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Is psychiatric assessment essential for better epilepsy surgery outcomes?

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HIGHLIGHTS

- Pre and postsurgical psychiatric assessment is a must for every epilepsy surgery case.
- Psychiatric morbidity is seen in all types of epilepsies especially TLE.
- Psychiatric morbidity affects surgical outcomes in terms of coping, seizure freedom and better quality of life.
- A comprehensive epilepsy care program should have a dedicated psychiatrist on the team.

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ABSTRACT

Epilepsy surgery is one of the most accepted and beneficial treatment for resistant epilepsies. However there is some variability in the comprehensive epilepsy care programs offered globally. Many centers do not do a psychiatric assessment unless required. It is now evident from a large body of research that epilepsy is associated with psychiatric morbidity which is also seen in patients considered for epilepsy surgery. There is also evidence to state that the risk for worsening or de novo psychiatric disorders is often seen post surgery. This calls for a comprehensive psychiatric assessment of all patients enrolled for the epilepsy surgery program to be evaluated pre and post surgically to minimize the risk of post surgical psychological disturbances and/or poor quality of life. Efficacious treatment of psychiatric disorders in those having psychiatric morbidity contributes to improved patient wellbeing, seizure freedom and better quality of life. Hence there is a need for most centers globally to include regular psychiatric assessment of epilepsy surgery patients as a protocol.

1. Introduction

Epilepsies are one of the most common chronic neurological diseases, with a prevalence of 0.5–1% in the general population. One third of newly diagnosed epilepsies will become refractory to medical therapy over time [1]with temporal lobe epilepsy (TLE) accounting for two thirds of refractory localization-related epilepsy [2]. However, the proportion of drug-resistant patients who could or should be offered a surgical treatment remains largely unknown, with estimates varying from 5% to 50% of all cases of drug-resistant epilepsies [3]. This is due to lack of appropriate studies and criteria for identifying a patient for epilepsy surgery.

Epilepsy surgery today has been accepted as a beneficial treatment due to the advances in neuroimaging. Along with long term video-electroencephalographic (EEG) monitoring and intra operative EEG recording, resection of the epileptogenic areas is possible. Although at the moment the number of operations performed each year is inadequate to meet the demand, rates of surgical treatment are increasing worldwide. However, despite this only small minority of potential epilepsy surgery candidates have access to a comprehensive presurgical evaluation. There still exists a major gap in the number of potential candidate who actually gets operated for epilepsy surgery [4,5].

The eligibility criteria for epilepsy surgery include that the patient suffers from disabling seizures unrelated to an idiopathic generalized epileptic syndrome, despite appropriate AED treatment.

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However, the decision as to whether or not to perform a presurgical evaluation should be taken by the patient with his expectations from the surgery. These expectations need to be balanced with the apparent severity of the epileptic condition & the chance of achieving a successful surgical treatment. The risk of a postoperative neurological, cognitive, or psychiatric deterioration should also be weighed. There is often a gap between eligibility criteria used for a presurgical evaluation and those applied to deciding on a surgical treatment. This then determines the proportion of patients assessed for surgery, which will be operated on eventually. This proportion varies between epilepsy surgery centers depending about the objectives of each center as well as their experience. Some centers may focus only on temporal lobe epilepsy (TLE) surgery, whereas others may provide epilepsy surgeries for catastrophic epilepsies of childhood, extratemporal partial epilepsies, cryptogenic cases, or operations in eloquent brain regions [5].

2. Presurgical work up

The primary aim of the presurgical evaluation is to identify the epileptogenic zone i.e. the minimum amount of brain tissue that should be resected to render the patient seizure-free. In order to identify the same, there has to be an association between the clinical semiology of seizures with the ictal onset corresponding to the region on video EEG recording. It should also corroborate with the epileptogenic lesion as seen on high resolution magnetic resonance imaging (MRI).

There are several other indicators of postoperative outcome which have to be taken into consideration viz the seizure frequency, cognitive and psychiatric state. Patients who are considered for surgery have to undergo a detailed presurgical workup for the localization of the epileptogenic focus and assessment as to whether it can be resected with favorable outcomes. Patients with epilepsy are at increased risk for memory dysfunction, particularly individuals with TLE. Neuropsychological assessment is essential for documenting the cognitive status & identifying potentially reversible causes of functional impairment. It also gives the post surgical cognitive outcomes to the patients [6]. Neuropsychological assessment is conducted for various purposes including provision of lateralising and localizing information. It is also used as a general determination of baseline (preoperative) neurobehavioural status [7]. Some neuropsychological dysfunctions like verbal memory impairment are associated with left TLE [8]. More importantly, the degree of preoperative verbal memory impairment is a strong predictor of postoperative memory decline following surgery in the dominant temporal lobe [9,10]. Presence of diffuse neuropsychological deficits may be an indicator of extensive brain disease and therefore a marker of poor outcome following focal resection [11].

3. The need for psychiatric assessment in epilepsy

The association between epilepsy and psychiatric disorders is well established. A myriad of psychiatric symptoms are experienced by the epileptic patients. These include symptoms of depression, anxiety, fear, emotional lability, mania, confusion, hallucinations, and delusions which can occur independently or as a part of the seizure phenomena [12–16]. Depression is the most common comorbid psychiatric disorder associated with epilepsy [14,17]and may be seen in about 11–60% of patients [18]. Depression is reported most frequently in patients with temporal lobe epilepsy (TLE) [12,19], particularly in those with left TLE [17,20] and possibly hippocampal sclerosis [21].

Among psychotic disorders, brief interictal psychoses are relatively uncommon (about 10% of all psychoses in epilepsy) whereas chronic interictal (schizophrenia-like) psychoses occur in 20% of the psychoses in epilepsy [22]. They are also 6 to 12 times more likely to occur in epileptic patients than in the general population [23].

Several factors may play a role in the etio-pathogenesis of psychiatric disturbances in epileptic patients. Psychiatric disorders are often under diagnosed in epileptic patients as patients may not report their symptoms of emotional distress to their treating physicians or neurologists. It is essential to recognize that psychopathology can be exacerbated by not only biological factors (e.g. etiology, focus localization), but also medication (e.g. number and types of medication) [24] and psychological and social factors (e.g. fear of seizures, perceived stigma) [25].

The relationship between psychiatric disorders and epilepsy is such that each can independently increase the risk of developing the other as also affect the overall quality of life [26] and the treatment outcomes for both.

4. Link between epilepsy and psychiatric disorders

Several mechanisms may be responsible for a relationship between epilepsy and behavioral & emotional disorders. These include common neuropathology, genetic predisposition, developmental disturbance, ictal or subictal neurophysiologic effects. There could be inhibition or hypo metabolism surrounding the epileptic focus, secondary epileptogenesis, alteration of receptor sensitivity or secondary endocrinologic alterations. Sometimes primary independent psychiatric illness, alterations and neurotransmission disturbance among critical anatomical networks, impaired or aberrant plastic changes can also cause psychiatric problems. Consequences of medical or surgical treatment or psychosocial burden of epilepsy may also lead to psychopathology in epileptics.

Several investigators reported more psychiatric disturbances in patients with TLE compared with extra-TLE and/or primary generalized epilepsy patients [27–29]. Others however, found no such differences [30–33]. Rodin et al. [29] hypothesized that as patients with TLE often had more than one seizure type, it was more responsible for the psychiatric morbidity. These findings were later confirmed by Hermann et al [34] and Dodrill [35]. Apart from the number of seizure types, it is likely that there are more risk factors (e.g. age at onset, laterality of the temporal epileptiform focus) that predispose to or protect patients with TLE from psychopathology [36,37].

Several researchers have found overlapping etiological factors between epilepsy and schizophrenia [38], temporal lobe epilepsy and mood disorders [39]and a possible link between epilepsy and bipolar disorder [40]. Abnormal neurotransmitter functioning, aberrant inflammation by cytokines in response to epileptiform discharges, dysregulation of the hypothalamic pituitary–adrenal axis, genetic aberrations, and abnormal neurogenesis in limbic structures such as the hippocampus are the factors responsible for heightened comorbidity of mood disturbance and epilepsy [41]. In a large cohort of subjects with newly diagnosed epilepsy, a history of psychiatric comorbidity was associated with progression to refractory disease [42].

5. Is psychiatric assessment carried out in epilepsy centers?

Many epilepsy centers in the world usually do not have a psychiatric assessment for every presurgical epilepsy patient. A psychiatric referral would be taken only if the patient has a previous history of psychiatric illness or is currently expressing some psychopathology. Instead of the psychiatrist there would be one or more neuropsychologists on the epilepsy team who assess the patients for an in depth analysis of the cognitive functions. The