Research, Society and Development, v. 12, n. 10, e33121043331, 2023
(CC BY 4.0) | ISSN 2525-3409 | DOI: http://dx.doi.org/10.33448/rsd-v12i10.43331

Neuropsychiatric and cognitive comorbidities in epilepsy

Comorbidades neuropsiquiátricas e cognitivas na epilepsia

Comorbilidades neuropsiquiátricas y cognitivas en la epilepsia

Received: 09/14/2023 | Revised: 09/29/2023 | Accepted: 10/01/2023 | Published: 10/04/2023

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Abstract
The epileptic crisis is characterized by a momentary episode of signs and symptoms that are caused by abnormal excessive or synchronous neuronal activity in the brain. On the other hand, epileptic syndrome is defined, according to the International League Against Epilepsy (ILAE), by "a group of clinical and neuroimaging characteristics in electroencephalographic (EEG) findings, many times, supported by specific etiologic findings (structural, genetic, metabolic, immunological and infectious)". Accordingly, epilepsy patients have multiple neuropsychiatric comorbidities, being depressive disorders the most common, a condition that affects the quality of life and is influenced by numerous external factors. The present study aims to conduct a literature review based on the analysis of articles published from 2010 to 2022 in the PubMed (Medline) and Science Direct databases on epilepsy, its cognitive compromising and its neuropsychiatric comorbidities, using the terminology indicated by the System of Descriptors in Health Sciences (DeCS) and a set of predetermined criteria to select the best articles on the subject. Therefore, approaching psychiatric comorbidities, such as depressive disorders and cognitive deficiencies, in epilepsy is essential in light of its high prevalence and the negative repercussions in the patient's life. Consequently, more in-depth studies are necessary to provide a better prognosis for epilepsy patients and to evaluate the side effects and the clinical repercussions of Anti-Epileptic Drugs (AEDs).
Keywords: Comorbidity; Epilepsy; Neurology.

Resumo

A crise epiléptica é caracterizada por um episódio momentâneo de sinais e sintomas que são causados por atividade neuronal anormal, excessiva ou sincrônica no cérebro. Por outro lado, a síndrome epiléptica é definida, de acordo com a Liga Internacional contra a Epilepsia (ILAE), por "um grupo de características clínicas e de neuroimagem em achados eletroencefalográficos (EEG), muitas vezes, apoiados por achados etiológicos específicos (estruturais, genéticos, metabólicos, imunológicos e infecciosos)". Dessa forma, os pacientes com epilepsia apresentam múltiplas comorbidades neuropsiquiátricas, sendo os transtornos depressivos os mais comuns, condição que afeta a qualidade de vida e é influenciada por inúmeros fatores externos. O presente estudo objetiva realizar uma revisão da literatura baseada na análise de artigos publicados de 2010 a 2022 nas bases de dados PubMed (Medline) e Science Direct sobre epilepsia, seu comprometimento cognitivo e suas comorbidades neuropsiquiátricas, utilizando a terminologia indicada pelo Sistema de Descritores em Ciências da Saúde (DeCS) e um conjunto de critérios predeterminados para selecionar os melhores artigos sobre o tema. Portanto, a abordagem das comorbidades psiquiátricas, como os transtornos depressivos e as deficiências cognitivas, na epilepsia é essencial, tendo em vista sua alta prevalência e as repercussões negativas na vida do paciente. Consequentemente, são necessários estudos mais aprofundados para oferecer um melhor prognóstico aos pacientes com epilepsia e avaliar os efeitos colaterais e as repercussões clínicas dos medicamentos antiepilépticos (AEDs).

Palavras-chave: Comorbidade; Epilepsia; Neurologia.

Resumen

La crisis epiléptica se caracteriza por un episodio momentáneo de signos y síntomas causados por una actividad neuronal anormal excesiva o sincrónica en el cerebro. Por otro lado, el síndrome epiléptico se define, según la Liga Internacional Contra la Epilepsia (ILAE), por "un grupo de características clínicas y de neuroimagen en los hallazgos electroencefalográficos (EEG), muchas veces, apoyados por hallazgos etiológicos específicos (estructurales, genéticos, metabólicos, inmunológicos e infecciosos)". En consecuencia, los pacientes epilépticos presentan múltiples comorbilidades neuropsiquiátricas, siendo los trastornos depresivos los más frecuentes, condición que afecta la calidad de vida y está influenciada por numerosos factores externos. El presente estudio tiene por objeto realizar una revisión bibliográfica basada en el análisis de artículos publicados desde 2010 hasta 2022 en las bases de datos PubMed (Medline) y Science Direct sobre la epilepsia, su compromiso cognitivo y sus comorbilidades neuropsiquiátricas, utilizando la terminología indicada por el Sistema de Descriptores en Ciencias de la Salud (DeCS) y un conjunto de criterios predeterminados para seleccionar los mejores artículos sobre el tema. Por lo tanto, el abordaje de las comorbilidades psiquiátricas, como los trastornos depresivos y los déficits cognitivos, en la epilepsia es esencial a la luz de su elevada prevalencia y de las repercusiones negativas en la vida del paciente. En consecuencia, son necesarios estudios más profundos para ofrecer un mejor pronóstico a los pacientes epilépticos y evaluar los efectos secundarios y las repercusiones clínicas de los fármacos antiepilépticos (FAE).

Palabras clave: Comorbilidad; Epilepsia; Neurología.

1. Introduction

The epileptic crisis is a transitory episode of subjective signs and symptoms that occur due to abnormal excessive or synchronous neuronal activity in a section, or in the entire brain, which can originate from any disorder in the cerebral functions, and is not only associated to the epilepsy etiology (Falco-Walter et al., 2020; Gulati et al., 2014). The epileptic syndrome, in the classification of International League Against Epilepsy (ILAE) from 2017, is defined as "a group of clinical and neuroimaging characteristics in electroencephalographic (EEG) findings, many times, supported by specific etiologic findings (structural, genetic, metabolic, immunological and infectious)" (Wirrell et al., 2022). It is important to highlight that epilepsy is a pathology characterized not only by the lasting predisposition to generate crises, but also by negative outcomes in cognition and in psychological, social and neurobiological comorbidities (Yogarajah et al., 2019).

When it comes to neuropsychiatric comorbidities, it is evidenced that depressive disorders are the most common dysfunctions in the patients with epilepsy. Studies point out that over 80% of the carriers develop a subjective depressive feeling, condition that has great impact on the quality of life (Suleymanova et al., 2021). Besides, other psychiatric conditions that influence the well-being of epilepsy patients are: high levels of stress, anxiety and psychosis, as well as other negative outcomes, such as sexual dysfunction and attempting or effectively performing self-extermination (Devinsky et al., 2018).

The cognitive damage, as well as humor and behavior disorders, represents common epilepsy comorbidities which can affect social, academic and labor performance, and also the life quality of these patients (Tedrus et al., 2020; Berg et al.,

2011). Besides the evident effects of chronic epilepsy in the brain´s anatomy and physiology, the subjacent cerebral dysfunction, responsible for the epilepsy, also presents adverse influence in cognition, as well as the typology of the therapy and the individual memory reserve capacity, which can change the brain's normal structure, metabolism, chemistry and other dimensions of cerebral functions (Allone et al., 2017).

Considering the addressed information, it is evident that the study of the neuropsychiatric comorbidities and of the cognitive deficits associated to epilepsy is an essential aspect for a better understanding of this condition, aiming to construct a foundation for diagnosis and therapeutic and to better the neuroscientific studies about the subject. Therefore, the objective of this study is to review the literature on the types of neuropsychiatric and cognitive comorbidities associated with epilepsy, as well as itsoutcomes, addressing also, questions about: relevance, epidemiology and the resultsof the drug use in its treatment.

2. Methodology

The present study is a narrative literature review, which was conducted through the utilization of the databases of the platforms Medline and Science Direct, as research source for the references, in the period from 2010 to 2022. Themes such as epilepsy,its cognitive compromising and its neuropsychiatric comorbidities were described.

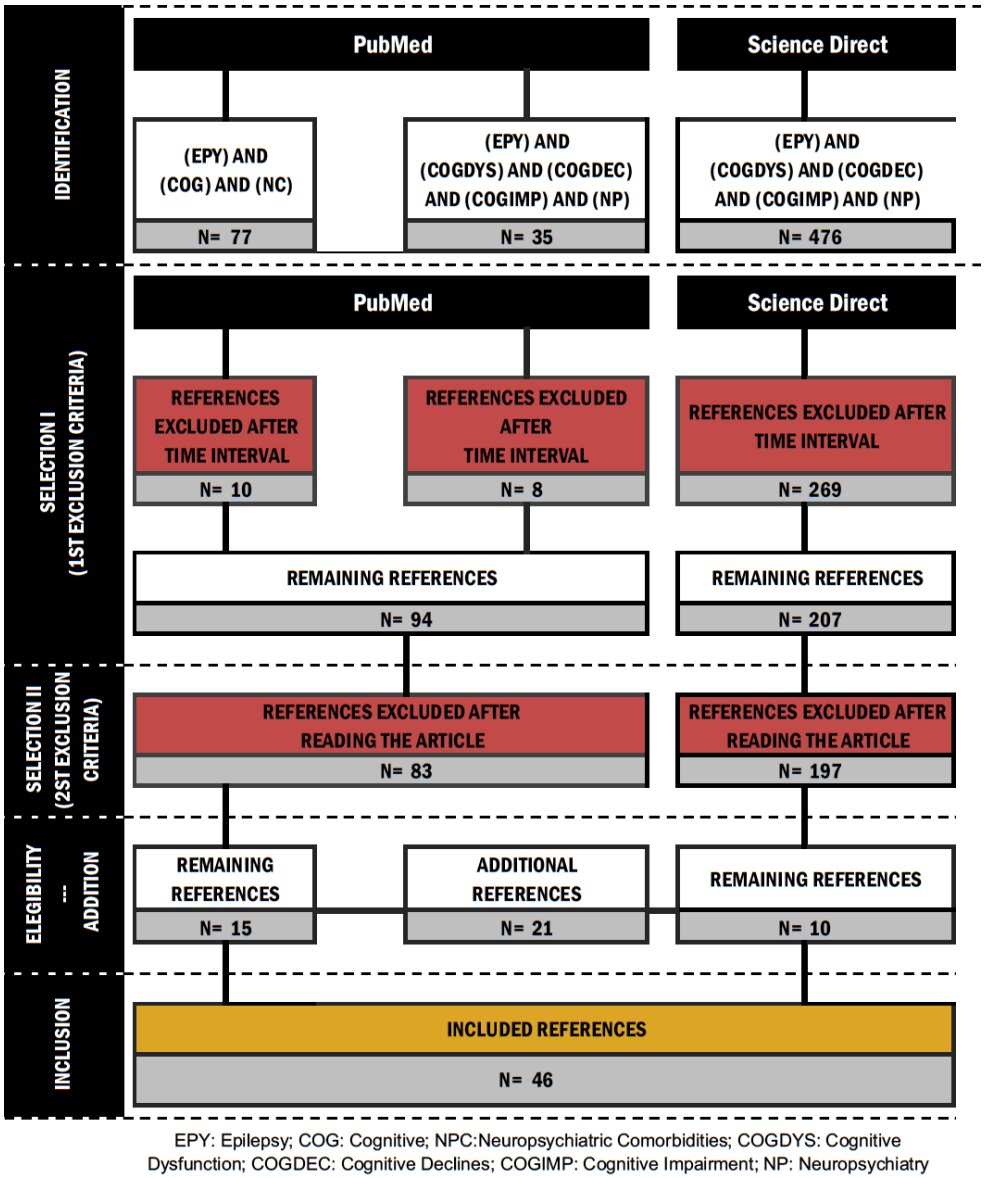
In PubMed´s database (Medline), two searches were executed: the first one was done through the keywords "(Epilepsy) AND (Cognitive) AND (Neuropsychiatric Comorbidities)", and 77 articles were found. Then, the search was restricted by the following filter: articles produced between 2010 and 2022, remaining 67 results. After the application of exclusion criteria (inadequate title, abstract with scarce information or addressing subjects that were not adequate to the research, disagreement betweenthe theme of the selected articles and the objective of the present research and textswritten in non-english language), finally, 11 articles were selected. For the second search, the keywords "(Epilepsy) AND (Cognitive Dysfunction) AND (Cognitive Declines) AND (Cognitive Impairment) AND (Neuropsychiatry)" were utilized, which led to 35 results. After utilizing the same filter, 27 results were left. Following the exclusion criteria previously mentioned, 04 articles were selected.

Besides, using the Science Direct platform, a search was conducted using the following keywords "(Epilepsy) AND (Cognitive Dysfunction) AND (Cognitive Declines)AND (Cognitive Impairment) AND (Neuropsychiatry)", which resulted in 476 articles. After applying the same search filter utilized in the PubMed (Medline) platform, there was a reduction of results to 207 articles, from which, after the application of the sameexclusion criteria, 10 items were left.

Furthermore, 21 new articles were manually selected and added, according to their relevance for the study. In total, for the research, 46 original articles in english remained.

Figure 1, presented below, is the “corpus” of the research and shows the result of the filtering carried out, that is, the material selected to be analyzed and discussed.

Figure 1 – Flowchart of the article selection.



EPY: Epilepsy; COG: Cognitive; NPC:Neuropsychiatric Comorbidities; COGDYS: Cognitive Dysfunction; COGDEC: Cognitive Declines; COGIMP: Cognitive Impairment; NP: Neuropsychiatry

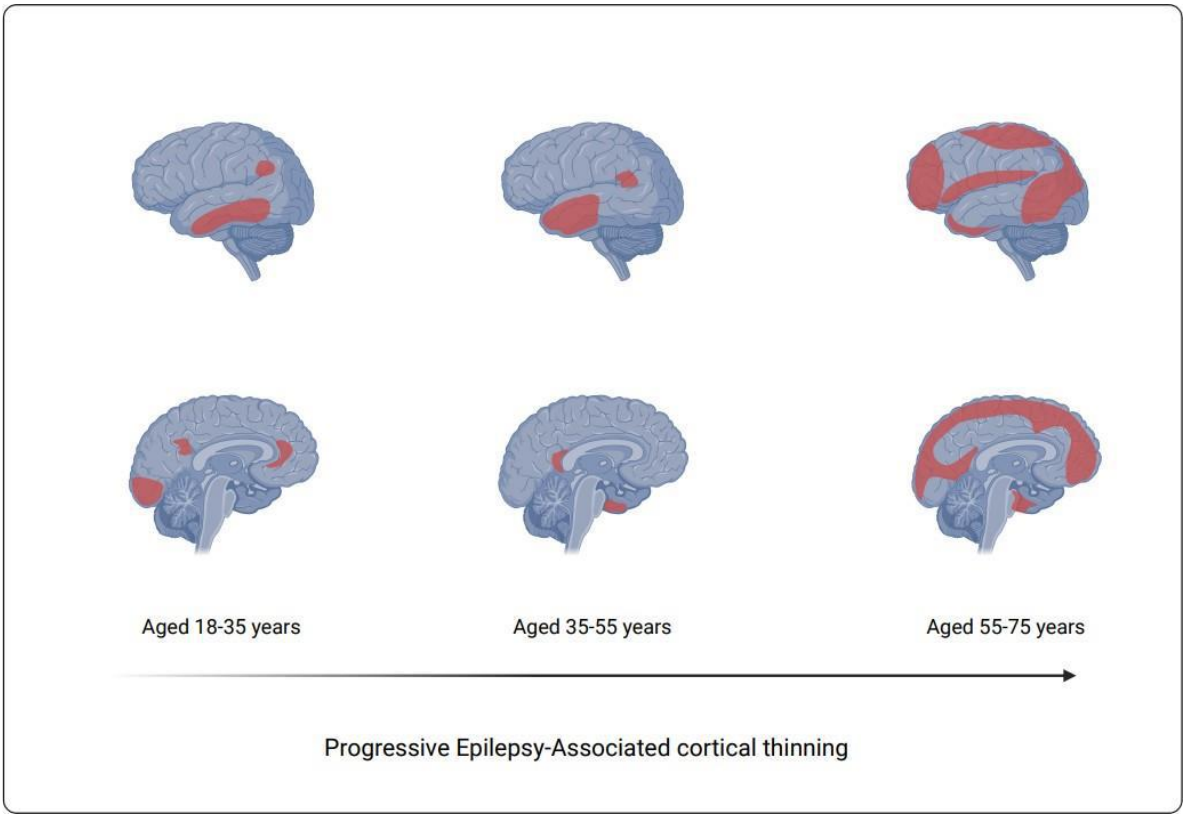
Source: Authors.

3. Results and Discussion

3.1 Cognitive Comorbidities in Epilepsy

Deficiencies related to cognitive aspects represent very common comorbiditiesin epilepsy. Regarding chronic epilepsy, 70% to 80% of patients present cognitive deficits. The cognition linked to epilepsy can be determined by multiple factors, such as structural brain injuries, active epilepsy, the treatment of choice and the individual memory reserve capacity (Helmstaedter et al., 2017). Considering that the pre-ictal and postictal activities are reversible, some literature defends that the accumulation of epileptic crisis during life causes a progressive mental decline, which leads to cognitive alterations (Allone et al., 2017). However, a recent case-control study of 331 adults with 678 magnetic resonance imaging scans demonstrated that progressive cerebral atrophy was not affected by seizure frequency, as the use of anticonvulsants alone didn't demonstrate a preventioneffect on cortical thinning, as described in figure 2. Therefore, progressive morphologic changes are a seizure-independent phenomenon, and not a directconsequence of seizures.

Figure 2 - Progressive cortical thinning associated with epileptic patients. Distinct from normal ageing, in epileptic patients, areas that were affected bilaterally included the lateral and posterior temporal lobes, posterior cingulate gyri, occipital lobes, pericentral gyri, and the opercula. The ventrolateral prefrontal cortex and the inferior parietal lobule were affected more in the right hemispherethan the left hemisphere in the case-control study.



Source: Adapted from Galovic (2019).

Executive functions is the term that refers to the group of cognitive processes of superior order, mediated by neuroanatomical circuits of the prefrontal cortex and its connections. About 49% of epilepsy patients present executive dysfunction. Some of these functions are: inhibition, work memory, initiation, flexibility and planning. Patients with executive function deficits generally struggle academically, socially and functionally, which worsens the quality of life. It is believed that these functions are interconnected controlling, organizing and directing all cognitive activity, the emotional answers and the behavior (Schraegle et al., 2016).

Accordingly, in the evaluation of epilepsy patients, a special attention must be directed to executive dysfunction, considering the quantity of studies agreeing that thispopulation of patients present important damage of these functions (Ueda et al., 2021). In a more specific vision, numerous research shows that the combination of executive function deficits, exaggerated use of medication and polypharmacy are linked to the diminished life quality of these patients. Anatomically, the frontal lobe has been more associated with the worsening of the executive functions in epilepsy patients, which present difficulties in planning, impulse control, temporal orientation, sequencing, categorization, mental flexibility and verbal reasoning, mainly (Macallister et al., 2014).

Studies point out that epilepsy patients present worse results in memory, attention and language use tests. Truly, 26% to 45% of these patients present memory harm (Subramaniam et al., 2020). The factors related to these data are: disease duration, patient´s age and early epilepsy onset. Apparently, the undertaking of the frontal lobe was mostly linkedto memory worsening in these patients. However, a plausible explanation from a pathophysiological point of view remains obscure (Tedrus et al., 2020).

Regarding the learning of epileptic patients, the data addressing factors that influence learning are scarce or conflicting. A clinical study with 211 patients, in 2020, evidenced that patients with generalized epilepsy crises presented better performance in comparison to those patients with focal crises. Apparently, the low performance in learning tests of these patients can be attributed, mainly, to the focus and attention problem, mostly observed in individuals with focal epilepsy (Subramaniam et al., 2020). Corroborating with these findings, recent studies show that the school and academic performance of patients with epilepsy is worse, when compared to the patients in control groups (Macallister et al., 2014). A systematic review with meta analysis, published in 2021, addresses the relation between linguistic dysfunction and children with epilepsy. The study suggests that the classification of epileptic crises, age of onset, measured language component (fluency, semantic and syntax) and the instruments to evaluate language were considered main moderators in the differences of language abilities observed in the numerous researches. Curiously, the syntactic language in children with epilepsy was similar to their pairs without epilepsy. In fact, a child carrying this disease is capable of comprehending and constructing phrases with adequate grammatical structure. However, semantic deficiency makes the communicating competency of these children compromised (Bailey et al., 2021).

The epilepsy´s neuropsychology has been an Important approach area for about a century and the cognitive deficiencies integrate the new definition of epilepsy. Between these deficiencies, the social cognitive dysfunctions are of relatively recent interest (Mirabel et al., 2020).

Many studies investigated the interaction between social cognition and epilepsy. Bora and collaborators (2016) brought a systematic review with meta analysis to evidence if the social cognitive abilities are damaged in patients with epilepsy of the frontal lobe, which is the most common of focal epilepsies. The findings show that the epileptic patients (with or without surgical treatment intervention) had worse results when compared to the healthy patients in regards to the recognition of other people's facial emotions.

Recent research points out that epilepsy patients can damage the cortex and cause a perturbation in dorsal and ventral areas. In analysis, the epileptic activity seems to interrupt the interactions in the communication network of the central nervous system (CNS), which even more this interaction, damaging the full attention of these patients (Jiang et al., 2018).

The epileptogenic focus of epilepsy can cause an interference in cognitive activities when blocking some important connections between the CNS network. Amongst these functions, attention is considered an important that is affected (Jiang et al., 2018). It is worth highlighting that epilepsy damages the basic processing functions of the brain, which can lead to a complex attention compromise, in a temporary or permanent way (Sherman et al., 2012).

The perceptual motor cognition also seems to be diminished in epilepsy. Two studies showed worsening of the perceptual reasoning rate in children with childhood benign epilepsy with centrotemporal spikes (Li et al., 2020). This index includes tests such as block design, picture conceptualization, mapping and matrix reasoning. After a year of treatment with antiepileptic drugs (levetiracetam, sodium valproate and oxcarbazepine), the scores of this index were significantly enhanced (Niu et al., 2021). Adult patients with occipital lobe epilepsy also demonstrated lowering of perceptual and motor functions when compared to healthy controls and patients with migraine. According to the Bender-Gestalt II scale, every subdomain was reduced, including the capacity to copy represented images, remembering images, motor (detailed drawing) and perceptual (interpreting the image to be copied) (Karami et al., 2019).

Some topics can be associated with cognitive alterations in epilepsy, as the secondary disorders associated with the condition, such as depression; the semiology of epileptic crisis; age of onset; psychosocial factors and alterations linked to drug use. In truth, these interferences related to cognition happen in the crisis itself, in the postictal period and, sometimes, during the interictal period, in which generally are related to the frontal or temporal lobe (Gulati et al., 2014; Ye et al., 2020).

3.2 Antiepileptic Drugs, Cognition and Behavior

According to a 2022 Cochrane meta-analysis, the most common adverse event of antiepileptic drugs (AEDs) is drowsiness/fatigue, with gabapentin and phenytoin in first place, and phenobarbitone in the last. Mood and behavioral changes are the sixth most frequent complication of AEDs, with topiramate and valproic acid as the main culprits. Cognitive disorders come as the eighth most common side effect, with topiramate being the principal cause. Topiramate is also the most strongly associated with anxiety, depression, anorexia, weight loss, sleep disorders, and nightmares. Weight gain, however, is more related to gabapentin. Finally, impotence, loss of libido, and asthenia are most frequently reported with phenytoin. Eslicarbazepine acetate was shown to be the least associated with cognitive and behavioral side effects, though it was studied only once in a clinical trial of 401 participants. A single trial of lacosamide was included as well (Nevitt et al., 2022).

Regarding cognitive function, in addition to being influenced by genetic and environmental factors, antiepileptic drugs, sleep disruption and ictal disorders will also be influenced (Baxendale et al., 2016). Perampanel (PER) is an adjuvant treatment option for epileptic seizures and was evaluated in a systematic review with 9 studies between 2016 and 2021 evaluating cognitive effects, without considering behavioral changes. However, it is concluded that its use does not have cognitive improvements (Witt et al., 2021).

A randomized controlled clinical trial evaluated the impact of a ketogenic diet on the cognition and behavior of children and adolescents with refractory epilepsy, concluding that this diet compared to the control group had a positive impact on behavioral functioning and cognitive activation (Ijff et al., 2016).

Functional magnetic resonance imaging (fMRI) studies shed light on the cognitive effects of AEDs. Carbamazepine was shown to impair the activation of the left inferior frontal gyrus (Xiao et al., 2018) and the temporal lobes (Wandschneider et al., 2014) during verbal and category fluency tasks (Xiao et al., 2018; Wandschneider et al., 2014), which may explain the language and memory deficits seen with carbamazepine. Topiramate was also related to decreased activation of cognitive frontoparietal networks and impaired deactivation of task-negative networks related to language, a topiramate-specific effect. These findings were associated with a poorer overall cognitive performance compared to subjects taking zonisamide and levetiracetam, as measured by a digit span, letter fluency, categorical fluency, and naming tasks (Wandschneider et al., 2017). Other more specific cognitive effects of topiramate include impairment in executive functions, verbal memory, and subject assessment of side effects (Helmstaedter et al., 2013).

Lamotrigine also was associated with abnormal task-related activation of frontal and parietal networks, which was correlated with a slightly impaired verbal fluency (Ijff et al., 2015). The drug effects on the temporal lobes were controversial (Xiao et al., 2018). Zonisamide was shown to decrease activation of frontal and parietal cognitive networks as well, and compared to levetiracetam, zonisamide-treated patients had poorer workingmemory performance (Wandschneider et al., 2017). Levetiracetam, on the other hand, normalized activation patterns in the right temporal lobe during visuospatial tasks with a dose-dependent manner. This effect was maintained for the left temporal lobe on verbal tasks without adjusting for any factors (Wandschneider et al., 2014). The drug also affected cognitive networks to a lesser extent than carbamazepine, lamotrigine (Xiao et al., 2018), topiramate, and zonisamide (Wandschneider et al., 2017). Putaminal activation, however, was impaired by carbamazepine, lamotrigine, and levetiracetam, which had a negative influence on verbal fluency (Liguori et al., 2018).

Lacosamide, however, was related to improved executive function (Li et al., 2020). It is also compared to lamotrigine in terms of cognitive side effects, with both being less prone to cause cognitive disturbances than carbamazepine, topiramate, and perampanel (Li et al., 2020). Additionally, lacosamide improved anxiety and depression in patients with refractory epilepsy (Alfaro et al., 2019; Moseley et al., 2015), an effect that was not associated with seizurecontrol (Rocamora et al., 2018).

Regarding sleep, there is little and conflicting evidence on the effects of AEDs. Eslicarbazepine, lacosamide, and perampanel either improve or exert no effect on sleep. The latter is associated with decreased insomnia risk, and lacosamide

was shown to decrease daytime sleepiness. Clonazepam, felbamate, lamotrigine, oxcarbazepine, and phenobarbital were correlated with indifferent or detrimental effects on sleep. Lamotrigine and felbamate may increase risk of insomnia, phenobarbital may enhance daytime sleepiness, and oxcarbazepine appears to increase total sleep duration. Finally, cannabidiol, carbamazepine, and levetiracetam were not associated with any changes in sleep, and results on sodium valproate are controversial (Liguori et al., 2021).

3.3 Epilepsy, Antiepileptic Drugs and Emotions

Psychiatric comorbidities are so frequent that all epileptic patients need to be evaluated for behavioral and mood disorders (Devinsky et al., 2018).

The most common psychiatric comorbidity in epilepsy is depression. Subjective symptoms of depression can be found in up to 80% of patients (Suleymanova et al., 2021). Some subtypes of epilepsy may have high rates of depression, such as temporal lobe epilepsy (TLE) (Gonçalves et al., 2017). Depression appears to be more prevalent in epilepsy than in other chronic diseases (Mula et al., 2009). In addition to depression, the prevalence of anxiety reaches 49% in anxious patients (Terra et al., 2014).

Mixed disorders of depression and anxiety significantly decrease the quality of life of epileptic patients. In addition to mood disorders, epileptic patients also have higher rates of psychotic disorders (Clancy et al., 2014).

It is possible to divide the psychiatric alterations in epilepsy between interictal and pericittal. In interictal seizures, symptoms are present regardless of the seizures, and may be due to electrical alterations, vascular alterations or through the release of neurotransmitters. Perictal changes may occur immediately before, during, or after the seizures. Post-ictal psychosis occurs when psychosis appears after repeated or longer attacks (Terra et al., 2014).

Before defining which therapy is used to treat depressive conditions, it is necessary to exclude iatrogenic causes. In addition to the most common neurological effects such as sedation, dizziness, blurred vision and tremor (Devinsky et al., 2018), some antiepileptic drugs (AEDs) are associated with this change in mood, such as phenobarbital, vigabatrin and topiramate. On the other hand, some antiepileptic drugs can be used as mood stabilizers, such as valproate and lamotrigine. The drugs considered first-line for the treatment of depression are SSRIs, as they have a low pharmacokinetic interaction. Tricyclics can also be used, but they are considered second-line mainly because of their side effect profile and for potentially altering the seizure threshold. For anxiety syndromes, SSRIs can also be used, but there is evidence that some AEDs, such as pregabalin, gabapentin, and valproate, have antiepileptic properties (Gulati et al., 2014).

Vagus nerve stimulation (VNS) can also be used as a non-pharmacological measure for the treatment of mood changes in patients with epilepsy (Mula et al., 2009).

Many of the psychosocial problems improve when the seizures resolve. This can be indirectly measured by the percentage of occupation of these patients in the labor market. Higher rates of job occupancy can be found in patients who have been in remission for at least 5 years (Laxer et al., 2014).

3.4 Epilepsy, Antiepileptic Drugs and Suicide

Most neuropsychiatric studies show that people with epilepsy are three times more likely to commit suicide (Abraham et al., 2019), accounting for 11% of deaths in epilepsy (Haile et al., 2018) and, conversely, people with a history of suicidal ideation are five times more likely to develop epilepsy than the general population, suggesting a common neurobiological mechanism (Mesraoua et al., 2020).

There are reported cases of intense suicidal ideation as a post-ictal event. In one study this phenomenon was prevalent in 13% of people with a median duration of 24h (Mula et al., 2015). Furthermore, the chance of later completed suicide is increased by 38% after a suicide attempt in patients with epilepsy (Haile et al., 2018).

Regarding the prevalence by gender, women represent more than two-thirds of patients suffering from stress-related disorders, but studies show that the majority of those who commit suicide are men, mainly because they methods were perceived to be more lethal (Abraham et al., 2019).

Different variables are involved in the risk of suicide in people with epilepsy. The main risk factors described are psychiatric comorbidities, AEDs, and factors related to epilepsy (Mesraoua et al., 2020), with studies describing a 6 to 25 times greater risk of suicidein people with temporal lobe epilepsy (Haile et al., 2018). People with epilepsy suffer impact on quality of life due to psychiatric comorbidities, as their performance and social connections can be affected by the fear of having seizure attack in public place, but itis unlikely that the comorbidities are the only responsible factor for the increased risk of suicide (Mula et al., 2015).

Since 2008, after the U.S. Food and Drug Administration (FDA) published a warning about the risk of suicide by the use of antiepileptic drugs, several studies have been developed, with conflicting results (Abraham et al., 2019; Haile et al., 2018). Some studies have shown that psychiatric adverse effects of AEDs are less frequently reported in populations other than epilepsy when these drugs are used, which suggests that there are lower dosesand lower risk of AED-AED interactions, when compared to people with epilepsy. In contrast, the underlying neurological condition could singly be associated with an increased risk of psychiatric adverse effects (Mula et al., 2015).

Given the high risk of suicide and the complexity of the related variables, studies argue that all patients with epilepsy should be regularly monitored for suicidal ideationand referred to a psychiatric evaluation as soon as possible. In addition, while the dataare conflicting, when starting or switching an AED, patients should be closely monitored for mood swings (Mesraoua et al., 2020).

4. Conclusion

In conclusion, approaching psychiatric comorbidities in epilepsy is essential, given that they are highly prevalent and impact the quality of life. If not properly managed, the aforementioned condition can represent an important risk factor for suicide, responsible for part of the deaths in patients with epilepsy. Cognitive deficiencies also stand out in terms of compromising the quality of life, regardless of other associated comorbidities and in case there is sufficient evidence to prove this relationship these will be addressed as new therapeutic targets, in the search for important benefits for patients with epilepsy.

Consequently, more in-depth studies are necessary to provide a better prognosisfor epilepsy patients and to evaluate the side effects and the clinical repercussions of Anti-Epileptic Drugs (AEDs), which despite their benefits in epilepsy interfere with mood and cognition.

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