Non-Epileptic Spells: What Do You Mean, That Isn't A Seizure?
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Objectives
- Review non-epileptic spells
- Discuss the differential for non-epileptic spells
- Differentiate response plans for seizures vs non-epileptic spells

Seizure Classification Continued
- Primary Generalized—Originating from all over the brain have not identifiable onset. Many generalized seizures start and spread so quickly it is impossible to identify the source.
- Focal / Partial—Originating from one part of the brain (may have several different foci) with or without spreading to other areas.

Seizure
- Sudden involuntary time-limited alteration in behavior including change in motor activity or autonomic function, consciousness, or sensation, accompanied by an abnormal electrical discharge in the brain.
- Usually self-limited, lasting seconds to minutes (on average 2-4 mins)
- 3 phases: aura, ictus, post-ictus

Partial / (Focal may become generalized)
- Simple partial seizures [SPS] WITHOUT altered consciousness
- Related to a region in the brain.
- An aura is a simple partial seizure.
  - Motor Events: facial twitching or hand wrenching
  - Somatic sensory Events: unusual taste in mouth, tingling, tinnitus, seeing flashes
  - Autonomic Events: epigastric sensation, vomiting, or sweating
  - Psychic Events: illusions, structured hallucinations, or deja vu
Simple Partial Seizure

- Synchronal cortical discharges resulting in symptomatology related to the brain region affected with alteration of consciousness.
- May or may not be precipitated by a SPS.
- Often a CPS is preceded by SPS with progression to impairment of consciousness.

Complex Partial Seizures (CPS)

- Automatisms: lip smacking, blinking, or picking at clothes
- Motor phenomena: wandering, running, or arm jerking (myoclonic jerks)

Secondary Generalized Seizure: begins with focal cortical discharges that spread across both cerebral hemispheres to ultimately manifest as a generalized seizure.

Primary Generalized

- Sudden Loss of Consciousness (non-responsive), no aura, no focal motor symptoms
  - Generalized Tonic Clonic (GTC) (formerly known as “grand mal”)
    - Synchronous cortical discharges involving both cerebral hemispheres.
    - Extremities will shake, may turn blue, pale, bite tongue, or wet his/her pants.
    - Usually lasts 1-5 mins.
    - Often will be sleepy afterward and will want some rest.

Non-epileptic spell (NES)

- Can look very similar but is not associated with an abnormal electrical discharge in the brain
- A physical sign or symptom without a biological marker.
- Ex: anxiety attack vs heart attack
  - No raised CK or troponin normal ECG
Terms used for non-epileptic spells (NES)

Trying to change the stigma of NES

- Hysterical seizures
- Pseudo seizures
- Psychogenic seizures
- Malingering
- Histrionic behavior
- Somatization
- Conversion Disorder
- Can also be something that is misunderstood as a seizure e.g. syncope, reflux etc.

How common is NES?

- 20% of patients seen at epilepsy centers have non epileptic seizures
- Some epilepsy monitoring units report that 15-20% of admissions are for non epileptic seizures
- The Cleveland Clinic reports they see 100 to 200 NES patients yearly

Psychosomatic- meaning "mind-body illnesses"

- Extreme emotional stress can actually cause physical illness
- Some physical illnesses can be greatly influenced by psychosocial or emotional factors

- Examples:
  - Acne
  - Allergy
  - Chest pain (angina)
  - Asthma
  - Headache
  - Ulcer
  - Obesity
  - Rheumatoid arthritis
  - Ulcerative colitis

- Medical and psychological treatment recommended

Somatoform- meaning "to take form in the body"

- Emotional stress can cause symptoms that resemble physical illness, but have no underlying physical cause

- Examples:
  - Paralysis
  - Blindness
  - Inability to speak

- Psychological treatment recommended
- No medical treatment needed

NES- Somatoform

- It is important to remember that NES represents a somatoform disorder.

- These are REAL conditions that arise from REAL stress.

- Students are not imagining or inventing them.

Diagnosis

- Most reliable test is the video electroencephalogram (EEG) in the Epilepsy Monitoring Unit (EMU) to determine if any abnormal electrical discharges occurred

- An EEG can help diagnose seizures, but NOT other conditions like: ADHD, learning problems, autism, mood disorders, or sleep disorders

- Other medical conditions to rule out:
  - Heart disease, stroke, fainting, sleep and neuromuscular disorders
Causes
- Misdiagnosis/ misinterpretation
- Elaboration
- Inappropriate Coping
- Stress
  - School, social interactions with peers, dating, and age related stressors are common triggers
- Traumatic event:
  - Physical or sexual abuse
  - Incest
  - Divorce
  - Death of a loved one
  - Great loss
  - Sudden change

Elaboration
- A small seizure is embellished
  - Fear
  - Attention seeking
  - Reinforcing dependent role
  - Conditioned response

Inappropriate Coping strategy
- Psychological conflict
- Personality issues
- Many issues with abandonment
- One study 43-57% report sexual abuse

Misdiagnosis/ Misinterpretation
- Patient
- Caregiver
- Parent
- Medical personnel
  - Physician
  - Nurse
  - ED
  - EMT

Things often mistaken for seizures (23)
- Neonates
  - Benign neonatal myoclonus
- Active sleep
  - Sleepiness
  - Hypersomnia
- Infants
  - ALTE
  - Spasm nutans
- Clonus
- Reflux
- Spastics
  - Torticollis
- Shuddering attacks
- Toddlers
  - Tics
  - Stereotypies
  - Masturbation
  - Breath holding spells
  - Night terrors
- Childhood
  - Staring spells
  - Confusional migraine
  - Benign paroxysmal vertigo
  - Alternating Hemiplegia
- Others
  - Posturing
  - Sleep apnea
  - Narcolepsy/catatopaxy
  - Oculogyric crisis

Features of non epileptic events
- Non epileptic spells tend to be far longer than epileptic seizures
- “out of phase” upper and lower extremity movements
- Flailing
- Presence of pelvic thrusting
- No rigidity
- Eyes closed
Non-epileptic spell video

Active sleep or Sleep myoclonus

- Normal sleep stage in neonates
- Eventually evolves into REM sleep

Reflux

- Usually can elicit some association with feedings
- Sandifer Syndrome

Spasmodic torticollis

- Sudden repetitive head lifting or turning
- Episodes can last hours to days
- Uncomfortable
- Alert and responsive
- Usually family history of torticollis or migraine
- Must rule out posterior fossa abnormal
- Will resolve over time

Shuddering Attacks

- Rapid tremor of head arms, trunk and can spread to legs
- Start around 4 months
- Usually resolve by 10 years (gradually decrease over time)
- May have family history of essential tremor

Tics

- Stereotyped repetitive movements, often appear sudden and intermittently
- In older children are often suppressible
- When involving eye blinking or facial twitching can be confused with seizures
Tics

- Self stimulatory behaviors increase with stress/excitement
- Often can be distracted from behavior
- Suppresible
- More common in children with developmental delay
- Often a more complex movement than a focal seizure

Stereotypies

Masturbation

- Rocking, straddling a toy or legs held tightly together
- Usually distractible but some children very persistent

Breath holding spells

- Precipitated by fear, frustration or minor injury
- Vigorous crying followed by cessation of breathing usually in expiration
- May have tonic stiffening
- Occasional clonic jerks
- At our altitude can progress to seizure/status (rare)
- Correcting anemia may help
- Often family history
- If not resolved by age 5 labeled a behavior

Breath holding spells

Staring spells

- Day dreaming, inattention
- Reported more often in children when there are other academic issues
- Usually able to alert immediately by name call or touching
Confusional migraine

- Unusual behavior
- Confusion
- Hyperactivity
- Amnesia
- Disorientation
- Lethargy
- Not usually psychosis
- Can last hours, rarely days
- Headache either at onset or offset.
- Gets better with sleep
- EEG may show slowing

Benign paroxysmal vertigo

- Brief episodes of vertigo
- Minutes to hours
- Very distressing and may be nauseated
- Alert during the event
- Family history of migraine common
- Usually resolves by 6-8 years of age, migraines later in life

Alternating hemiplegia

- Paroxysmal episodes of weakness, and/or dystonia usually associated with headache
- Episodes can last minutes to hours
- Emotions and fatigue can trigger attacks
- Pts can also have seizures but are usually different in phenotype
- Treatment - flunarizine

Narcolepsy/cataplexy

- Narcolepsy - excessive uncontrollable daytime sleepiness
  - Responsive to stimuli
- Cataplexy - sudden loss of tone
  - Usually in association with unexpected touch or increased emotion
  - No loss of consciousness

Oculogyric Crisis

Eye deviation that is often associated with medications
- Irritability
- Awareness
- May have other associated dystonic movements

The greatest risk factor

- The greatest risk factor for having non-epileptic spells is having seizures!
Outcomes

- Children with non-epileptic spells have a much higher rate of recovery.
  - 81% children and adolescents NES free at 3 years.
  - 20% of adults NES free at 3 years.
  - 50% reduction immediately after attending IEC.

Integrative treatment approach

- Neurologist, Psychiatrist, and if appropriate a Neuro Psychologist.
- Reinforce and explain NES diagnosis.
  - Confidence in the diagnosis allows for proper treatment and significantly increases the chance of a complete recovery.

After the diagnosis

- Safely stop anti-seizure meds if appropriate.
- Remove blame and shame from the diagnosis.
- Identify learning and cognitive deficits to assist with 504 and IEP recommendations.
- Provide families with the recommendation to obtain mental health support for coping strategies.
  - Psychotherapy, Stress reduction techniques, Relaxation, Biofeedback.

NES Response Plan

It is not appropriate to give medications, to send away from class, call the paramedics, or encourage avoidance of certain activities in response to an NES.

1. Speak to student having NES. Report to parents if they are able to speak or respond during NES.
2. Brief reassurance
   - "You are having one of your events. You will be fine. Right now you need to have some time to calm down. I am going to stay close by but step away so that you can have some time to relax."
   - "You’re having an event, but you are ok and safe."
3. After this brief reassurance it is best to stop interacting until the NES has stopped.
4. If this occurs in class and does not last for an extended amount of time, it may be best just to watch closely but continue on with class.
5. Once the event is over, it may be helpful to leave the room for a few minutes to calm or rest.

NES Response Plan

3. Ensure the student will not get hurt. It is not recommended they be moved during an event.
   - If sent out of the room, this will draw attention to the situation and may increase stress and anxiety. Therefore, if the student can stay in the room after the event, this is recommended.
4. If the student falls, keep away from sharp objects, and ensure their head is not hitting a hard surface.
   - Do not place anything in the mouth.
5. Do not restrain.
6. Those in the room should be instructed to return to their normal activities without interacting until it is finished.
   - "It’s having an episode, but it’s okay. Let’s let them be, so that they are able to relax.”

After NES

1. Note what happened just before the NES started. Is there anything that could have caused an increase in stress?
2. If it is important that “normal” activities be resumed as soon as is possible to reestablish normalcy and minimize disruption to daily activities.
   - Neutral, calm responses will foster calm.
3. May need a 10 to 15 minute break, but should not need more than that.
   - We do not want to continue to perpetuate isolation and avoidance.
   - Should not be removed from an activity or asked not to participate, because this will give the signal that something is wrong, or they cannot do something.
   - Still capable of engaging in normal daily activities, and this should be encouraged.
Still have questions about a student?

- If you have NES questions about a student who is seen by a provider:
  - HIPAA allows provider RN to communicate directly with school RN only as it falls under continuity of care. All other school personnel must have signed release of information (ROI) on file for RN to speak about students health related information.
  - Guardians may request that provider not speak with school representative and that request will be respected.
  - Schools must have written permission from legal guardian to record a video. If permission is received, check with the student’s provider to see if the video may be emailed for review including name and date of birth or student.

Questions?

References

- American Epilepsy Society: www.aesnet.org
- Epilepsy Foundation: www.epilepsyfoundation.org