Blackouts

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Test of interactive software
Diagnosis of blackouts is:

A. Easy
B. OK
C. Difficult
D. Very difficult

![Image showing percentages for each option]

- A: 0%
- B: 0%
- C: 0%
- D: 0%
Aims

• Practical guide to diagnosis and management of blackouts
• Whom to refer to neurology
• Whom not to refer
• NICE guidelines
• Case-based diagnosis
• Videos
• Management
History

• An 18yr lady has a blackout.
• It occurred whilst standing at a bar with her friends.
• Before the event, she felt unwell, sick with her vision closing in.
• There is no FH of note.
• Her friends said she jerked for a few seconds “like a seizure”.
• She came round after a few seconds and agreed to be taken to see a doctor.
• On examination, heart sounds are normal.
What is the most appropriate course of action?

A. Refer to neurology
B. Refer to cardiology
C. Perform a 12 lead ECG and if normal diagnose vasovagal syncope

C. is the correct answer.
NICE guideline 109 Blackouts

• Careful history
• ECG
• Refer for cardiovascular assessment: TLOC on exertion, FH, new SOB, hear failure, heart murmur, ECG abnormal
• Diagnose vasovagal syncope if no features for alternative ("brief seizure activity can occur") AND any of 3 "P"s present: posture, provocation, prodrome
NICE guideline 109 Blackouts

• Refer for neurological assessment: tongue bite, head turn, abnormal behaviour not remembered, posturing, prolonged limb jerking, confusion afterwards, déjà vu

• Unlikely epileptic if: prodromal symptoms abolished by sitting down, sweating beforehand, prolonged standing, pallor
Whom to refer to neurology

- ?Epilepsy
- ?Non-epileptic attack disorder
- Blackout of uncertain aetiology with seizure markers

Whom not to refer to neurology

- Syncope
- Vasovagal
- “Please exclude epilepsy”
A typical blackout

• An 18 yr woman comes to see you.
• She tells you she found herself on the floor a week ago and wasn’t sure how she got there.
• She says she can’t remember anything about it.
• Her friend (not present) says she shook for 10 minutes.
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know

[D. Don’t know]
The uncertainty principle $\Delta x \Delta p \geq \frac{\hbar}{2}$

"But you can't go through life applying Heisenberg's Uncertainty Principle to everything."
Diagnosis of epileptic seizures

- Often difficult
- Epilepsy vs NEAD vs syncope (vasovagal and cardiac)
- Rarities
- Patients recall little
- Witnesses frightened
- Mimics
- Chameleons
Fears of misdiagnosis and overdiagnosis

Not diagnosing epilepsy

Not diagnosing NEAD

Seizure-related mortality

Morbidity from anticonvulsants, restrictions, social stigma, missed therapeutic chance

Clinician error

Potential consequence

Frequency of error

Rare

Common
Case 1

• A 30 yr man collapses in an amusement arcade.
• He recalls feeling unwell “difficult to describe” then came round on the floor of the arcade.
• He can recall little else.
• His friend came in and he was “thrashing about” for about 5 minutes, seemed confused but was back to himself after 10 minutes.
Video footage from CCTV
What is the likely diagnosis?

✓ A. Epileptic seizure

B. Non-epileptic attack disorder

C. Syncope

D. Don’t know
More video footage
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know
• Diagnosing the cause of a blackout can be difficult
• You can make mistakes if you miss the start of the attack

Main differential diagnostic problem: epilepsy vs non-epileptic attack disorder (NEAD)
Diagnosis
Blackouts: a practical approach

- Get as much information as possible
- First decide: is it syncope?
- Are there features that point towards epilepsy or NEAD?
- Is it really weird?
- How do they give the history?
First decide: is it syncope?

- Prodrome
- Nausea
- Visual constriction
- Dizziness
- Short duration
- May jerk or (more rarely) wet themselves
- Rapid recovery (unless supported)
Points of history to focus on...

- Shaking: nature, amplitude, frequency, evolution
- Eyes
- Incontinence
- Zyanosis (sorry...)
- Unpleasant bites
- Responsiveness
- Estimated duration
- Speed of recovery
## Epilepsy vs NEAD

<table>
<thead>
<tr>
<th>Epilepsy</th>
<th>NEAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aura</td>
<td>Aura</td>
</tr>
<tr>
<td>Onset from sleep</td>
<td>Onset reported from sleep</td>
</tr>
<tr>
<td>Tonic and clonic phases</td>
<td>Shaking</td>
</tr>
<tr>
<td>Variation in amplitude and frequency</td>
<td>Seminology constant</td>
</tr>
<tr>
<td>Can be bizarre</td>
<td>Can be bizarre</td>
</tr>
<tr>
<td>Urinary incontinence</td>
<td>Urinary incontinence</td>
</tr>
<tr>
<td>Lateral tongue bite</td>
<td>Can bite tip of tongue</td>
</tr>
<tr>
<td>Cyanosis</td>
<td>Not usually</td>
</tr>
<tr>
<td>Indistinct vocalisation</td>
<td>Not usually</td>
</tr>
<tr>
<td>Eyes open</td>
<td>Eyes closed</td>
</tr>
<tr>
<td>Lasts 30 secs-2 minutes</td>
<td>May be prolonged or relapsing</td>
</tr>
<tr>
<td>Confused afterwards</td>
<td>Rapid recovery</td>
</tr>
<tr>
<td>May sleep</td>
<td>Tired, post-event crying</td>
</tr>
<tr>
<td>Stereotyped</td>
<td>Seminology variable</td>
</tr>
<tr>
<td>Sometimes</td>
<td>History of abuse</td>
</tr>
</tbody>
</table>
Conversational analysis

• Spontaneity
• Richness of detail
• Attempts at reformulation
• Concentrates on event not circumstances
• “I think its stress-related”
If still uncertain....

- Tell the patient
- Gather more information: video on phone
- Ensure safety
- Address driving
- Review
Driving (May 2016)

- MUST inform the DVLA
- First seizure - 6-12 months
- Multiple seizures - 12 months (all types)
- Secondary causes (1 week from acute head injury or 24 hours from intracranial surgery or stroke; electrolytes; eclampsia) - individual basis
- Withdrawal - not for 6 months after last dose
- HGV - 5-10 years off medication
- Syncope: prodrome and posture
- Vasovagal with reliable prodrome or avoidable trigger whilst standing - OK to drive, no need to inform DVLA
- Vasovagal syncope with prodrome/trigger while sitting: 1 month
- Unexplained syncope inc. without prodrome: 6-12 months
- Blackout with seizure markers: 6-12 months
- NEAD - 3 months without attacks
- Cough syncope - 6-12 months except if conditions fulfilled
Some witnessed blackouts...
An attack
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know

Answer: C. Syncope
Vasovagal syncope

- Myoclonic jerks are common in vasovagal syncope
  - Provokation
  - Postural
  - Prodrome
  - Rapid recovery

Lempert et al, Ann Neurol 2004
12s
90% myoclonus
Head turns, automatisms
Another attack
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know

✅ A. Epileptic seizure
Another attack
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know

✅ B. Non-epileptic attack disorder
Non-epileptic attack disorder

- Eyes closed, stopping and starting, partially responsive, non-ictal seminology shaking
Another attack
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know

A. B. C. D.
0% 0% 0% 0%
Non-epileptic attack disorder

- “Pseudo-tonic” arched posture, regular frequency and amplitude shaking, sequence wrong
Another attack
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know
Frontal lobe seizure

- May be bizarre but **stereotyped**
- Motor posturing or activity
- Short-lasting
- Consciousness may be retained
- EEG often normal during attack
Another attack
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know
Complex partial seizure

- Not an absence
- May be aura
- Automatisms
- Usually loss of awareness
- May wander around confused
- Can be atypical
Another attack
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know
Cardiac syncope: two groups

• YOUNG PATIENTS
  • Long QT
  • WPW
  • Brugada
  • Arrhythomogenic right ventricular cardiomyopathy
  • HOCM

• OLDER PATIENTS
  • IHD
  • Heart block
History

• A 21yr woman awoke her boyfriend in the early hours one morning when they were both sleeping.
• Her breathing was erratic, her body stiff, her eyes open and she was unresponsive for 2–3 min.
• She did not have tonic or clonic movements, tongue biting or incontinence.
• She was drowsy and amnesic for the event.
• She was taken to an A&E department.
• Examination was normal.
• An ECG was performed.
What is the likely diagnosis?

A. Epileptic seizure
B. Non-epileptic attack disorder
C. Syncope
D. Don’t know
History

• She was seen in clinic 4 weeks later.
• There had been no further symptoms and no relevant history could be added.
• There was clinical uncertainty about the nature of the attack but it was felt most likely that an event arising from sleep could be a seizure.
• A standard EEG and an MR brain scan were both reported as normal.
History

• She was found at home dead in her bed.
Prolonged QT interval

“It is difficult to interpret the A&E ECG and the machine has miscalculated QT and QTc, but there is undoubted QT prolongation. Some QT intervals are almost 600 ms.”
• The ECG can miscalculate QT intervals

• The prolonged QT interval is sometimes not seen in all leads
Summary: diagnosis

• Can be difficult
• Commonest differential of epilepsy is NEAD, cardiac differentials can be critical
• Take opportunities to document events in detail
• Always do an ECG
• Misdiagnosing NEAD has a morbidity too
Management
Management of epilepsy

• Non-emergency
• Type of seizures
• Type of patient
Management

• Driving
• Safety: bathing, heights, hot water
• Do they need treatment?
• Risks (further seizures, SUDEP, etc. vs spontaneous resolution, side effects, etc.)
Why do we not always treat after a single seizure?

- Previous myoclonic seizures or absences
- Congenital neurological deficit
- Unequivocal epileptiform changes on EEG
- Risk of recurrence unacceptable to pt

First seizure trial group, Neurology, 1993
Risk of recurrence @ 2 years 51% untreated

MESS study, Marson et al, Lancet, 2005
Early treatment reduces early seizure recurrence but not long-term remission rates
Which drug?

IGE
- Valproate in men
- Lamotrigine
- Levetiracetam

Focal epilepsy
- Carbamazepine
- Lamotrigine
- Levetiracetam

SANAD trial, NEJM, 2007

Clinical caveats: Carbamazepine makes myoclonic and absence seizures worse; LTG not very good for myoclonus; Levetiracetam not very good for absences
8 “C”s in the refractory patient

- Correct diagnosis?
- Correct classification?
- Correct drug?
- Covert lesion?
- Compliance?
- Comorbidity?
- Clear triggers?
- Consistent with truth?
Management options

• Identify cause
• Increase dose(s)
• Change drug(s)
• Short-term cover options

Kwon-Brodie data, NEJM
1st drug: 50%
2nd drug 13%
3rd drug 5%

Nelligan et al, 8%
with each new drug
Summary: management

• Is it epilepsy?
• Anticonvulsants not generally indicated after first event
• Think about the type of patient and the type of seizure
Thank you

Any questions?