

# MAJOR DEPRESSIVE DISORDER IN EPILEPTIC PATIENTS

Amer Abbas<sup>1</sup>, Mian Iftikhar Hussain<sup>2</sup>, Wajid Ali<sup>1</sup>, Mehreen<sup>2</sup>

## ABSTRACT

**Background:** Depressive disorders can co occur in epileptic patients. This worsens out come and furthers lower their quality of life. The purpose of this study is to determine the rate of major depressive disorder in epileptic patients in our clinical setting.

**Materials and Methods:** It is a descriptive cross sectional study conducted at Iftikhar Psychiatric Hospital, Peshawar, from January 2012 to November 2012. A total of 152 epileptic patients presenting to outpatient department were assessed using Hamilton depression rating scale. Demographic data and illness related data was recorded on a semi structured proforma. Data was analyzed using SPSS 16.

**RESULTS:** Mean age of subjects was 29.8 years with standard deviation of 1.44. In this, majority patients were female. Major depressive disorder was present in 88 % of cases. Depression was associated with increased frequency, prolonged duration of illness, type of antiepileptic medication used to treat epilepsy. Carbamezapine was the most commonly used antiepileptic. Age and gender had no significant relationship with depression in epilepsy.

**Conclusion:** Majority of epilepsy patients suffered from psychiatric co morbidities. Most of them remain undiagnosed and untreated, worsening out come.

**Key words:** Epilepsy, Hamilton Depression Rating Scale, Major depressive disorder.

## INTRODUCTION

According to International League Against Epilepsy (ILAE) and International Bureau for Epilepsy (IBE) epilepsy is a disorder characterized by enduring predisposition to generate epileptic seizures and is accompanied by neurobiologic, cognitive, psychological and social consequences.<sup>1,2,3,4</sup>

Epileptic seizures are unpredictable and can occur at any time adversely impacting work performance, social functioning and quality of life. People suffering from epilepsy have to face prejudice, discrimination and social isolation. These problems are further aggravated if psychiatric co morbid illness is also present. Depression is the most common co morbid psychiatric condition and is associated with increased healthcare cost and worsened out come.<sup>5,6,7,8,9,10</sup>

According to Gaitatzis et al depression can precede, co-occur with or follow the diagnosis of epilepsy<sup>11</sup>. Research has shown that unadjusted annual median costs of co morbid condition like major depressive disorder in epilepsy can range from 1100 to 1500 US dollars.<sup>5</sup> Despite their high prevalence, psychiatric dis-

orders very often remains unrecognized and untreated in patients with epilepsy.<sup>12</sup>

Little work has been done to study the co occurrence of depression in epilepsy and factors affecting it in our clinical setting. Present study aims to reduce this gap and help in detecting and treating undiagnosed cases of depression in a population of epilepsy.

## MATERIALS AND METHODS

It is a descriptive cross sectional study conducted at Iftikhar Psychiatric Hospital, Peshawar, from January 2012 to November 2012. A total of 152 epileptic patients presenting to psychiatric outpatient department were included through purposive sampling in this study. Those patients who refused to give informed consent or who suffered from cognitive deficits were excluded from the study.

Depression was assessed using Hamilton depression rating scale. Demographic data and illness related data was recorded on a semi structured proforma. Data was analyzed using SPSS 16. Factor correlation done by chi square test

## RESULTS

Mean age of care givers was 29.8 years with standard deviation of 1.44 In this study 71.7% of the epileptic patients were female and 28.3% were male. 27.6% suffered from one or more epileptic seizure every week. 21.3 % suffered from one or more seizure every month and 19% from one or more seizure every year. 32.2 % of the patients had their epilepsy under control and were seizure free.

<sup>1</sup> Department of Psychiatry, Hayatabad Medical Complex/ Khyber Girls Medical College, Peshawar

<sup>2</sup> Department of Psychiatrist, Iftikhar Psychiatric Hospital, Peshawar

### Address for Correspondence:

**Dr Amer Abbas**

Department of Psychiatry, Hayatabad Medical Complex/ Khyber Girls Medical College, Peshawar Contact: Email: amerabbasqureshi@gmail.com Cell:03139643617

**Table 1: Relation of Major Depressive Disorder in Epileptic Patients with Illness Related Factors.**

Illness related factors	Frequency	Percentage	Significance of association of Major depressive disorder with Illness related factors.( Pearson Chi Square test) P Value
Gender			0.77
Male	43	28.3	
Female	109	71.7	
Duration of Epilepsy			0.003
Up to 3 months	11	7.2	
3 months to 1 year	24	15.8	
Up to 2 years	37	24.3	
More than 2 years	45	29.6	
Frequency of Seizures			0.0009
One or more seizure per week	42	27.6	
One or more seizure Per month	32	21.3	
One or more seizure Per year	29	19.3	
None	49	32.2	
Valproic acid	18	11.8	0.001
Carbamezapine	49	32.2	
Topiramate	4	2.6	
Lamotrogine	6	3.9	
Phenytoin sodium	13	8.6	
Levitriacetem	10	6.6	
Valproic acid and topiramate	22	14.5	
Carbmezapine topiramate Carbmezapine and Phenytoin sodium	8	5.3	
Valproic acid and lamotrogine	4	2.6	
Valproic acid and phenytoin sodium	3	1.9	
Levitriacetem and	8	5.3	
Valproic acid	7	4.6	

As regards to duration of epilepsy is concerned, 29.6% had epilepsy for more than 2 years.24.3%of the patients had duration up to 2 years,15.8% had duration up to 1 year and only 7.2% of the presenting cases suffered from epilepsy for less than 3 months. Carbamezapine was the most commonly used antiepileptic. It was used in 32.2% of cases, Valproic acid was used in 11.8% of cases. Topiramate and valproic acid combination was used in 14.5% of cases. Age and gender had no significant relationship with epilepsy. Severity of epilepsy indicated by frequency of seizures, and duration of epilepsy, was strongly associated with depression. Similarly type and number of antiepileptic used were strongly associated with depression in these patients

## DISCUSSION

This study demonstrated close association between depression and epilepsy. It shows more than 88% of epileptic patients suffer from major depressive disorder. Although, this percentage is higher than general population (6-17%) it is consistent with the results of previous studies done on epilepsy. Research shows that up to 48% of patients suffer from depression<sup>13</sup>. In one such study, Williams studied 2000 patients with epilepsy and found that depressed mood was the second most common emotion associated with epileptic seizure<sup>14</sup>. Similarly, Mendez et al compared epileptic patients to matched controls suffering from chronic medical illness but similar degree of disability. He found that, more than half of epileptic patients suffered from depression<sup>15</sup>.

The main reasons for this close association of epilepsy with depression may include biological vulnerabilities, psychological reaction to the epilepsy, and experiencing adverse social circumstances<sup>16</sup>. Decreased serotonergic, noradrenergic, and GABAergic functions have been identified as the biological cause for developing depression<sup>17</sup>. Decreased activity of these same neurotransmitters has been shown to facilitate the development of seizure foci, to exacerbate seizure severity, and to intensify predisposition in some animal models of epilepsy<sup>17,18</sup>.

Therefore, changes in the levels of serotonin, nor epinephrine, dopamine and gamma-aminobutyric acid (GABA) may be responsible for the pathophysiology of both depressive disorders and epilepsy. Jobe et al also presented evidence that depression and some types of epilepsy may be associated with decreased noradrenergic and serotonergic transmission in the brain<sup>17,18</sup>. Flor-Henry speculated that depression might be related to right (non dominant) foci, a finding confirmed by a few other investigators<sup>16</sup>. Most studies that find a relationship between laterality and depression have found depression to be more common with left-sided foci.<sup>19</sup>

Although this study shows no significant relationship with demographic factors and depression in epilepsy, strong association was found between severity of epilepsy and major depressive disorder. Severity of illness was indicated by increased frequency of seizures, prolonged duration of the illness and use of more than one antiepileptic medication. This finding is consistent with previous research done to study the impact of symptom severity, demographics and duration of epilepsy on the development of depression. Main reason for this is that increased severity of symptoms caused social and occupational impairment and may even lead to physical disability. This leads to frequent health visits and increased health care cost.<sup>20</sup>

In this study, there was statistically significant relation between depression and number of antiepileptic medication. Depression was more common in those using two or more antiepileptic medication. This finding is consistent with previous work done on this subject. In one such study, Choi-Kwon et al found significant relationship with number of antiepileptics and depression. Use of multiple antidepressants indicate severity of symptoms and is associated with increased treatment cost and increased risk of side effects.<sup>21,22,23</sup>

Similarly, there was significant association between depression and type of antiepileptic used. of topiramate, phenytoin and levetiracetam use was strongly associated with the development of depression. This is consistent with previous research which showed that these antiepileptic drugs possess significant depressogenic effect<sup>21,22,23,24</sup>. In January 2008, the US Food and Drug Administration (FDA) issued an alert regarding the association between suicidality and AEDs, having concluded that there was a statistically

significant, 1.8-fold increased risk of suicide with the exposure to AEDs.<sup>21,13,24,25,26</sup>

## CONCLUSIONS

A significant number of epileptic patients suffer from psychiatric co morbidities. However majority of them remain undiagnosed and untreated worsening the quality of life. Therefore it is imperative that patients suffering from epilepsy should be properly screened for psychiatric co morbidities. As appropriate pharmacological and psychotherapeutic intervention can greatly improve outcome in such cases.

## REFERRANCE

1. Fisher RS, Boas WVE, Blume W, Elger C, Genton P, Lee P et al. Epileptic seizures and epilepsy: Definition proposed by the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE). *Epilepsia* 2005; 46: 470-2.
2. Titlic M, Basic S, Hajnsek S, Lusic I. Comorbidity Psychiatric Disorders in Epilepsy. A review of literature 2008; 105-109.
3. Feinstein AR. The pre-therapeutic classification of comorbidity in chronic disease. *J Chronic Dis* 1973; 23: 455-69.
4. Price BH, Adams RD, Coyle JT. Neurology and psychiatry: closing the great divide. *Neurology* 2000; 54: 8-14.
5. Berto P. Quality of life in patients with epilepsy and impact of treatments. *Pharmacoeconomics* 2002; 20: 1039-59.
6. Tellez-Zenteno JF, Patten SB, Jetté N, Williams J, Wiebe S. Psychiatric comorbidity in epilepsy: a population-based analysis. *Epilepsia* 2007; 48: 2336-44.
7. Ettinger A, Reed M, Cramer J. Depression and comorbidity in community-based patients with epilepsy or asthma. *Neurology* 2004; 63: 1008-14.
8. Kobau R, Gilliam F, Thurman DJ. Prevalence of self-reported epilepsy or seizure disorder and its associations with self-reported depression and anxiety: results from the 2004 HealthStyles Survey. *Epilepsia* 2006; 47: 1915-21.
9. Barry J, Lembke A, Gisbert PA, et al. Affective disorders in epilepsy. In: Ettinger AB, Kanner AM, eds. *Psychiatric issues in Epilepsy: A Practical Guide to Diagnosis and Treatment*. Philadelphia, PA: Lippincott Williams & Williams 2007: 203-47.
10. Jobe PC, Dailey JW, Wernicke JF. A noradrenergic and serotonergic hypothesis of the linkage between epilepsy and affective disorders. *Crit Rev Neurobiol* 1999; 13: 317-56.
11. Jose F. Tellez-Zenteno, Patten SB, Jetté N, Williams J, and Wiebe S. Psychiatric comorbidity in epilepsy: A population-based analysis. *Epilepsia* 2007; 48: 2336-44.
12. Kanner AM, Balabanov A. Depression and epilepsy:

- how closely related are they?. *Neurology* 2002; 58: S27-39.
13. Hermann BP, Jones JE. Depression in Epilepsy: What is the Extent of the Current Problem? In: *Mood Disorders in Epilepsy: Bridging the Gap Between Psychiatry and Neurology*. American Epilepsy Society and IntraMed Scientific Solutions 2005: 3-11.
  14. Williams D. The structure of emotions reflected in epileptic experiences. *Brain* 1956; 79: 29-67.
  15. Perrine K, Hermann BP, Meador KJ, Vickrey BG, Cramer JA, Hays RD, et al. The relationship of neuropsychological functioning to quality of life in epilepsy. *Arch Neurol* 1995; 52: 997-1003.
  16. Jobe PC, Dailey JW, Wernicke JF. A noradrenergic and serotonergic hypothesis of the linkage between epilepsy and affective disorders. *Crit Rev Neurobiol* 1999; 13: 317-56.
  17. Schildkraut JJ. The catecholamine hypothesis of affective disorders: a review of supporting evidence. *Am J Psychiatry* 1965; 122: 509-22.
  18. Lopez-Rodriguez F, Altshuler L, Kay J. Depression and laterality of epileptogenic region in patients with medically refractory temporal lobe seizures. *Epilepsia* 1999; 40: 60.
  19. Flor-Henry P. Psychosis and temporal lobe epilepsy. A controlled investigation. *Epilepsia* 1969; 10: 363-95.
  20. Kimiskidis VK, Triantafyllou NI, Kararizou E, Gatzonis SS, Fountoulakis KN, Siatouni A, Loucaidis P, Pseftogianni D, Vlaikidis N, Kaprinis GS. Depression and anxiety in epilepsy: the association with demographic and seizure-related variables. *Annals of General Psychiatry* 2007; 6: 28.
  21. Waxman SG, Geschwind N. The interictal behavior syndrome of temporal lobe epilepsy. *Arch Gen Psychiatry* 1975; 32: 1580-6.
  22. Benson DF, Hermann B. Personality disorders. Engel J, Pedley TA, eds. *Epilepsy: A Comprehensive Textbook*. Philadelphia: Lippincott-Raven; 2065-70.
  23. Trinka E, Kienpointner G, Unterberger I, Luef G, Bauer G, Doering LB, et al. Psychiatric comorbidity in juvenile myoclonic epilepsy. *Epilepsia* 2006; 47: 2086-91.
  24. Trimble M. Treatment issues for personality disorders in epilepsy. *Epilepsia* 2013; 54: 41-5.
  25. Chou IC, Chang YT, Chin ZN, Muo CH, Sung FC, Kuo HT, et al. Correlation between epilepsy and attention deficit hyperactivity disorder: a population-based cohort study. *PLoS One* 2013; 8: e57926.
  26. Kaufmann R, Goldberg-Stern H, Shuper A. Attention-deficit disorders and epilepsy in childhood: incidence, causative relations and treatment possibilities. *J Child Neurol* 2009; 24: 727-33.

### ONLINE SUBMISSION OF MANUSCRIPT

It is mandatory to submit the manuscripts at the following website of KJMS. It is quick, convenient, cheap, requirement of HEC and Paperless.

Website: [www.kjms.com.pk](http://www.kjms.com.pk)

The intending writers are expected to first register themselves on the website and follow the instructions on the website. Author agreement can be easily downloaded from our website. A duly signed author agreement must accompany initial submission of the manuscript.