A case study: 32 year old female with episodes of unconsciousness

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Case Presentation
32 year old female
Brief seizures, worsening over 8 years
- Loss of consciousness and muscle tone
- Occasional incontinence
- Confusion
72 hour EEG showed 10 left temporal seizures
Ambulatory EEG recording

72 hour EEG showed 10 left temporal lobe seizures.
Differential Diagnosis
• Seizures
• Cardiac Dysrhythmias
• Migraines
• Behavioral Changes
• Psychiatric issues
Diagnostic Procedures
mass lesion in the inferior left temporal lobe

MRI imaging with and without contrast
Tumor cells
Cancerous Brain Tissue
Epilepsy

- Sudden extension
- Sudden loss of tone
- Complex seizure
Normal EEG Recording
Ambulatory EEG Recording
Inpatient Video-EEG Recording
Different symptoms

- Two different types of symptoms with different duration
  - Longstanding, consistent with a neurocardiogenic syndrome
  - More recent, abrupt and unpredictable with loss of awareness but not loss of consciousness
- Normal Echocardiogram
Diagnosis

- Seizure-induced vagal stimulation and vagotonic sinus bradycardia/sinus arrest
- Neurocardiogenic syncope
- Sick sinus syndrome
Mechanisms of the Disease
Pathology
Deletions of 1p/19q

Fluorescence in situ hybridization (FISH)
Deletions of chromosomes 1p and 19q help to identify oligodendroglial component.
Oligoastrocytoma
The glial cells where Oligoastrocytomas are found
Location of the tumor
Incidence

- Brain tumors that are NOT Gliomas: 60
- Gliomas: 39
- Mixed Gliomas (primarily Oligoastrocytomas): 1
Epilepsy

Permanent changes in brain
   Brain tumor, traumatic brain injury, infections, etc.
Ictal Asystole
Tumor/Seizure + a gene = cessation of pulse
Intrinsic Cardiac Pacemaking Gene

Ion Channels

Ticking

Speed
Dual Phenotype of Epilepsy and Cardiac Arrhythmia from a Single Gene

Potassium channel gene mutations cause cardiac arrhythmias

Decrease in cardiac potassium current
Potential links to Epilepsy: positive “seizure phenotype” & genotyped LQT syndrome

Johnson et al, Neurology 2009 72:224-31
Potassium channel deficiency reveals brain-driven cardiac dysfunction as a candidate mechanism for sudden unexplained death in epilepsy
Treatment
Asystole

- Pacemaker
  - Concern: Permanent pacemaker in a young person may carry long-term risks for complications
- Beta Blocker
  - Concern: Mixed results
- Subsequent MRIs
Brain Tumor

- Resection
- chemotherapy
Challenges & Unresolved issues

• Cardiac dysfunction in epilepsy
• Appropriate screening of seizure patients
• Impact of AEDs
• Genotype-phenotype correlation
Post-surgical follow up
Prognosis

- Engel I (no events) x20 months
- Lesional temporal lobe epilepsy
- MRIs for life
- Overall Low Risk
- 70-90% cure rate
- Observation Recommended
References