Original Article

Epilepsy and Interictal Psychopathology

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Abstract

Patients with epilepsy may experience psychiatric symptoms preceding the seizure (pre-ictal), following the seizure (post-ictal), independently of seizure occurrence (interictal), or as an expression of the seizure (ictal). Compared to interictal, peri-ictal psychiatric symptoms are less investigated and recognized. However, they contribute substantially to disability and distress among people with epilepsy. The relationship between interictal and peri-ictal symptoms is still largely unknown but it seems that they are intimately related in epilepsy. Greater appreciation and understanding of the peri-ictal period is clinically important, providing a model for understanding basic mechanisms underlying mood and thought disorders and the substrates of cognition, volition, emotion, and consciousness. The present paper is aimed at reviewing major psychiatric symptoms that may occur around the ictus with special attention to clinical descriptions and relationships with interictal psychopathology.

Keywords: emotion, consciousness , seizure , epilepsy

Introduction

Epilepsy is one of the world's oldest known conditions, with written records dating back to 4000 BC.[1]

The International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE) define epilepsy as a disorder of the brain characterised by an enduring predisposition to generate epileptic seizures and by the biologic, cognitive, psychological, and social consequences of this condition[2]

Close to 80% of people with epilepsy live in low- and middle-income countries with a prevalence rate of 7 and 14 per 1000 people and an annual incidence rate up to twice that of high-income countries between 30 and 50 per 100 000 people.[1] A recent study has shown that the age-standardized incidence of epilepsy in India is 0.03%.[3]

The WHO estimates that there are 50 million people living with epilepsy worldwide, making it a universal global neurological problem. Eighty percent of epilepsy are distributed in low- and middle-income countries. Consequently, it is estimated that 10–12

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million epileptic are living in India, contributing to almost one-sixth of disease load. The WHO estimates that epilepsy is responsible for 0.5% of worldwide disease load and 7,419,000 disability-adjusted life years in 2015. The prevalence estimates in India range from 3.0 to 11.9/1000 population and incidence from 0.2 to 0.6/1000/year. There is heterogeneity of distribution of epilepsy cases depending on socioeconomic and geographical variations, with higher occurrence in males, rural areas, and lower socioeconomic status.

Up to 37% [4] patients with epilepsy may have interictal psychopathology in the form of psychotic disturbances[5], affective symptoms[6], personality changes[7] and cognitive decline[8].

Rationale: Interictal psychopathology a significant cause of morbidity in patients with epilepsy. This study was planned to add to our knowledge with focus on interictal psychopathology which is studied less

Objective: To study the pattern and prevalence of Interictal psychopathology in a group of patients having epilepsy.

CLASSIFICATION OF PSYCHOPATHOLOGY ACCORDING TO THE TEMPORAL RELATIONS WITH SEIZURES

Patients with epilepsy may experience psychiatric symptoms(table 1) preceding the seizure (preictal), following the seizure (postictal), independently of seizure occurrence (interictal), or as an expression of the seizure (ictal).[30]

Table 1: Common Psychiatric Problems

The common psychiatric problems identified in Epilepsy include:

Temporally related to Seizures	Temporally un- related to seizures
* Preictal	* Interictal
* Ictal	- Depression
* Post ictal	- Anxiety
	- Psuedoseizures
	- Psychoses
	- Personality disorder
	- Aggression

Methodology

The present study is a hospital based cross sectional study conducted on patients attending psychiatry OPDs having a clinical diagnosis of epilepsy whom met the inclusion criteria and did not get excluded were recruited to the study by purposive sampling with 50 cases of epilepsy identified to have interictal psychopathology were assessed for the pattern of psychopathology using the various tools mentioned below

Inclusion criteria:

1. Patients aged between 18- 55 years.
2. Patients having generalised tonic-clonic seizures - primary or secondary and complex partial seizures.
3. Epilepsy duration of 1 year or longer.
4. Both genders.

Exclusion criteria:

1. Patients having other illnesses known to cause Vitamin D deficiency

2. History of a seizure within a week before the evaluation.
3. Mental retardation
4. Patients who are having psychiatric Illness preceding the onset of epilepsy.

Results

A total 195 patients with epilepsy were screen of which 50 patients had psychopathology i.e. the prevalence of psychopathology at the time of study in this sample was 25.64 %.(figure 1)

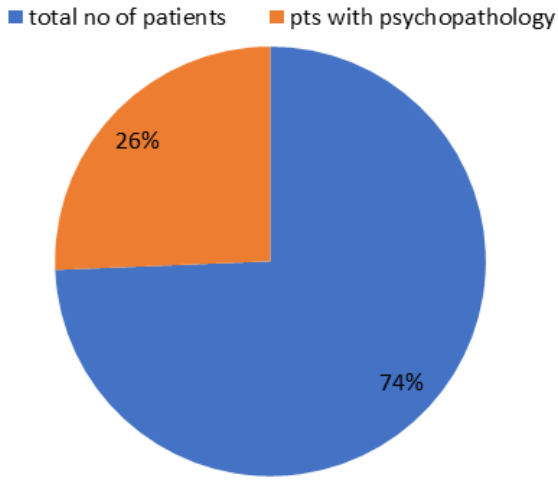

Fig 1: Relation between patients and psychopathology

Table-2 : Symptomatology in patients with epilepsy and Interictal psychopathology

Psychiatric diagnosis	Number of patients with symptomatology	Percentage of total sample
Mdd	15	29.4%
MDD With Anxious Distress	6	11.8%
MDD With Psychotic Features	4	7.8%
BPAD - Current Episode Mania	3	5.9%
Schizophrenia	12	23.5%
GAD	3	5.9%
Agoraphobia	2	3.9%
Neurocognitive Impairment	4	7.8%
Personality Changes	1	2%

Of the 50 patients who have epilepsy and Interictal psychopathology 29.4% were diagnosed with MDD, 11.8% had major depressive disorder (MDD) with anxious distress and 7.8 % with MDD with psychotic features. 23.5 % had schizophrenia, and 5.9% were diagnosedwith Mania. The diagnosis of GAD,agoraphobia, neurocognitive impairment& personality changes was found to be at 5.9%, 3.9%, 7.8 % and 2 % respectively. (table 2)

The mean scores of the sample of patients with Interictal psychopathology were as depicted above.

The mean score on GHQ was 17.34 indicating most of them had a high GHQ score (table 3)

Overall the sample had depressive symptoms and was mildly ill as per BPRS but had no cognitive impairment or anxiety symptoms as per scores on MMSE and HADS

Table 3: Mean scores on the various scales used

SCALES	MEAN (±SD)
MMSE	24.82±3.482
HADS A	7.38 ±4.19
HADS D	11.74±5.14
BPRS	33.84 ±9.49
GHQ	17.34±3.99

Most of the sample i.e. 44% had no illness, while 36% had mild, 8% had moderate, and 4% had severe illness per the BPRS scores(table 4)

Table 4: Distribution of BPRS scores

NO ILLNESS	22 (44%)
MILD ILLNESS	18 (36%)
MODERATE ILLNESS	8(16%)
SEVERE ILLNESS	2(4%)

80% of the sample met the criterion of depression while only 38 % had anxiety as per the scores on the HADS.(table 5)

Table 5: HADS – A

	HADS-A	HADS- D
CASES	19 (38%)	40 (80%)
NOT CASES	31(62%)	10(20%)

80% of the sample met the criterion of depression while only 38 % had anxiety as per the scores on the HADS.

Table 6: Distribution of MMSE scores

MODERATE IMPAIREMENT	3 (6%)
MILD IMPAIREMENT	15 (30%)
NO IMPAIRMENT	32 (64%)

Most of the sample i.e. 64% had no cognitive impairment while 30 % had mild cognitive impairment and 6% had moderate impairment.(table 6)

Table 7: Scores of Big Five Inventory

Domains / Traits	Mean Scores ±Std. Deviation	Mean average score ±Std. Deviation
Extraversion	32.56 ±4.777	4.07 ± 0.60
Agreeableness	33.04 ±5.115	3.67 ± 0.57
Conscientiousness	27.86 ±6.408	3.10 ± 0.71
Neuroticism	29.18 ±7.790	3.64 ± 0.97
Openness	28.50 ±7.352	2.85 ± 0.74

The current sample was high on neuroticism and extraversion and low on openness.(table 7)

Discussion

The focus in medical care has shifted from mere treatment of symptoms to improvement of overall health and well-being of a person. Identification of psychosocial problems of patients especially those with chronic illnesses like epilepsy has become important as they can contribute to an already reduced quality of life

The objective of this study were to find out the prevalence and pattern of Interictal psychopathology

In the current study, the prevalence of Interictal psychopathology was present in 50 i.e. 25.64% out of 195 patients. This is consistent with the study done by Gujere Oye done in 1991 wherein prevalence of Interictal psychopathology was 37 %.[4]

In other studies, the prevalence of psychiatric comorbidity in patients with epilepsy has variedconsiderably. A psychiatric comorbidity rate of 6% was found in community samples of patients with epilepsy which rose to as high as 10% for those having TLE and refractory epilepsy by Gaitazis et al. in a recent meta-analysis.[9] In outpatients attending hospitals, prevalence has varied from 60 % in patients with TLE[10] to 34.8%-37% [10,11] in patients having generalised epilepsy and 51% of patients having focal non-TLE.[11]

Most studies do not differentiate between the postictal, and interictal onset of the psychiatric comorbidity, have retrospective and cross-sectional study design and have included inpatients as well as outpatients.

The interictal period has been defined as the period from the end of the postictal period to the start of the next preictalperiod.[12]The postictal period has been defined variably usually between 5 to 30 minutes to up to one week by different authors.[13]

In the current study, the Interictal period was defined as one week after the seizure episode and the diagnosis of Interictal psychopathology was made using DSM-V diagnostic criterion.[14]

In this study 25 patients i.e. nearly half of the patients had a Depressive disorder of which 15 had major depressive disorder, 6 had MDD with anxious distress while 4 had MDD with psychotic

features. The average HADS score was found to be 11.74 which implies depressive symptoms were common in patients having epilepsy and Interictal psychopathology. Nearly 80 % of such patients met the criterion for depression which further indicates depression as a comorbidity in majority of cases.

The prevalence of depression has varied with population group with it being 4% in community studies[15] to nearly 45.2 % of patients attending outpatient clinics.[16]

In a recent meta -analysis by Fiest etal. the point prevalence of depression was found to be 23.1% and a lifetime prevalence of depression in PWE as 13.0%.[17] In a study by Biflu et al. the rates of depression were found to be as high as 45.2 % using Becks Depressive Inventory.[16]Depression rates were found be 30 % by Gaitazis et al. in a non-systematicanalysis.[9] Curie et al. had found the rates of depression to be 11% while Brown et al. had found the depression rates to be around 31.1 %.[18,19]

These findings are however complicated using varying tools and definitions of depression with many studies using depressive symptomatology instead of diagnostic criterion, scales or structured interviews and ill-defined inclusion criterion.

The overall prevalence of anxiety disorders in our study was 10 % with three patients having GAD and another 2 having agoraphobia. Nearly 38 % of the sample met the cut off for anxiety disorders on HADS.

This is consistent with studies done previously in a community setting wherein the rates of anxiety have been found between 10 % to 25 %.[4,11,20] Anxiety symptoms are often concomitantly found with depression in patients.

Curie et al. found the prevalence of anxiety symptoms as low as 9% while Brown et al. found it to be around 11%.Jacoby et al. had found a that nearly 13% of PWE had anxiety disorders, and this figure rose to 25 % in patients having poor seizure control.[15,18,19]

Gujere O had found an overall prevalence of neurotic disorders to be around 51%.Nevertheless, the terms neurotic illness was not clearly defined by the author.[4]

In our study 12 i.e. nearly 24 % patients with epilepsy were diagnosed as schizophrenia. The mean BPRS score was found to be 33.84 with 44 % patients having no illness.

The findings are like those by Gujere O. wherein nearly one-third of the sample had psychosis.[4]Mendez et al. found an overall prevalence of psychosis as 9.25% with only 4.72% meeting the criterion for schizophrenia as per DSM III.[21]Steffanson et al. found the prevalence of schizophrenia and paranoid psychosis to be 3% as per the ICD –9 criterion.[22]A recent meta-analysis by Clancy et al. has however found the prevalence of interictal psychosis to be much lower at 5.2 %.[23]The higher prevalence of psychosis in our sample could be due to consecutive sampling wherein patients who are more severely sick might come more frequently for follow up.

Nearly 6 % of the patients had Bipolar illness – currently in mania.This is consistent with previous studies wherein the disease has been reported to be between 5% to 12.2%.[24,25]However, since the patient and family members may not report ahistory of mania in some patients, this number may be spuriously low. The average YMRS score of patients with Mania was 19.25.

This finding is like those by Bourgeios et al. wherein 11.1 % of the children with epilepsy had a decrease of ten points or more on regular IQ assessment [26]. However, in a study done by Helmstaeder et al. in 2003 nearly 50 % of medically treated patients with epilepsy had declined in memory functions at ten years of follow-up.[27] In the study by Mojs et al. in 2007, the nearly 30 % patients had cognitive decline.[28]

In the current study, personality changes were observed in only 2 % of the sample which is less than that found in other studies between 10 % to 23%[29,30] in generalised epilepsy to nearly 40 % in temporal lobe epilepsies.[31] The sample was found be high in neuroticism and extraversion.This is like findings in patients with TLE in other studies that have been found high in neuroticism.[32]

Victoroff et al. found 18% prevalence of personality disorders in patients with epilepsy using the SCID-P.[29] The prevalence of personality disorder

was observed to be 21% in patients with refractory epilepsy by Lopez-Rodriguez et al.[33]

In this study, we have concentrated on only the change in personality traits as observed by the patients themselves rather than any diagnostic category and so the prevalence rates are much lesser than in previous rates.

Conclusion

- Nearly one-quarter of the patients with epilepsy had interictal psychopathology as comorbidity.
- Major depressive disorder was the most common psychiatric diagnosis.
- This emphasises the importance of screening for psychopathology in patients with epilepsy.

Informed Consent: written informed consent was taken from patients **.**

Ethical Approval: ethical committee approval was taken from the institutional committee of ethics (MAMC/2023/12).

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Conflict of Interest: there was no conflict of interest

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