A Day in the Epilepsy Center
Pearls for Everyday Issues

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New Onset Seizures

Gary is a 38 year old architect whose wife witnessed a generalized tonic clonic seizure while he was sleeping.

He had been sleep deprived all week working on a project and had been out celebrating its completion.

He was fighting off a cold and had drank to excess the night of the seizure.

His neuro exam is normal and his EEG and MRI were normal as well.
First Seizure - To Treat Or Not To Treat?

40- 50% recurrence in 2 years—highest risk in 6 months

Lower risk (about 25%): “provoked”, normal exam, normal EEG, normal MRI

Medium Risk (about 50%): abnormal EEG or a neurologic disorder of some type

High Risk (greater than 65%): abnormal EEG and a neurologic disorder
Other Factors That Go Into Deciding To Start AEDS

- Life cycle
- Driving needs
- Risk of injury
- Certainty that it was indeed a seizure
- Patient/family fears
- Potential medication side effects
New Onset Epilepsy

- Is it really new?
- Recurrent stereotypic spells that are clearly focal seizures are often dismissed and can go on for years.
- These patients “smolder” and can become very refractory by the time they are diagnosed.
Gary has been having “migraines” for years. He describes an enlarging orange scotoma in his right visual field that lasts for about a minute. He feels far away and as if he is in a dream like state. His wife states that he sweats and looks pale. He is exhausted afterwards and sometimes has trouble speaking for the rest of the day. He sometimes has a headache after, but this is infrequent.

He used to get 2 episodes a year, but this year he has had 6 episodes.

On the night of the seizure he had 2 in a row earlier that evening, which almost made him decline the celebration.

Is this new onset epilepsy???????????????????????????????????
New Onset Epilepsy

His repeat prolonged sleep deprived EEG showed left posterior temporal and occipital sharp waves

He had a 3 Tesla MRI a few years later at UW which revealed a left occipital cortical dysplasia

Repeat EEGs can sometimes be very revealing - I like to run mine for over an hour on patients who are about 4 hours sleep deprived. HV and photic with drowsy, sleep, and arousal is ideal

MRI’s should be done with thin coronal slices through the temporal lobes
Left Occipital Cortical Dysplasia
MRI Coronal Slices:  
Right Mesial Temporal Sclerosis
Most Common Finding on MRI?
Choosing an AED

- Seizure type/Epilepsy syndrome
- Comorbidities/side effect profiles
- Lifecycle
- Pharmacokinetics
- Cost and availability
What AED Would You Give Gary?

- Normal weight
- Mild anxiety and insomnia
- No other comorbidities
Seizure Type/Epilepsy Syndrome

- Partial Epilepsies - they all work except ethosuximide
- Primary Generalized Tonic Clonic Seizures – they usually all work except for ethosuximide
- Absence Epilepsy - ethosuximide, valproate, methsuximide (worsened by phenytoin, carbamazepine, oxcarbazepine)
- Myoclonic seizures - valproate, keppra, zonisamide, clonazepam, clobazam (worsened by phenytoin, carbamazepine, oxcarbazepine, lamotrigine, gabapentin)
- Lennox Gastaut/multi focal seizures/atypical absence - rufinamide, valproate, felbamate, zonisamide, keppra, lamictal, clobazam, topiramate
Choosing an AED

- Who would you give valproate to?
  - young women with JME planning a family?
  - 75 year old man with new partial seizures?
  - 50 year old morbidly obese women with diabetes?
  - 1 year old child with suspected metabolic disorder?
  - 15 year old slim male with idiopathic generalized seizures?
Choosing an AED- general rules

Psychiatric issues- lamotrigine, oxcarbazepine, valproate, carbamazepine all generally helpful--levetiracetam and phenobarbital can worsen mood disorders

Obesity- topiramate, zonisamide, generally encourage weight loss- valproate, pregabalin, gabapentin commonly add weight

Kidney Stones- avoid topiramate and zonisamide

Migraines- topiramate, valproate, zonisamide generally helpful, lamotrigine may worsen headaches

Elderly- valproate often causes parkinsonism and sometimes encephalopathy, oxcarbazepine and carbamazepine can cause significant hyponatremia
Choosing an AED - general rules

- Kidney stones - stay away from topiramate or zonisamide
- Psychiatric issues - stay away from levetriacetam
- Elderly - stay away from valproate (parkinsonism) and carbamazepine and oxcarbazepine (hyponatremia)
- Women that can become pregnant - stay away from valproate, phenytoin, phenobarbital
- Obese patients - stay away from valproate, pregabalin, gabapentin
Medically Refractory Epilepsy

- Jessica is a 29 year old with seizures since she was 9 that now occur monthly in clusters around her menses.
- Déjà vu, epigastric rising sensation, stop, stare, oral buccal automatisms, post confusion and aphasia.
- Recent nocturnal convulsions.
- Past MRI 5 years ago normal.
- EEG left anterior spikes.
- Failed Lamictal, Tegretol, Topamax, Keppra, Zonegran.
- On Lamictal 400 mg AM, Keppra 1500 mg bid.
ILAE Definition “Drug Resistant”

“failure of adequate trials of two tolerated and appropriately chosen
and used AED schedules
(whether as monotherapies or in combination) to achieve sustained seizure freedom”
Pregnancy in Women with Epilepsy

- She has been married for 2 years and wants to start a family
- What do you tell her?
Pregnancy in Women with Epilepsy

- Withdraw meds?
- Teratogenesis, Low birth weight (SGA)
- Folic acid supplementation
- Monotherapy verses polytherapy
- Seizures in pregnancy
- Status epilepticus in pregnancy
- Valproate? The devil we know.
- Are all pregnancies considered high risk?
- Role of blood levels of AEDS
Post Partum Issues

- Jessica wants to breast feed and be a stay at home mom
- What advice do you have?
Post Partum Safety

Infant Safety?

Baby Safety Month!
Postpartum issues for moms

- Sleep deprivation
- Fluctuating blood levels
AEDS and Contraception

- Drugs that significantly induce P 450 system will lower efficacy of birth control pills
- Phenobarbital
- Phenytoin
- Carbamazepine
- Oxcarbazepine
- Primidone
- Topamax (above 200 mg)
Management of Refractory Epilepsy

- Video EEG is essential.
- Is it the right diagnosis?
- Non epileptic events?
- One seizure focus?
- Generalized seizures?
Management of Refractory Epilepsy

- Epilepsy Surgery
- VNS
- Neuropace- responsive neurostimulator (RNS)
- Ketogenic diet/ modified Atkin’s diet
- Drug trials
- Polytherapy combinations
- CBDs?
- New Drugs- Potiga, Fycompa, Aptiom
Selective Amygdala-hippocampectomy
Neuropace RNS System
New AEDs

- POTIGA- KCNQ channels, ezogabine is thought to stabilize the resting membrane potential and reduce brain excitability. Problems: Retinal pigment destruction, urinary retention, weight gain, psychosis

- FYCOMPA® (PERAMPANEL) is the first non competitive AMPA RECEPTOR ANTAGONIST--UNIQUE MOA: The first and only agent that targets glutamate activity at postsynaptic AMPA receptors. Once a day dosing. Problems: behavior, dizziness

- Aptiom® (eslicarbazepine acetate)- prolongs inactivated state of voltage gated sodium channel. Problems: rash, hyponatremia, dizziness
Does Anyone Ever Come Off Seizure Medications?

- WHEN PIGS FLY
Are Patients Truly Seizure Free?

Seizure self reporting is horribly inaccurate by virtue of the seizures themselves

“Small seizures don’t count”

Can occur during sleep with no good witnesses

Can be very subtle and even subclinical

Video EEG is often full of surprises!

That ever flowing river DENIAL.....
Risk Factors for SUDEP

Estimates of SUDEP risk vary, but general population studies suggests that each year there is about 1 case of SUDEP for every 1,000 people with epilepsy.

For some, this risk can be considerably higher, depending on several factors:

Uncontrolled or frequent seizures

Generalized tonic clonic seizures – especially nocturnal

Other possible risk factors may include the following:
Long duration of epilepsy and young age when seizures started
Not taking antiepileptic medication regularly as prescribed
Alcohol use.
When To Refer To An Epilepsy Center?

- Patients not seizure free after 2 or 3 AED trials
- Need for video EEG
- Confirm diagnosis/second opinion
- Special populations
- Concern for subclinical seizures
- Decision to withdraw meds