EPILEPTIC OR NOT?

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Learning Objectives

• Describe features that differentiate epileptic and psychogenic seizures
Interrater reliability of EEG-video monitoring

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For the NES Treatment Workshop*

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ABSTRACT

Objective: The diagnosis of psychogenic nonepileptic seizures (PNES) can be challenging. In the absence of a gold standard to verify the reliability of the diagnosis by EEG-video, we sought to assess the interrater reliability of the diagnosis using EEG-video recordings.

Methods: Patient samples consisted of 22 unselected consecutive patients who underwent EEG-video monitoring and had at least an episode recorded. Other test results and histories were not provided, because the goal was to assess the reliability of the EEG-video. Data were sent to 22 reviewers, who were board-certified neurologists and practicing epileptologists at epilepsy centers. Choices were 1) PNES, 2) epilepsy, and 3) nonepileptic but not psychogenic (“physiologic”). Interrater agreement was measured using a κ coefficient for each diagnostic category. We used generalized κ coefficients, which measure the overall level of between-method agreement beyond that which can be ascribed to chance. We also report category-specific κ values.

Results: For the diagnosis of PNES, there was moderate agreement (κ = 0.57, 95% confidence interval [CI] 0.39–0.76). For the diagnosis of epilepsy, there was substantial agreement (κ = 0.69, 95% CI 0.51–0.86). For physiologic nonepileptic episodes, the agreement was low (κ = 0.09, 95% CI 0.02–0.27). The overall κ statistic across all 3 diagnostic categories was moderate at 0.56 (95% CI 0.41–0.73).

Conclusions: Interrater reliability for the diagnosis of psychogenic nonepileptic seizures by EEG-video monitoring was only moderate. Although this may be related to limitations of the study (diagnosis based on EEG-video alone, artificial nature of the forced choice paradigm, single episode), it highlights the difficulties and subjective components inherent to this diagnosis.

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• For the diagnosis of PNES
  – Moderate agreement: 0.57, 95% [CI] 0.39–0.76
• A closer look at the data reveals that
  – in 12 (of 22) patients, there was agreement in ≥19 reviewers
  – in 17 (of 22) patients, there was agreement in ≥ 17 reviewers
• This suggest that the diagnosis is not difficult in most patients, but that there are a few difficult ones that account for an only moderate overall agreement
Historical features

EPILEPTIC
- Stereotyped
- Occurrence out of sleep
- Injury
  - Including tongue biting
- Incontinence

PSYCHOGENIC
- Odd triggers (e.g., pain, noises, getting upset)
- Doctor’s office (75% PPV)
- High frequency despite AEDs
- Associated psychiatric disease
- Demeanor and social history
- “Fibromyalgia” (75% PPV)
  - Other vague diagnoses
- Florid review of system (somatization)

References
Ictal Semiology

- Characteristics of the jerking or shaking
  - Slow onset, stop-and-go
  - Arrhythmic, asynchronous movements

- Specific behaviors
  - Pelvic thrusting
  - Head shaking
  - Weeping, stuttering, eyes closed
  - Opisthotonic posturing ("back arching")
  - Bilateral motor activity with preserved awareness

- References
Provocative Techniques

- Purposes
  - Proves suggestibility
  - Makes evaluation diagnostic if no spells occur
- Various methods: IV saline, patch etc.
- Has to trigger the *habitual* episode
- Sensitivity: 30% and variable
- *Specificity*: 99%
- Ethical concerns?

The value of videos

• Words only go so far ...
• “Shaking” vs “shaking”
  – Amplitude, frequency, symmetry, synchrony, rhythmicity
  – Myoclonic, tonic, clonic, automatisms
Impact on Clinical Care and Practice

• EEG-video = EEG + video
• Each is interpreted in the context of each other
• Video alone > EEG alone
• Tell families to use their cell phone!