



## Suicide as Temporal Lobe Epilepsy Phenomena: A Rare Case Report

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### ABSTRACT

Depression and suicide tendencies are interrelated and commonly seen in chronic diseases especially in epilepsy. It is scientifically proved that limbic system is involved in psychiatric problems pathologically such as in temporal lobe epilepsy (TLE) which is more than expectation. Here, a 28 years old female was attempted for suicide repeatedly. She was diagnosed as TLE with EEG finding of continuous electric discharge from temporal lobe. Alterations and neurotransmission disturbances among critical anatomical networks and impaired or aberrant plastic changes might predispose patient with TLE to mood disorders. She was given oxcarbazepine 600mg OD, antidepressants Escitalopam 10mg OD and anxiolytics Clonazepam 0.5mg OD at night. After getting this treatment for 5months she has no such repeated suicidal attacks. All these drugs are continuing and the patient is followed up regularly.

**Keywords:** Temporal lobe epilepsy, repeated suicidal attack, limbic system, chronic diseases.

### INTRODUCTION

The attempt for suicide is more frequent among depression people with epilepsy than in the general population.<sup>1</sup> Yet, suicide and its associated psychiatric disorders remain under recognized and untreated. A recent alert from the Food and Drug Administration (FDA), suggesting that antiepileptic drugs (AEDs) increase suicide risk, has kindled significant interest. The relationship between epilepsy and suicidality is complex and multi-factorial. Suicide attempts are found with relative frequency in epilepsy. It was found that 11.2% of deaths of patients with chronic epilepsy were attributed.<sup>2</sup> In another study found that individuals with epilepsy had a three-fold higher risk of suicide as a cause of death.<sup>1</sup>

#### Psychiatric Risks Factors

After controlling for co-morbid socioeconomic status and psychiatric co-morbidities, the Danish population-based study mentioned found that the patients with epilepsy had nearly twice the risk of committing suicide than controls.<sup>1</sup> However, the risk increased almost 14-fold when co-morbid psychiatric disorders were present, particularly with mood of 32 folds and anxiety of 12 folds disorders. Of note, the study found that the risk of suicide was greatest during the first 6 months after the diagnosis of epilepsy and was even higher in the presence of co-morbid psychiatric during this early period. Similarly, a Swedish study demonstrated that co-morbid psychiatric disorders were associated with a nine-fold increase in the risk of suicide and a 10-fold increase for patients also using antipsychotic drugs.<sup>3</sup> In a study, the highest risks for a suicide attempt were correlated with a lifetime history

of major depressive episode and lifetime manic episode. Likewise, a lifetime history of mood or anxiety disorders was identified as significantly associated with the risk of suicidal ideation.<sup>2</sup>

#### Epilepsy Related Risk Factors

In a study among 100 consecutive patients, 13% experienced suicidal ideation at a median duration of 24 hours after more than 50% of their seizures. These patients were significantly more likely to have had a past history of bipolar or major depressive disorders as well as of psychiatric hospitalization. Suicidal behaviour also has been reported in the context of postictal psychotic episodes. In an another study it was reported that suicide attempts were more frequent 7% during postictal psychotic episodes, 2% during either acute interictal psychosis and no postictal confusion.<sup>4</sup>

Temporal lobe epilepsy (TLE) is the most frequently seen epileptic disorder. It is generally seen that depressive symptoms and major depressive episodes are quite common in epilepsy particularly with TLE.<sup>5</sup> This relation of depression with TLE attracts the attention of psychiatrist to know the relation between these two as well as the relationship between the mood, cognition and temporo limbic system and function in other related diseases also. It was previously documented that there is association between epilepsy and psychiatric disorder;<sup>5</sup> still the depression and such disorders remain undiagnosed and untreated many a time in young epileptics.<sup>6,7</sup>

An increased suicide risk of as much as 6- 25 fold was reported to be associated with TLE.<sup>6, 8</sup> Furthermore, having undergone epilepsy surgery has been associated



with higher suicide rates (24% of all deaths) compared with the rates in nonsurgical series, whether or not seizure-free state was achieved.<sup>9</sup>

There are limited evidences regarding the prevalence of depression in TLE patients and clinical features by which diagnosis can be made. Paucity of data available regarding the relationship between the TLE and suicidal tendencies. Here we report a case of such relationship between temporal lobe epilepsy and suicide, with clinical diagnosis and its treatment.

### CASE REPORT

We report a case of 28 year old female presented to the outpatient department of psychiatry, IMS and SUM Hospital, Bhubaneswar, a tertiary care teaching hospital with chief complaint of repeated attempt to commit suicide. In the past, with the third attempt of suicide she was admitted in one of the hospitals of Agra for two days and discharged with advice to take antidepressant Escitalopam 10mg.

This patient was apparently alright six months back, to stat with she again attempted suicide by consuming phenyl herself and also she has poisoned her daughter with the same, for which both of them got admitted to the local hospital (Agra). They were discharged after five days with antidepressants (Escitalopam 10mg) and anxiolytics (clonazepam 2mg). She felt guilty for her mistakes only after discharge. After two month, while she was continuing the drug, again she attempted suicide by cutting her wrist, and admitted to hospital. After discharge from hospital she again felt guilty.

She attempts suicide usually 4-5 days before her menstrual period (pre menstrual symptoms). There was no suicidal note/any guilty feeling, hopeless ideas or any stressor before the event but she was confused during the attempt. In the first event she attempted when she brought her child from the school and in the second attempt she was cooking at home. There was no history of diabetes mellitus, hypertension, epilepsy or any history of suicidal attempts in the past. There was no family history of any psychiatric illness or suicidal tendencies also. According to her personal history, she was a house wife married to an army officer 5years back with a 4year daughter and the interpersonal relationship in the family is very cordial.

After third attempt of suicide on 17<sup>th</sup> march 2013 she came to our OPD (IMS and SUM Hospital, Bhubaneswar) with a complaint of regular interval suicidal attempts. On the OPD basis all the routine investigations such as all blood parameters, EEG, MRI scan of brain, USG abdomen were done. All parameters were within normal limits except the EEG which showed there was a continuous electric discharge from the temporal lobe. MRI and USG abdomen findings showed no abnormal findings. She was diagnosed as TLE which was confirmed by a neurologist.

Then she was given Oxcarbazepine 600mg OD, antidepressants Escitalopam 10mg OD, and anxiolytics Clonazepam 0.5mg OD at night. After getting this treatment for 5months she has no such repeated suicidal attacks.

### DISCUSSION

In a cross sectional study, Jones et al. found a 20.8% lifetime prevalence of suicide attempts among 139 outpatients followed in five tertiary epilepsy centres in the United States.<sup>2</sup> A Canadian population-based study demonstrated a 25% lifetime prevalence of suicidal ideation for people with epilepsy compared with 12.2% of controls.<sup>10</sup> A history of suicide attempt is the strongest predictor of a future completed suicide. For example, Harris and Barraclough found that people with epilepsy who attempted suicide had a 38.4% increased risk for later completed suicide compared with the general population. Likewise, in a Swedish population based study, a previous suicide attempt was identified in 46.2% of people with epilepsy who eventually committed suicide.<sup>11</sup> Not only do people with epilepsy have a higher risk of suicide, but conversely, one population-based study identified a five-fold higher risk for developing epilepsy among individuals who exhibited suicidality prior to the onset of epilepsy.<sup>12</sup> This risk was independent of a history of major depressive disorder and alcohol abuse. In addition, two other population-based studies found that people with a history of depression have a four- to seven-fold higher risk of developing epilepsy.<sup>13, 14</sup> Furthermore, the co-occurrence of migraine with aura (but not migraine without aura), major depression, and suicidality increase the risk of unprovoked seizures by more than six-fold;<sup>15</sup> these data may be explained by abnormal brain serotonin activity.<sup>16</sup>

It is seen historically that depressive symptoms have been considered to be more frequent in epilepsy with a temporal lobe focus than extra TLE or generalized epilepsy.<sup>17, 18, 19</sup> noted that many patients with TLE have more than one seizure type and that the number of seizures rather than the location of the focus may be more relevant. There is also a study which found that a potential relation between depression and development of seizures in older age.<sup>12</sup>

The concept of interictal dysphoric disorder suggests that a significant portion of epilepsy patients with depressive symptoms would not have met criteria for major depressive disorders. 'antidepressants. Two categories of symptoms have been described in relation to the TLE personalities,<sup>20</sup> out of which one is depressive-somatoform symptoms which includes depressed mood, anergia, pain and insomnia and the other is affective symptoms which includes irritability, euphoric mood, fear and anxiety.

Among epileptic patients the most frequent diagnosis includes affective disorders, schizophrenia and substance abuse. Psychosis in particular may contribute to increase



suicide risk. Postictal psychotic episodes may increase the risk of suicide in individuals with epilepsy and more specifically, individuals with TLE.<sup>21,22</sup> Psychiatric disorders in epilepsy may result from the inhibitory activity that develops as a reaction to the excessive excitatory activity of the chronic seizure.<sup>23</sup>

The relationship between the epilepsy and psychiatric disorders is based on:

- a) Delay in the development of interictal dysphoric disorders after onset of epilepsy, as inhibitory mechanisms become increasingly established.
- b) As seizures decrease and are controlled dysphoric symptoms and psychosis tend to be exacerbated or to emerge de novo.
- c) The same psychiatric changes also appear at times when acute worsening of the seizures causes an enhanced inhibitory response, commonly in the prodromal and postictal phases.
- d) A delay of 6-18 months has been noted before psychiatric changes after optimal surgical elimination of the epileptogenic zone.

Epilepsy and depression may share common pathogenic transmitter mechanisms involving decreased serotonergic, noradrenergic, dopaminergic and GABAergic activity.<sup>24, 25</sup> Teenagers and adolescents are especially affected by mood disorders in epilepsy.<sup>26</sup>

As most partial seizures have a temporal lobe origin, some authors concluded that TLE in males represent a risk of suicidal behavior. Among female patients, in contrast, the presence of complex partial seizure is inversely correlated with death caused by suicide. Early age onset of epilepsy means a higher risk of suicide in men but not in women.<sup>27</sup>

There is also a variable relationship of antiepileptic drugs with suicidal tendency. Phenobarbital is regarded as a depression inducing drug<sup>28</sup> and depression in turn could trigger suicidal attempts in women where as daily doses of carbamazepine, oxcarbazepine, valproic acid were negatively correlated with suicidal behavior especially in females who are more susceptible to depression.<sup>28</sup> The development of new anti epileptic drugs has occurred during the past few years, which are topiramate, oxcarbazepine, gabapentin, lamotrigine and levitracetam to treat epilepsy, but little information is available regarding its antidepressant effect.<sup>27</sup>

## CONCLUSION

Our case report of relation of TLE & suicide is a rare case report

1. Which simulate some studies like
  - a. The risk of suicide in presence of depression is five fold higher in women & only two fold higher in men in the general population.

- b. Suicidal risk is more in patients suffering from partial seizure with temporal lobe focus.
- c. Newer antiepileptics like oxcarbazepine may decrease the depression thereby decreasing the suicidal tendency.

2. Whereas contrasting some studies like

- a. Male epileptics with potential seizures are more vulnerable for depressive symptoms with suicide.

Suicide in epileptic patients is a real problem, as it is under diagnosed by clinicians. Possible risk factors for suicide in all epileptics must always be evaluated.

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