

# SUICIDALITY AS A SIDE EFFECT OF PHENYTOIN: CASE REPORT AND REVIEW OF LITERATURE

Shi Xun (Dave) Fang BS, Sree Reddy DO, Sahil Munjal MD  
Department of Psychiatry, Wake Forest School of Medicine, Winston-Salem, NC

## BACKGROUND

- Patients with epilepsy are particularly vulnerable to depression and suicidality.
- It is critical to monitor the role of Anti-Epileptic Drugs (AEDs) in precipitating psychiatric symptoms.
- We present a case of an individual who presented for suicide attempt after initiation of phenytoin.

## CASE DETAILS

- Mr. X is a 43-year-old male with PMHx of intractable focal epilepsy s/p TBI due to MVA in 2014, with multiple hospital admissions for status epilepticus. He has no past psychiatric hx.

### November 2019

Patient started **Phenytoin**. HAM-D was **2**.

### December

Developed depressed mood, anhedonia, decreased concentration, decreased appetite, feelings of guilt/worthlessness.

### January 2020

Pt lost 50lb since starting medication, begins drinking alcohol daily (did not drink prior).

### February

Admitted to psychiatric unit following **SA via OD of phenytoin**. HAM-D was **25**.

Discharged, Phenytoin discontinued. Pt refused pharmacologic mgmt. of MDD.

### March

Rapid improvement in mood & energy  
Received 2 sessions of outpatient therapy.

Patient speaks out about his experience with suicide to his church community.

### April

HAM-D is **4**.



## DISCUSSION

Psychiatric and Behavioral Side Effects (PBSE) of AEDs are well documented in the literature:

| PBSE Rate per AED <sup>1</sup> |       |               |      |
|--------------------------------|-------|---------------|------|
| Levetiracetam                  | 22.1% | Phenytoin     | 2.9% |
| Zonisamide                     | 9.7%  | Oxcarbazepine | 2.8% |
| Clobazam                       | 4.5%  | Carbamazepine | 1.8% |
| Lamotrigine                    | 4.2%  | Gabapentin    | 1.7% |

| Most Common PBSEs <sup>1</sup> |       |                          |      |
|--------------------------------|-------|--------------------------|------|
| Overall PBSE                   | 17.2% | Other Behavioral Changes | 1.6% |
| Intolerability                 | 13.8% | Aggressive behaviors     | 1.0% |
| Irritability                   | 6.9%  | Psychosis                | 0.5% |
| Depressive Mood                | 4.1%  | Tantrums                 | 0.5% |
| Anxiety                        | 2.5%  | Suicidal thoughts        | 0.2% |

## Suicide Risk of Phenytoin in literature is ambiguous

- Exposure to phenytoin was **associated with suicide-related behavior** in older veterans (Hazard Ratio=5.33)<sup>2</sup>
- Phenytoin (and other conventional AEDs) were **not associated with increased risk** of suicidal behavior (Adjusted OR = 0.67)<sup>3</sup>

## Factors Implicated in Psychiatric Adverse Effects of Antiepileptic Drugs<sup>4</sup>

- |                        |                    |
|------------------------|--------------------|
| • Severity of Epilepsy | • Rapid Titration  |
| • Psychiatric Hx       | • High Drug Dosage |
| • Family Hx            |                    |

## CONCLUSION:

- Our patient with **intractable epilepsy** but **no psychiatric history** who tolerated all AEDs prior to **phenytoin** developed **major depression, SI and SA**
- We recommend increased vigilance with regards to the **PBSEs** of AED, especially for vulnerable patients.

*"I want to share my experience, so it doesn't have to happen to anyone else." ~ Mr. X*

## REFERENCES

1. Chen B, Choi H, Hirsch LJ, et al. Psychiatric and behavioral side effects of antiepileptic drugs in adults with epilepsy. *Epilepsy Behav.* 2017; 76:24-31
2. Pugh MJ, Copeland LA, Zeber JE, et al. Antiepileptic drug monotherapy exposure and suicide-related behavior in older veterans. *J Am Geriatr Soc.* 2012; 60(11):2042-2047
3. Andersohn F, Schade R, Willich SN, et al. Use of antiepileptic drugs in epilepsy and the risk of self-harm or suicidal behavior. *Neurology.* 2010; 75(4):335-340
4. Mula M. Treatment-emergent psychiatric adverse events of antiepileptic drugs in epilepsy: how can we avoid them? *Neuropsychiatry.* 2011; 1(4): 371-376