INTRODUCTION
Chapter-I

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"Melancholics ordinarily become epileptics and epileptics melancholics: Of these two states, what determines the preference is the direction malady takes: if it bears upon the body, epilepsy, if upon the intelligence, melancholy".

-Hippocrates, The Sacred Disease

A relationship between depression and epilepsy has been observed since antiquity. Both the disorders are common and well documented in history.

Epilepsy by its sudden, frightening and recurrent manifestations has attracted the attention of man since centuries. Frequent association of hallucinatory and emotional experience made it a 'sacred' disease, believed to be caused by supernatural forces or evil spirits. The ancient Greeks regarded seizures as manifestations of God and Goddesses (Lennox et al., 1960). However, Sushruta described it as a disease produced by 'vayu' and stated that 'the aggravated vayu finds lodgement in the regions of the head, heart and temples. It presses on those parts and gives rise to convulsive moments...' (Kutumbiah, 1969).

Hughlings Jackson, the eminent British neurologist of the nineteenth century postulated epilepsy as an intermittent derangement of the nervous system due presumably to a sudden, excessive, disorderly discharge of cerebral neurons and which holds true till date.
Although epilepsy is the commonest serious neurological disease, incidence and prevalence figures have varied considerably in different studies due to differences in inclusion criteria, classification, diagnosis and case ascertainment methods. In most studies the overall incidence of epilepsy has been found to be around 70 cases per 100,000 persons per year (usual prevalence figure given is about 5-10 cases per 1,000 persons). The life time prevalence is between 2-5 per cent (Shorovon, 1995).

Classically two patterns of epileptic discharge have been recognized: those arising from focal cortical disturbances and those characterised by immediate synchronous spike wave discharge of both hemispheres these correspond to the focal and generalized seizure, respectively. No easy clinical definition of a seizure can be proposed because of the infinite variety of clinical manifestation. The 1981 international classification of seizures has two major divisions. Partial seizures begin locally in the cortex and are often preceded by an aura which reflects the functional role of that part of the cortex in which seizure begins. Such seizures may also be associated with post-ictal focal disturbances (Todd’s phenomenon). These are differentiated from generalized seizures which commence bilaterally and in which consciousness is lost suddenly, so that the patient experiences no aura. Any partial seizure may spread to become generalized with a tonic clonic seizure. EEG findings also help differentiate partial and generalized seizures. Intercital EEGs tend to show localised spikes and on occasions associated focal slow waves in patients with partial seizures, but synchronous, high amplitude, generalised spike-wave discharge in patients with primarily generalised seizures (Chadwick, 1995).
Epidemiologic studies have shown certain post-natal insults e.g. brain trauma, CNS infections, cerebrovascular disease and brain tumours, to greatly increase the incidence of epilepsy. Although there is a convincing evidence to attribute some cases of epilepsy to specific causes, the cause of about 70 per cent of all cases of epilepsy is unknown (Annegers, 1994).

Mood disorders encompass a large group of psychiatric disorders in which pathological moods and related vegetative and psychomotor disturbances dominate the clinical picture. Mood disorders have been known since ancient times and much of what is known today about mood disorders was described by the ancient Greeks and Romans. Hippocrates (460-357 BC) described melancholia ("Black Bile") as a state of 'aversion to food, despondency, sleeplessness, irritability and restlessness' and also recognised the close link between anxiety and depressive states: "Patients with fear... of long standing are subject to melancholia".

Mania as a state of raving madness with exalted mood was noted by the ancient Greeks and its relation to melancholia was probably also noted as early as the 1st century BC. Aretaeus of capadocia (Circa AD 150) is generally credited with making the connection between the two major mood states: "It appears to me that melancholy is the commencement and a part of mania".

Thus evolved the current concepts of the mood disorders, major depressive disorder sometimes called unipolar depression is the most common disorder it may manifest as a single episode or as recurrent episodes. Bipolar disorder previously called manic depressive disorder consists of atleas one excited (manic or hypomanic) episode although some patients experience only manic episodes.
Data from DSM-IV (Diagnostic and Statistical Manual-IV) reveals life time prevalence of major depressive disorders as 10-25 per cent for women and 5-12 per cent for men and about 6 per cent in case of dysthymia. The risk in bipolar disorders is similar in both sexes and is reported as a life time prevalence of 0.4-1.6 per cent for Bipolar-I and 0.5 per cent for Bipolar-II disorder.

The relationship between mood disorders and epilepsy is evident from various works since the time of Hippocrates. Temkin (1971) quotes Aretaeus as saying that epileptics were 'languid, spiritless... insociable and not disposed to hold intercourse, nor to be sociable, at any period of life; sleepless, subject to many horrid dreams and without appetite' while Paulus Aegineta (625-700) thought that one of the two causes of epilepsy was melancholic humour, either in the brain or its cavities. While nearer our own times. Griesinger (1857) noted that misanthropic perversion of sentiment, some times even actual melancholia with suicidal tendency is observed in great many epileptics. Morel (1860) in his description of "Epilepsie larve" was probably the first to recognize that both depression (melanocolic avec stupor) and mania (manic periodique) could be related to epilepsy.

In keeping with one of the current classifications of psychiatric disorders there are broadly two major types of affect and mood changes: peri-ictal, those relating to the ictus or seizures and interictal in which disturbances are chronic and not directly related to the ictal electric discharge. Other workers classify it into 3 main groups ictal, perictal and interictal.

Ictal disturbances of emotion can be a manifestation of epileptiform activity in the limbic system. Approximately about 1 quarter of epileptic auras are experiential or psychic and 15 per cent of these involve mood or affect.
Williams in a study of 100 patients with mood aura reported fear in 61, depression in 21 and 18 with either pleasurable or displeasurable emotions with fear ranging from apprehension to anxiety to fright.

Ictal depression has been known to outlast the actual ictus by up to two weeks and can be sufficiently intense to lead to suicide.

Peri-ictal disorders of mood and affect accompany seizure but are not direct expressions of epileptiform discharges. Peri-ictal changes occur before (prodrome), after (post-ictal) or during (mixed ictal and post-ictal) intermittent epileptiform activity. Prodrome symptoms may precede seizures by minutes or days and can range from anxiety, irritability to agitation, paranoia or hallucinations including depression. These changes are not reported to be accompanied by EEG changes but are relieved by having seizure.

Post-ictal changes may be immediate or delayed in some cases and can be associated with delerium or may occur in clear sensorium.

Interictal disorders of mood and affect are probably the most common psychiatric disorder especially in their depressive forms and history of interictal depression is reported in up to 75 per cent of epileptics in some of the studies. On the other hand, mania is not reported that frequently as an interictal syndrome and is probably not common.

Betts presented a classification of the relationship that may exist between depressive feelings - illness and epilepsy and attributed it as an: reaction to acquiring the label of epilepsy, social or family problems of epilepsy; as prodrome, aura, ictal experience, post-ictal depressive feelings, depressive twilight states, depressive delerium or it may be endogenous depression
unrelated directly to epilepsy or as a symptom in association with other mental illness particularly a psychosis.

Over the years the views regarding the origin of mood disturbances in epilepsy patients have frequently shifted. Moving from views of around the turn of this century, that all patients underwent mental deterioration because of their fits to the position that most patients were psychologically normal, expressed most forcibly by Lennox (1960), ideas once again altered in the early 1950s with the advent of electroencephalogram and the findings of, for example Gibbs (1951) of a high frequency of psychiatric disorder in patients with psychomotor peculiarity was best summed up by a quotation of Gibbs and Stamps (1953) that 'the patient's emotional reactions to his seizures, to his family and to his social situations are less important determinants of psychiatric disorder than the site and type of epileptic discharge', however, there are a number of authors who don't share the same view.

Despite various studies the nature and significance of association of mood disorders in epileptics is still not very clear and it is not in the best interest to deny the possibility that seizure could cause enduring behavioural disorders and is essential to pursue clinical and laboratory investigations in order to identify any such changes and elucidate their mechanisms (Engel, 1991).

Betts reported that of all the psychiatric conditions to be found in association with epilepsy, depression and anxiety in their various forms must be commonest, and yet of all the conditions they are the least well recognized or described in the literature. Similarly, Devinsky (1993) reported that depression is a common problem in epileptics which is often overlooked and identifying risk factors should assist in developing methods to prevent these disorders.

The present study is directed towards investigating the relationship between epilepsy and mood disturbances.