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A Review of Clinical Management of Drug Resistant Epilepsy

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ABSTRACT

Epilepsy is one of the most prevalent chronic neurological illnesses, with an estimated frequency of 0.5% to 1%. Currently, the majority of epilepsy treatment methods include the provision of symptomatic medicine. When treating individuals with drug-resistant epilepsy (DRE), it is essential to provide anti-seizure medicines (ASDs) at an appropriate daily dose to prevent seizures with DRE. Because of drug resistance, about one-third of epileptic patients are still unable to take their drugs, despite the fact that the number of ASDs accessible continues to expand. Several risk factors, including epilepsy that started in infancy, symptoms of epilepsy, and abnormal neurological examination, increase the likelihood that a newly diagnosed epileptic patient would proceed to DRE. ASD poly-therapy is a kind of pharmacological treatment that is widely used. When assessing the influence of DRE on mental health and social integration, it is vital to make complete therapy modifications in order to improve the overall quality of life of patients.

Keywords: Seizure, Epilepsy, Drug Resistant Epilepsy

INTRODUCTION

A diagnosis of drug resistant epilepsy (DRE) is defined as the continuation of seizures after the use of at least two syndrome-adapted anti-seizure medications (ASD) at an effective daily dosage. An observational research examining the response to ASDs in hospitalized patients with newly diagnosed epilepsy revealed that the first and second medication regimens were effective in 49.5% and 36% of cases, respectively. In this aspect, the success rates of all ASD therapy following the failure of the first two medicines were much lower (from 12.5 to 22.2 percent) [1].

Based on this definition, the only thing to think about is whether or not the patient is having seizures. This definition, on the other hand, doesn't include the type of seizures, how often they happen, or any other problems that can come up because of epilepsy [2]. Epilepsy patients whose seizures do not respond to anticonvulsant pharmaceutical treatment are classified to have drug-resistant epilepsy (DRE). This disorder is also known as intractable epilepsy, medically refractory epilepsy, or pharmacoresistance [3].

Pharmacological Management

Pharmacological therapy is the cornerstone of the treatment of refractory epilepsy, and in these patients, polytherapy should be carefully reviewed, taking into consideration the risk/benefit ratio in terms of effectiveness, tolerability, and patient compliance. Despite the common use of polytherapy in patients with DRE, there is little evidence to support the concept that supplemental therapy is significantly more helpful than monotherapy [4].–Thus, the amount of evidence on the effectiveness of available ASDs in DRE add-on treatment is high. Rare investigations examined the effectiveness of alternate monotherapy to

adjunctive treatment in ASD-resistant individuals [5,6].

However, the vast majority of patients in these trials failed just one medication, and so did not meet the DRE criterion. One research randomized patients, whereas the other was observational. No blinding strategy was adopted, however, since the randomized trial had to be pragmatic and tailored to actual practice. Importantly, the seizure-free rate varied greatly across the two investigations, indicating that the patient groups were distinct. In one trial, 72 percent of patients experienced remission regardless of treatment technique, but in the other, the 12-month likelihood of staying seizure-free was about 15 percent [7,8].

The purpose of polytherapy in individuals with pharmacoresistance is to develop ASMs combinations that enhance effectiveness and decrease adverse effects. Indirectly, the advantage of polytherapy over monotherapy has been shown in numerous studies, particularly when one considers the favorable effects of the combination of lamotrigine and sodium valproate in patients with DRE36 or of clobazam with stiripentol of cannabidiol in Dravet Syndrome [9,10]. Other concerns surrounding the use of rational polytherapy include the various pharmacokinetic and adverse effects (AEs) profiles and the effects of drug-drug interactions.

Nonetheless, there is an abundance of research documenting the impact of ASD-related adverse events on the quality of life of patients [11]. In patients with DRE, it has been shown that ASD-related adverse events have a higher detrimental effect on daily quality of life than seizure frequency, particularly when ASDs disrupt cognitive functioning, mood, or coordination [12]. In this setting, lowering ASD burden may be advantageous for certain individuals, however seizure freedom cannot be attained.

Non-Pharmacological Management

Whenever feasible, surgical therapy is the most effective and possibly curative option to ASDs for individuals with intractable epilepsy. Every patient with DRE should be sent to a tertiary referral facility, particularly to consider candidacy for epilepsy surgery or neurostimulation.

Epilepsy Surgery

Priority consideration for epilepsy surgery should be given to individuals with drug-resistant focal epilepsy. Class I evidence indicates that epilepsy surgery is preferable to medical care in adults with drug-resistant temporal lobe epilepsy and in children with drug-resistant focal epilepsy, regardless of location. In addition, children have been reported to have had effective surgery for epilepsy owing to early brain injuries despite having a widespread EEG. The objective of the preoperative examination is to define the epileptogenic zone, a benefit-to-risk ratio between resection, disconnection, or destruction of a brain area and the smallest possible neurological damage [13-17].

Neurostimulation

Neurostimulation may be divided into two categories: vagus nerve stimulation (VNS) and brain stimulation, which includes Deep Brain Stimulation (DBS) and Responsive neurostimulation (RNS). RNS, which is based on a closed-loop device capable of detecting particular patterns of epileptogenic activity and applying focused stimulation to terminate seizure activity, is another neurostimulation technique for DRE. It consists of a pulse generator implanted beneath the scalp, a depth lead implanted through stereotactic software in the ictal onset zone or a subdural lead implanted through a burr hole and positioned on the desired cortical area, and an external programmer by which detection and stimulation parameters can be modulated based on patient characteristics [18]. These methods were equally effective. Intraoperative irregular cardiac rhythm,

dysphonia, dysphagia, surgical site infection, and sleep apnea are relatively uncommon adverse effects. Initially validated in focal epilepsy, VNS has shown promise in generalized epilepsies, such as Lennox-Gastaut and Dravet syndromes, according to further research [19-20]

CONCLUSION

Managing patients with medication resistance remains a significant concern for clinicians. The variability of clinical symptoms in terms of seizure semeiology and course, with varied and often unexpected intervals of remission and recurrence in patients with DRE, makes it challenging to compare clinical research and develop criteria. Due to the danger of damage posed by the development of a seizure at work, several professional activities are incompatible with DRE. In contrast, some patients struggle to fulfill their professional goals not because of their seizures, but because of stigmatization.

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