

Outsmarting Brain Tumors

Seizures and Epilepsy: Diagnosis, Prognosis and Management

Jeffrey M. Chung, MD
Director, Epilepsy Monitoring Unit
Cedars-Sinai Medical Center
May 10, 2008

Outline

- Definitions
- Incidence
- Risk Factors
- Types of Seizures
- Signs and Symptoms of a Seizure
- Prognosis
- Management

Definitions

- What is a seizure?
 - Abnormal electrical discharges that become rhythmic
 - Spread pattern
- Epilepsy = recurrent unprovoked seizures

Incidence

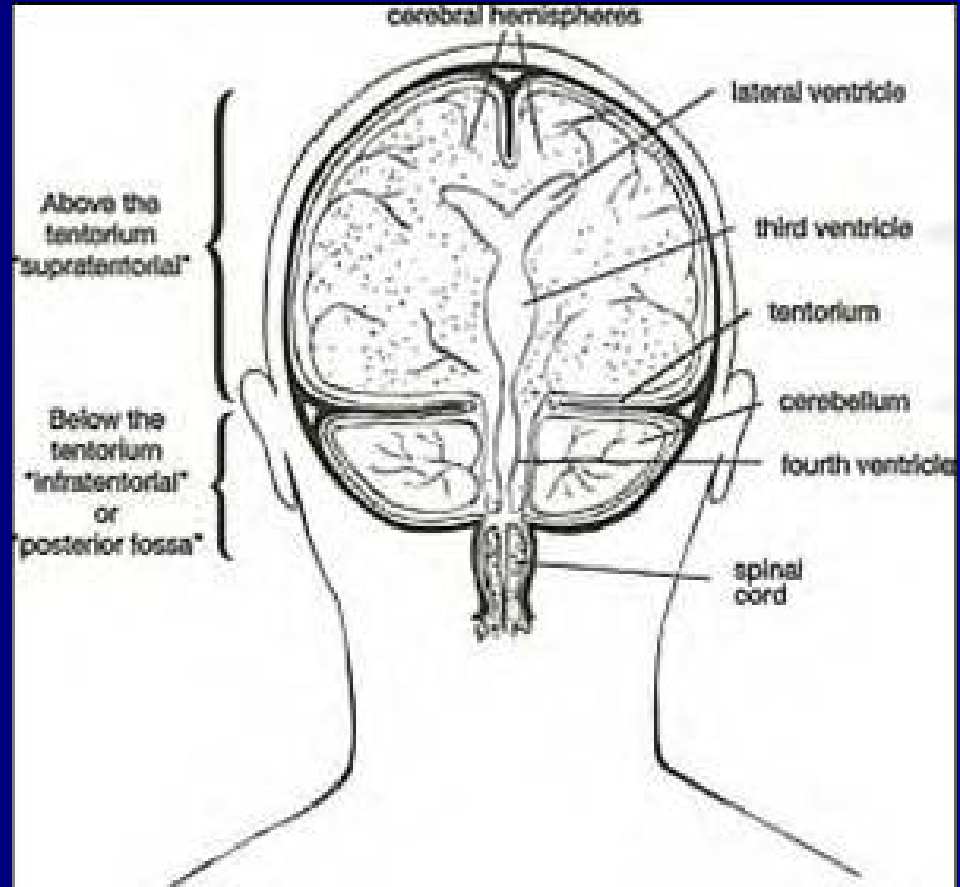
- Seizure occurrence in brain tumor patients
 - 50% of children with supratentorial tumors
 - 20 – 40% of adults
- Seizure as the first symptom of brain tumor
 - <5% of children
 - ~25% of adults

Risk Factors

- Location
- Tumor Type

Location

- Seizures are more common with tumors above the tentorium than below
- Seizures are more common with superficial than deep tumors

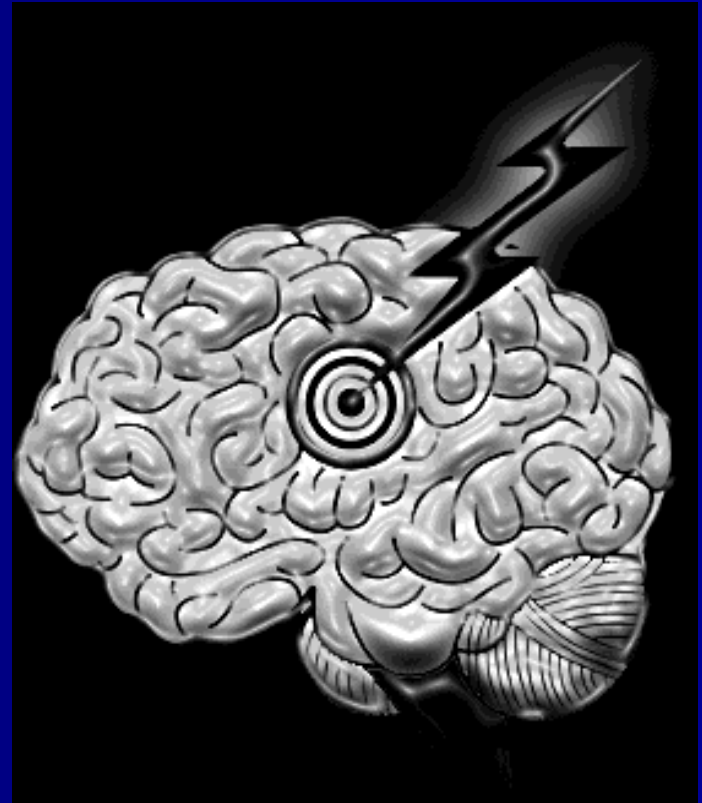


Tumor Type

- Higher risk of having seizures in:
 - Low grade primary brain tumors
 - Astrocytoma, oligodendroglioma, meningioma
- Less likely to have seizures in:
 - High grade primary brain tumors
 - Anaplastic astrocytoma, glioblastoma

Types of Seizures (1)

- Simple partial seizures
 - Focal disruption
- Complex partial seizures
 - Extended disruption



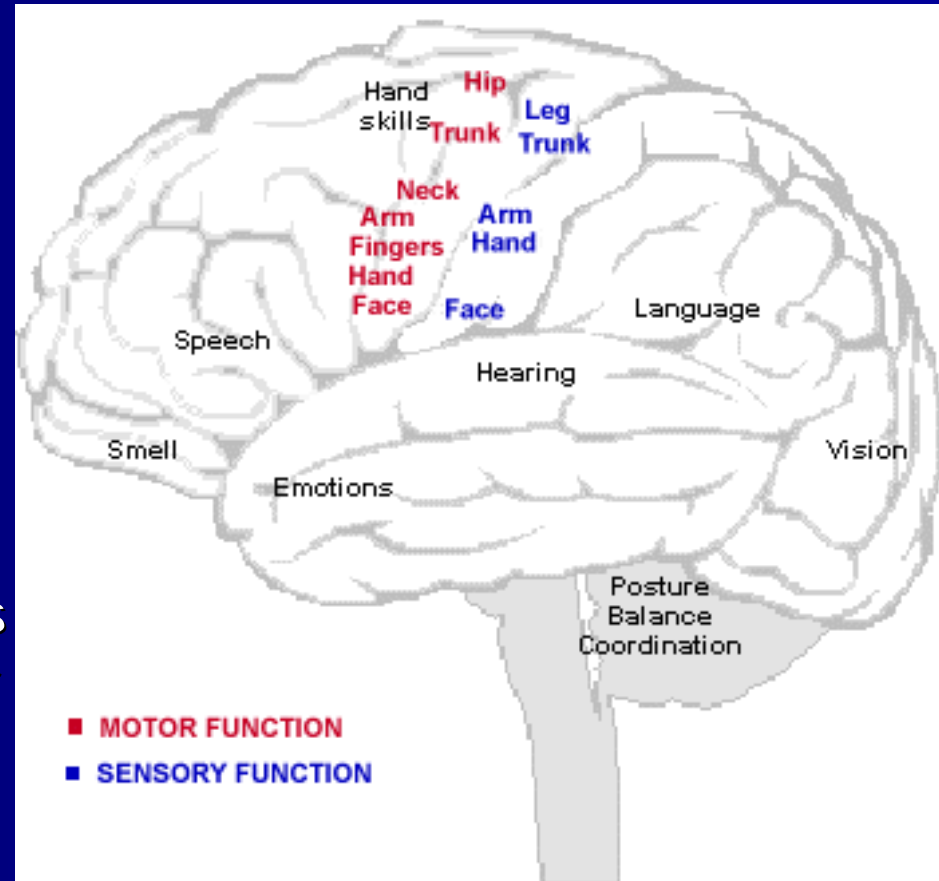
Types of Seizures (2)

- Generalized seizures
 - Spread to involve both hemispheres
- Continuous seizures / status epilepticus



Signs and Symptoms (1)

- Simple Partial Seizures
 - Aura/Warnings
 - Smell and taste
 - Gastric sensations
 - Emotional sensations
 - Sounds
 - Visual images
 - déjà vu and jamais vu
 - Focal motor movements
 - Prolonged jerking of a limb



Signs and Symptoms (2)

- Complex Partial Seizures
 - Alteration of awareness
 - Staring
 - Repetitive movements
 - Eye blinking, lip smacking, manual movements, speech
- Generalized Seizures
 - Jerking of limbs
 - Generalized convulsions

Signs and Symptoms (3)

- Continuous Seizures/Status Epilepticus
 - Continuous seizure activity
 - Two seizures without an interval of clear mentation

 - Convulsive
 - Non-Convulsive
 - Subtle or Sub-clinical

Prognosis

- No effect of seizures on survival seen
 - Earliest recognizable sign
 - Earlier treatment
 - More likely to be low grade tumors
- Seizure freedom with medical management when tumor is the culprit
 - 20% to 60%

Management (1)

- Surgical Resection
 - Focal resection of tumor
 - Localization of seizure onset focus

Management (2)

- Functional brain mapping
 - Motor cortex mapping
 - Sensory cortex mapping
 - Language mapping



Management (3)

- Medical Treatment
 - Anti-epileptic medications
 - One medication
 - Combination of multiple medications
 - Risks, benefits, side effects
 - Older and newer medications

Side Effects (1)

- Common

- Sedation, impairment of cognition, difficulty with balance

- Medication Specific

- Skin rashes, reduced white blood cell or platelet counts, liver enzymes

Side Effects (2)

■ Long Term

- Enzyme inducers (phenytoin, carbamazepine)
 - Increase bone turnover → decrease bone density
 - Increase lipid profile
 - Joint pain

■ Other Considerations

- Interactions with other medications
- Interactions with food (grapefruit juice, calcium)
- Dosing schedule

Anti-Epileptic Medications (1)

■ Older Medications

- Phenobarbital (*Luminal*)
- Phenytoin (*Dilantin, Phenytek*)
- Primidone
- Carbamazepine (*Tegretol, Carbatrol*)
- Valproate (*Depakote, Depakene*)

Anti-Epileptic Medications (2)

- Newer Medications
 - Felbamate (*Felbatol*)
 - Levetiracetam (*Keppra*)
 - Lamotrigine (*Lamictal*)
 - Topiramate (*Topamax*)
 - Zonisamide (*Zonegran*)
 - Tiagabine (*Gabitril*)
 - Oxcarbazepine (*Trileptal*)
 - Gabapentin (*Neurontin*)
 - Pregabalin (*Lyrica*)

How Can You Help?

- What can you do as a bystander?
 - Head protection
 - Lay patient down on his/her side
 - DO NOT place any object in his/her mouth
- Prolonged Seizures (Status Epilepticus)
 - Similar protection
 - Emergency help if >5 minutes

Seizure Precautions (1)

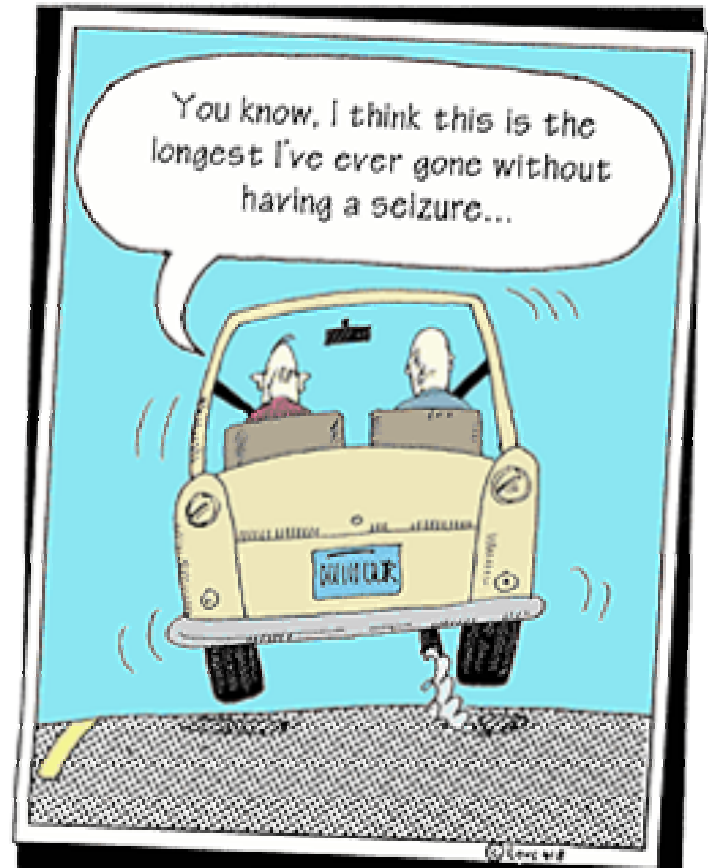
■ Avoid

- Driving
- Climbing high places
- Operating heavy machinery
- Taking baths
- Using front burners on stovetop

■ Can

- Swim with a friend close by or wear a life vest

SNAPSHOTS by Jason Love



Things we don't like to hear as a passenger.

Seizure Precautions (2)

- Record all medications and dietary supplement
- DO NOT change your medication dosage without consulting your doctor
- DO NOT stop anti-epileptic medication abruptly

Resources

- Epilepsy Foundation of America
 - www.epilepsyfoundation.org
- Epilepsy Foundation of Southern California
 - www.epilepsyfoundation-socalif.org
- National Institute of Health
 - www.ninds.nih.gov/disorders/epilepsy/epilepsy.htm
- Cedars-Sinai Medical Center
 - www.csmc.edu



"Mr. Osborne, may I be excused?
My brain is full."