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Review

Psychiatric complications after epilepsy surgery… but where are the psychiatrists?

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ABSTRACT

In patients with refractory epilepsy, there is a significant risk of postoperative psychiatric complications after epilepsy surgery. The main risk factors for this phenomenon include a lifetime or family history of psychiatric illness; these risk factors can be easily identified through a preoperative evaluation performed by a psychiatrist. Despite this, very few comprehensive epilepsy centers include a psychiatrist on the treatment team. Preoperative evaluations often fail to identify patients at risk of postoperative psychiatric complications, thus missing the opportunity to counsel and prophylactically treat patients at risk. In this article, we review the risk factors for the development of postoperative psychiatric complications and discuss the reasons why epilepsy centers continue to perform presurgical evaluations without psychiatrists. Additionally, we provide practical solutions for neurologists in the identification and management of postoperative psychiatric disorders.

This article is part of the Special Issue "Obstacles of Treatment of Psychiatric Comorbidities in Epilepsy".

1. Introduction

In adult patients with medically refractory focal epilepsy, surgical resection offers the chance of a cure. Despite promising rates of seizure freedom, 30%–40% of patients with epilepsy (PWE) experience postoperative depressive or anxiety disorders [1], and 18% develop de novo psychiatric disorders [2]. Patients with a history of psychiatric diagnoses have higher rates of postoperative psychiatric complications [3,4]; therefore, a large percentage of surgical candidates are at risk: the prevalence of psychiatric disorders in patients with medically refractory epilepsy undergoing epilepsy surgery evaluation is 43–80% [5].

Psychosocial factors also contribute to postoperative mood disorders, as patients and their families adjust to the "burden of normality" [see below]. Identifying and counseling at-risk patients preoperatively could lead to better psychiatric outcomes; unfortunately, at-risk patients are often unrecognized by the treatment team. Very few epilepsy centers incorporate a psychiatric evaluation in their presurgical workup, which would identify patients at risk: those with a lifetime history and/or family psychiatric illness; even fewer have a dedicated psychiatrist as part of their team [6].

Postoperative psychiatric disorders are often unrecognized by the neurologist, as patients are not routinely screened for psychiatric symptoms. These symptoms can significantly affect patients' quality of life and overshadow any positive seizure outcomes after surgery. The identification of at-risk patients prior to surgery, appropriate counseling of patients and families, and early recognition of postoperative psychiatric symptoms would help minimize the development of psychiatric complications. In this review, we aimed to analyze the reasons why susceptible patients are not being identified prior to epilepsy surgery and to provide practical solutions for the neurologist in the identification and management of postoperative psychiatric disorders.

2. Discussion

2.1. What is the magnitude of the problem?

All PWE, whether refractory or controlled, are at risk of developing comorbid psychiatric disorders. Mood and anxiety disorders are the most common, with a lifetime prevalence of approximately 30% among PWE [3,4,7]. Symptoms of depression and anxiety coexist in PWE more frequently than in the general population and are associated with a poor response to medication and a lower quality of life [8,9]. Patients with epilepsy are also at higher risk of developing psychotic disorders than the general population, with 7% of patients with refractory focal seizures affected [10].

Unfortunately, patients with refractory epilepsy who undergo surgical resection are also susceptible to psychiatric disorders in the postoperative period. These disorders occur as either an *exacerbation* of a known psychiatric diagnosis; the *reemergence* of a previous psychiatric disorder in remission or the development of a de novo disorder in a patient with no history of psychiatric illness.

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Several authors have shown that a current or past history of psychiatric illness is a risk factor for the development of postoperative psychiatric disease. Devinsky et al. reported the psychiatric outcomes of 360 patients who underwent epilepsy surgery: prior to resection, symptoms of depression or anxiety were seen in 22% and 25%, respectively. The rates of depression and anxiety twenty-four months after resection were 11% and 13%, respectively. Of the patients with postoperative depression, 41% had reported depressive symptoms preoperatively. Forty-nine percent of patients with postoperative anxiety had had preoperative anxiety [3]. Similarly, de Araujo Filho et al. reported postoperative psychiatric outcomes in 115 PWE who underwent temporal lobectomy. Presurgical psychiatric disorders were present in 41% of patients. Of the 27% of patients who were diagnosed with postoperative psychiatric disorders, 65% had had preexisting disorders [11]. Both authors reported postoperative de novo psychiatric disorders, in 10–16% of patients [3,11].

2.1.1. Depression and anxiety

Depressed mood is the most common psychiatric symptom occurring in PWE, both before and after surgery; anxiety is the second most common [4,12]. Several authors have shown that a current or past history of depression or anxiety is a risk factor for the development of postoperative psychiatric disease. Devinsky et al. reported the psychiatric outcomes of 360 patients who underwent epilepsy surgery: prior to resection, symptoms of depression or anxiety were identified in 22% and 25%, respectively. The rates of depression and anxiety twenty-four months after resection were 11% and 13%, respectively [3]. Of the patients with postoperative depression, 41% had reported depressive symptoms preoperatively. Forty-nine percent of patients with postoperative anxiety had had preoperative anxiety. Similarly, a study evaluating psychiatric outcomes of 99 patients after temporal lobectomy at the Rush Epilepsy Center revealed that 44 patients experienced depression or anxiety postoperatively. Seventy percent of these patients experienced an exacerbation in presurgical depression or anxiety; 20% developed de novo depression or anxiety [6]. Similar findings have been reported by other investigators [3,4]. Clearly, a history of presurgical depression or anxiety predisposes patients to the development of postsurgical mood or anxiety disorders. Patients treated with antidepressants at the time of surgery tend to be more stable postoperatively; if medication is ceased, they are more likely to experience worsening [13].

Depression usually occurs soon after surgery – as early as one month postoperatively – and can be persistent in many cases, lasting more than six months [4]. A subset of patients develops depression that is refractory to treatment [1]. In the case series from the Rush Epilepsy Center, 15% of patients who developed postsurgical depression continued to be symptomatic at two years after surgery the last contact [6]. Anxiety usually manifests immediately after surgery; symptoms then decline, with an ultimate return to baseline by two years postop [1].

On the other hand, anterior temporal lobectomies have been associated with remission of presurgical mood and anxiety disorder. Devinsky et al. reported that, among patients with preoperative depression, 56% were not depressed two years after surgery. Similarly, decreased anxiety was reported by 77% of patients with preoperative anxiety [3]. In the case series from Rush, 56 patients had a presurgical psychiatric history, but only 16 were symptomatic at the last follow-up [6].

Other risk factors for the development of postoperative depression and anxiety have been reported. Dysfunctional family dynamics can lead to postoperative depression and anxiety; adjusting to seizure freedom ("the burden of normality") can cause challenges as patients, who are no longer in the sick role, explore social and vocational independence [4,14]. Other reported risk factors include a family history of psychiatric illness, older age, male sex, the experience of auras of ictal fear, and poor seizure outcomes [4,15,16].

2.1.2. Psychosis

Though uncommon compared with mood and anxiety disorders, psychosis occurs more frequently in PWE than in the general population [17]. Though some patients experience psychosis as a postictal phenomenon, others have chronic psychotic symptoms. Postoperative psychosis occurs in 3% of patients following epilepsy surgery [17]. Several case series describe de novo psychotic disorders developing after epilepsy surgery, usually within 6–12 months after surgery [18]. Because of the small numbers of patients reported, the risk factors have not been clearly elucidated; however, a family history of psychosis, personality disorders, a right temporal seizure focus, and certain pathology (dysembrioplastic neuroepithelial tumor, focal cortical dysplasia, hamartoma) may confer a higher risk [6,19].

2.2. How can we identify patients at risk?

Despite the high incidence of postoperative psychiatric disorders and the negative effect these disorders play on the postsurgical overall outcome, most major epilepsy centers do not perform presurgical psychiatric evaluations and hence, fail to identify patients at risk. The results of a survey sent out to 88 major North American epilepsy centers demonstrate not only the rarity of performing these evaluations, but also a lack of awareness of the problem: only 21% of responding centers perform a preoperative psychiatric evaluation on all patients being evaluated for surgery, and 55% did not believe that psychiatric complications following temporal lobectomy were frequent enough to warrant a preoperative psychiatric evaluation [6].

The main reason why PWE do not undergo preoperative psychiatric evaluations is the lack of a dedicated psychiatrist on the epilepsy treatment team. Most centers rely on evaluations performed by a neuropsychologist to identify psychiatric symptoms. The National Association of Epilepsy Centers (NAEC) requires that epilepsy centers that perform epilepsy surgery (level 4 centers) must include at least one neuropsychologist on the epilepsy team; in fact, many centers have two neuropsychologists. The NAEC has no such requirement regarding psychiatrists; therefore, few epilepsy teams include a psychiatrist: only 26% responding to the survey had a psychiatrist on their team.

The inclusion of a psychiatrist is essential, as their evaluations differ from those performed by a neuropsychologist in several important ways. First, most neuropsychologists screen for psychiatric symptoms with screening instruments that investigate their existence currently or in the previous two to four weeks. Second, most neuropsychologists do not establish the presence of categorical psychiatric disorders and do not investigate the patients' lifetime psychiatric history. In fact, the recognition of remote psychiatric disorders is of the essence when stratifying the risk of postsurgical psychiatric complications. Additionally, neuropsychologists do not consistently assess for concomitant personality disorders, which increase a patient's risk of postoperative psychosis and other serious psychiatric complications [5,20]. Furthermore, neuropsychologists do not always obtain a detailed family history of psychiatric disorders; doing so is imperative, as there is a strong genetic basis to most psychiatric disorders, and in particular to mood and anxiety disorders, family psychiatric history has been associated with an increased risk of iatrogenic postsurgical and pharmacologic psychiatric episodes. Finally, neuropsychologists do not regularly assess how a seizure-free state will impact family dynamics, including expectations of the patient and family members regarding the patient's potential employment, control of finances, socialization, and independence after surgery.

A comprehensive psychiatric evaluation investigates all of these important factors, thus allowing the treatment team to adequately assess the risk of postoperative psychiatric complications, counsel the patient and family on these risks, and discuss treatment strategies if and when needed.

Clearly, the arguments discussed above make the inclusion of a psychiatrist in the team of any level 4 epilepsy center an obvious necessity.

So, what reasons (if any) could explain the contradiction between the obvious need for a psychiatrist in level 4 epilepsy centers and their absence?

1) Epileptologists and neurologists have yet to *really* recognize the need for a psychiatrist (beyond the "lip service" we have become accustomed to hear at national and international meetings).
2) Epilepsy centers balk at the need to pay for the time spent by a psychiatrist in the epilepsy center. Yet, most epilepsy centers pay for or contribute to the neuropsychologist's salary.
3) Epileptologists continue to equate (erroneously) that neuropsychological and psychiatric evaluations are equivalent.

To deal with these contradictions, most epilepsy centers have chosen to ignore the existence of postsurgical psychiatric complications. Sadly, until the NAEC mandates the inclusion of psychiatrists in level 4 epilepsy centers, this reality is unlikely to change!

Not having a psychiatrist in the epilepsy team should not be an excuse to not properly assess the potential risk for postoperative psychiatric complications by the neurologists/epileptologists responsible for the patient. Furthermore, all patients and their families must be counseled about these potential risks, in the same manner as they counsel them about potential neuropsychological and neurosurgical complications. The preoperative assessment should:

1. Assess lifetime history of psychiatric disorders, including mood, anxiety, psychotic disorders, and attention-deficit disorders. In addition, the presence of personality disorders must be investigated; personality disorders can be suspected in patients with a history of drug and alcohol abuse; excessive mood lability with outbursts of anger and poor frustration tolerance; and an inability to maintain a job which cannot be explained by the cognitive deficits or epilepsy-related obstacles; and poor social interaction, not explained by a comorbid autistic spectrum disorder.
2. Assess family history of psychiatric disorders, in particular of suicidal behavior and psychotic disorders.
3. Assess the patient's and family's expectations of epilepsy surgery and investigate the ramifications of seizure freedom in terms of employment, social freedom, and family dynamics.

2.3. What should the neurologist do if a patient is at risk?

If patients are identified to be at risk of postoperative psychiatric complications, the neurologist should ensure that the patient and family members are educated on the early recognition and the potential course of psychiatric symptoms. Patients and family members should be instructed to contact the treatment team upon recognition of any symptoms postoperatively for instructions on how to proceed.

Patients with a current and/or past psychiatric history for which they are on psychotropic drugs at the time of their presurgical evaluation need to be evaluated for persistent symptoms — in which case the psychiatric regimen should be adjusted to yield a symptom-free state. Patients who are suffering from active psychiatric disorders may not be able to provide an objective informed consent to proceed with surgery; appreciate the benefits and limitations of the surgical procedure; and cooperate with all the tests required in the presurgical evaluation. Furthermore, these patients should remain on the psychopharmacologic regimen that rendered them symptom-free after surgery and for a period of time of at least 12 months as this is the time when postsurgical de novo and/or exacerbation of mood and anxiety disorders tend to completely remit. Additionally, "prophylactic" selective serotonin reuptake inhibitors (SSRIs) should be considered in patients at high risk, particularly patients with a history of depression or anxiety who have been treated in the 5 years prior to surgery. The neurologist should strongly consider restarting the previous antidepressant or antianxiety medication at least six weeks before surgery and continue it for one year postoperatively.

2.3.1. Postoperative screening

All patients, regardless of risk, should be screened for symptoms of depression, hypomania, and anxiety at 2, 4, 8, 12, 18, 24, 36, and 52 weeks after surgery and at each postoperative visit until one year after surgery. Screening for psychiatric symptoms can be done by telephone contact, and screening self-rating instruments of depression and anxiety should be used at each visit (see articles by Bermeo-Ovalle, Munger Clary & Salpekar and Kanner et al. in this issue).

3. Conclusions

There is a significant risk of psychiatric comorbidity after epilepsy surgery; the risk factors for this phenomenon have been well described. Patients at higher risk can be best identified through a preoperative psychiatric evaluation performed by a psychiatrist, which should be a mandatory element of the presurgical workup. Additionally, the NAEC should require the inclusion of a psychiatrist on the treatment team in Level 4 epilepsy centers. The identification of high-risk patients allows for early identification of symptoms, early treatment, and potentially better psychiatric outcomes.

Conflict of interest

Authors declare no conflict of interest.

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