ 87
Score – 5

FSIQ 64
Score – 3

HADS Anx 15
Dep 20

FSIQ 72
Neuropsychometry
Can I drive, Doc?

- What makes this a difficult question to answer?

- To suggest a method that avoids some pitfalls
Abilities

• Cognitive
  – Attention, Co-ordination, Memory

• Motor
  – Weakness, Range of movement, Fatigue

• Sensory
  – Poor proprioception, sluggish response

• Vision

Very few deficits occur in isolation

Our medications may be making them worse
Fitness

‘Fitness to drive’ is an ambiguous concept

Tip
Separate eligibility from ability and consider these separately
Eligibility in UK

• **Epilepsy** was the first medical condition to be declared an absolute bar to driving

• 1930s when a driver suffered a seizure at the wheel drove into the crowd at Changing of the Guard, killing an onlooker

• 1960s a driver with undeclared epilepsy crashed into the car of the then Minister for Transport, Barbara Castle
Eligibility

• Department for Transport – DVLA
  – Nervous disorders panel
  – Alcohol and
  – Cardiovascular
  – Diabetes
  – Psychiatry –
  – Visual disorders

• Difficult cases can be discussed at panel meetings
A trap..

On Anti-epileptic drug withdrawal

Advice

“The panel advises that patients should be advised not to drive from commencement of the period of withdrawal and thereafter for a period of 6 months after cessation of treatment”
Eligibility v Ability

- Eligibility varies from country to country – even within EU and state to state in USA
  - Represents evolution of legislation and poor quality of evidence

- Ability can be objectively demonstrated and tested
Ability assessment

- In the clinic room
- Simulator ‘rig’
- On the road – With and without adaptations
- Psychological testing
Implications

Problem

Ill-informed replies may come back to haunt us.

Tip

Cautious optimism may be misconstrued. Take care when giving ‘provisional’ advice.

PERSONAL VIEWPOINT

Road not taken: lessons to be learned from *Queen v. Gillett*

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LATEST HEADLINES

Two year sentence for dangerous driving pensioner

10:20am Sunday 24th May 2009

A 67-YEAR-OLD man has been sentenced to two years in prison and disqualified from driving for life after causing the deaths of two people when he blacked out at the wheel of his car.
LEAN thinking

“Can I drive, doctor?” LEAN thinking may help us answer the question

R H Thomas, T A T Hughes