San Francisco VA Epilepsy Center of Excellence:

State-of-the-Art Diagnostic & Therapeutic Services

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Epilepsy and Depression

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What is Depression?

• Clinical depression: a mood disorder in which feelings of sadness, loss, anger, or frustration interfere with everyday life for weeks or longer

• “Major depression:” depressed mood every day for at least two weeks
  – 15% of the population experiences depression at some point in life
  – 6-8% of primary care patients meet criteria for the diagnosis

• 25-55% of epilepsy patients have depression

• Depression is a real disease!
What are the symptoms?

- Sadness/depressed mood
- Insomnia (with early morning awakenings, 2-4 AM)
- Loss of interest (“anhedonia”)
- Feelings of guilt or worthlessness
- Decreased energy
- Concentration difficulties
- Disturbance of appetite or weight
- Agitation, restlessness, or slowness of thoughts/movement
- Suicidal thoughts, plans, or attempts
What causes depression?

• No single cause, but contributing factors include:
  – Abnormal brain chemistry
    • Due to genetics
    • Due to a reaction to stress
  – Alcohol or drugs
  – Medical problems
  – Medications
  – Sleeping problems
  – Stressful life events
    • Relationship/work problems
    • Death or illness of loved ones
    • Social isolation
What’s the risk if you have epilepsy?

- 25-55% of epilepsy patients have depression
- The suicide rate is higher for people with epilepsy
- Those with depression have a worse quality of life
- We do a poor job of treating depression in people with epilepsy...

Why?

- The focus is on seizures
- Fear of medication interactions (antidepressants and anticonvulsants)
- Poor understanding of how the diseases are linked
Why are epilepsy patients more likely to become depressed?

- Psychological stress caused by life with epilepsy
- Medication side effects
- The cause of the epilepsy (TBI, stroke, etc) may cause depression
- The epilepsy itself...
Depression Symptoms

Effects of Epilepsy

Medication Side Effects
Depression Symptoms

Effects of Epilepsy

Medication Side Effects

Overlap:
Sad mood
Feeling worthless
Sleep disturbance
Decreased energy
Trouble concentrating
Disturbance of appetite/weight
Agitation/restlessness
Slowed thinking
Anticonvulsants and depression

• Better
  – Carbamazepine (Tegretol)
  – Lamotrigine (Lamictal)
  – Valproate (Depakote)

• Worse
  – Topiramate (Topamax)
  – Levetiracetam (Keppra)
  – Phenobarbital
  – Vigabatrin (Sabril)
Epilepsy and Depression: The Link

• Nerve cells in the brain are constantly firing tiny electrical impulses

• These electrical impulses trigger nerve cells to release chemicals called neurotransmitters

• Neurotransmitters bind to neighboring nerve cells, triggering more tiny electrical impulses, and the process repeats....
• Seizures are essentially “electrical storms” in part of the brain, caused by excessive synchronized electrical activity (too many neurons firing at the same time, instead of doing their job)
• These “electrical storms” may cause changes in the amounts or location of neurotransmitters
• Low levels of neurotransmitters (especially serotonin and norepinephrine), are at least partially responsible for depression
Evidence from the lab

• Rats with epilepsy seem “depressed”
  – Less exploration
  – Drinking less sugar water
  – Their neurons have fewer “branches” and less serotonin, norepinephrine

• Rats who experience stress as newborns:
  – Develop seizures more quickly when exposed to seizure-causing drugs
  – Appear depressed, as above

Kanner, Epilpesia 52: 21-27, 2011
Evidence from the lab

- In humans with epilepsy, PET scans show fewer receptors for serotonin.
- People with depression before they developed epilepsy are twice as likely to develop treatment-resistant (severe) epilepsy.
- The neurotransmitters associated with epilepsy (glutamate and GABA) may be linked to the neurotransmitters associated with depression (serotonin and norepinephrine), but we don’t yet understand these links.

Bottom line...

• We don’t fully understand the link between depression and epilepsy
• Epilepsy may cause depression in people who are predisposed (genetics) or under significant stress
• It is possible that epilepsy makes depression worse, or vice-versa – but we need more research to understand this
Can depression be treated?

• YES!

• Medications

• Therapy

• ECT

• There is ALWAYS hope....
Medications for Depression

• Selective serotonin reuptake inhibitors (SSRIs):
  – Fluoxetine (Prozac) – “activating”
  – *Mirtazapine (Remeron) – “sedating”
  – Sertraline (Zoloft)
  – Paroxetine (Paxil)
  – Fluvoxamine (Luvox)
  – **Citalopram (Celexa)**
  – **Escitalopram (Lexapro)**

• Selective norepinephrine reuptake inhibitors (SNRIs):
  – Desvenlafaxine (Pristiq)
  – Venlafaxine (Effexor) – anti-anxiety effects
  – **Duloxetine (Cymbalta)**

• Drug interactions more likely with fluoxetine, fluvoxamine, or paroxetine
• Drug interactions less likely with escitalopram, citalopram, or sertraline
• There are other types of antidepressants (TCA inhibitors, MAO inhibitors, etc), but these are rarely used in people with epilepsy

* - technically not an SSRI, but similar....
Side Effects of Antidepressants

- Loss of appetite/weight
- Drowsiness
- Dizziness
- Fatigue
- Headache
- Nausea
- Dry eyes and mouth
- Urinary retention
- Sexual dysfunction
Antidepressants, continued

- Most “failures” of antidepressants occur because
  - the side effects weren’t tolerated
  - The dose was too low to be effective
- Talk to your doctor...
  - About the principle of “maximal tolerated dose”
  - About being patient... weeks to months needed to see an effect
Epilepsy surgery and depression

- A recent study of patients who had epilepsy surgery:
  - 22% were depressed before surgery
  - 17% were depressed after surgery, if still having seizures
  - 8% were depressed after surgery, if not having seizures

- Vagus Nerve Stimulator
  - Initially developed as a treatment for epilepsy, but now FDA-approved for depression
  - Effectiveness is controversial, mechanism is poorly understood

*Neurology* 2005 65(11): 1744-1749
Suicide

- People with epilepsy are at higher risk of suicide than the average person.
- There is some data that anticonvulsants and antidepressants can increase the risk of suicide slightly in young people! BUT....
  - This is extremely rare
  - The reasons are not understood (but theories abound)
  - The risks of untreated epilepsy or depression are much higher than the risk of suicide on antidepressants or anticonvulsants.
- **Anyone who expresses thoughts about hurting himself or herself should be taken extremely seriously!**
- Contact a physician, emergency room, or hotline immediately if a depressed person:
  - Discusses a specific plan to hurt himself or herself
  - Gives away treasured items
  - Suddenly begins making plans/arrangements for their absence in the future
  - It is okay to act direct questions!
Mental Health Support

ASK FOR SUPPORT WHEN YOU NEED IT!

• Talk to someone about…
  – your stress, problems, worries
  – the disappointment you feel after a seizure
  – your frustration at having to pace yourself slower than others
  – the feeling of not being “normal” like everyone else
  – the anger or irritation you get from having to take all of your medications and their side effects

DON’T BE AFRAID TO GET PROFESSIONAL HELP!

• Psychotherapy (counseling)
• Support groups
Psychotherapy

**Types**
Psychoanalytic (Freud), psychodynamic, cognitive-behavioral, mindfulness-based, short-term, long-term, etc.

**Modalities**
Individual (child, adolescent, adult), couples, family, group

**Counselors**
Licensed Clinical Social Worker, Marriage and Family Therapist, Psychologist, Psychiatrist

***Find the right counselor for YOU***
Group Support

Living With Epilepsy

Open to all adults with epilepsy and any caregivers, families, and friends.

Every 2nd Monday of the month
11am-12:30pm
SFVA Epilepsy Center

Gil Woo
Resources

- www.epilepsy.com
- www.epilepsynorcal.org
- www.epilepsyfoundation.org
- www.epilepsyadvocate.com

- National Suicide Prevention Hotline: (800) 273-TALK
- Veterans Suicide Prevention Hotline: (800) 273-TALK press 1
Remember, there is always hope!

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