LETTER TO THE EDITOR

Epilepsy surgery: an effective but underutilized treatment worldwide

Cirugía de epilepsia: un tratamiento efectivo subutilizado en el mundo

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To the Editor,

Epilepsy surgery continues to be an underutilized treatment worldwide, particularly in our country, despite findings from controlled clinical trials and more than 100 case series and observational studies supporting the efficacy and safety of resective surgery and, more recently, non-resective surgical interventions for the treatment of adults and children with drug-resistant epilepsy (DRE) (1). Moreover, this intervention is not only effective in controlling seizures, but also in improving psychosocial aspects, functioning, and autonomy, reducing medication burden, and increasing overall patient satisfaction. Most complications following epilepsy surgery are mild or transient (e.g., intracranial or extracranial infections) and usually resolve completely. Severe and permanent neurological complications (such as aphasia or hemianopsia) are infrequent, and surgery-related mortality is extremely rare (1).

Epilepsy is one of the most common chronic neurological diseases, affecting individuals of all ages, races, socioeconomic statuses, and geographic regions. It is estimated that approximately 50 million people worldwide have this condition, of whom 80% reside in low- and middle-income countries (2). In Latin America and the Caribbean, the prevalence of active epilepsy is 9.06 per 1,000 inhabitants, while in Peru it is estimated at 11.43 per 1,000 inhabitants (3). Despite the availability of more than 30 antiseizure medications worldwide, one-third of people with epilepsy have DRE. This condition is defined as the sustained failure to achieve seizure control after the use of at least two well-tolerated, appropriately chosen antiseizure medications, administered as monotherapy or in combination (4). DRE negatively affects quality of life due to the physical and psychosocial effects of seizures, the burden of psychiatric, cognitive, and somatic comorbidities, and the adverse effects of medications. Individuals with uncontrolled seizures also have an increased risk of premature mortality due to seizure-related accidents, status epilepticus, and sudden unexpected death in epilepsy. In addition, DRE represents a substantial economic burden for patients and their families, healthcare systems, and society (5).

Although epilepsy surgery has been the treatment of choice for patients with DRE for decades, referral for surgical evaluation is often delayed while palliative options continue to be explored, increasing the morbidity and mortality associated with DRE. A 2020 study in children with epilepsy found that only about 1% of children with DRE underwent epilepsy surgery in the United States (6). The Surgical Therapies Commission of the International League Against Epilepsy (ILAE) sought to address the low referral rates for epilepsy surgery, recommending that referral for surgical evaluation be offered to all patients with confirmed DRE. Likewise, surgical referral should be considered for adults and children who are seizure-free with one or two antiseizure medications but have a brain lesion located in the non-eloquent cortex (7).

Low rates of epilepsy surgery are multifactorial. Barriers appear to be related to neurologists' knowledge and attitudes, as well as access to epilepsy surgery programs. For example, physicians treating patients with epilepsy are often unaware of the evidence and clinical guidelines regarding epilepsy surgery. Additionally, some neurologists have the misconception that epilepsy surgery is contraindicated in patients with psychiatric comorbidities, cognitive impairment, or a normal magnetic resonance imaging (8). In our country, the limited availability of epilepsy surgery programs constitutes an important factor that must

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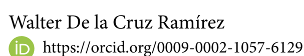
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be addressed. Patients' knowledge and attitudes toward epilepsy surgery also play a significant role. Distrust in the medical profession, a negative perception of epilepsy surgery by the treating physician, an exaggerated perception of surgical risks, lack of awareness of epilepsy surgery, lower educational level, and pre-existing disability have been identified as potential barriers among patients (8).

In resource-limited countries such as ours, where multiple barriers to epilepsy surgery exist, simplification of referral protocols and of pre-surgical evaluation (Figure 1) may help improve epilepsy surgery rates. In this context, it is important to consider the concept of surgically remediable epilepsies, which refers to epileptic syndromes that are typically resistant to antiseizure medications but respond well to surgical treatment (9). Significant advances in epileptology have had a substantial impact on the feasibility of surgery for various types of surgically remediable epilepsies in resource-limited settings. Specifically, advances in neurophysiology and neuroimaging have enabled the simplification of pre-surgical protocols, allowing pre-surgical evaluation and surgical management of these patients to be performed without requiring highly sophisticated technology, provided that trained personnel are available to identify, evaluate, and treat them. In the context of DRE, in which surgically remediable epilepsies are recognized, technological and conceptual advances from developed centers have translated into more practical and feasible approaches for evaluation and surgical management in the following scenarios: (a) mesial temporal lobe epilepsy, (b) focal epilepsies due to well-circumscribed resectable lesions, (c) severe epilepsies associated with diffuse hemispheric abnormalities, and (d) gelastic seizures due to hypothalamic hamartoma (9,10).

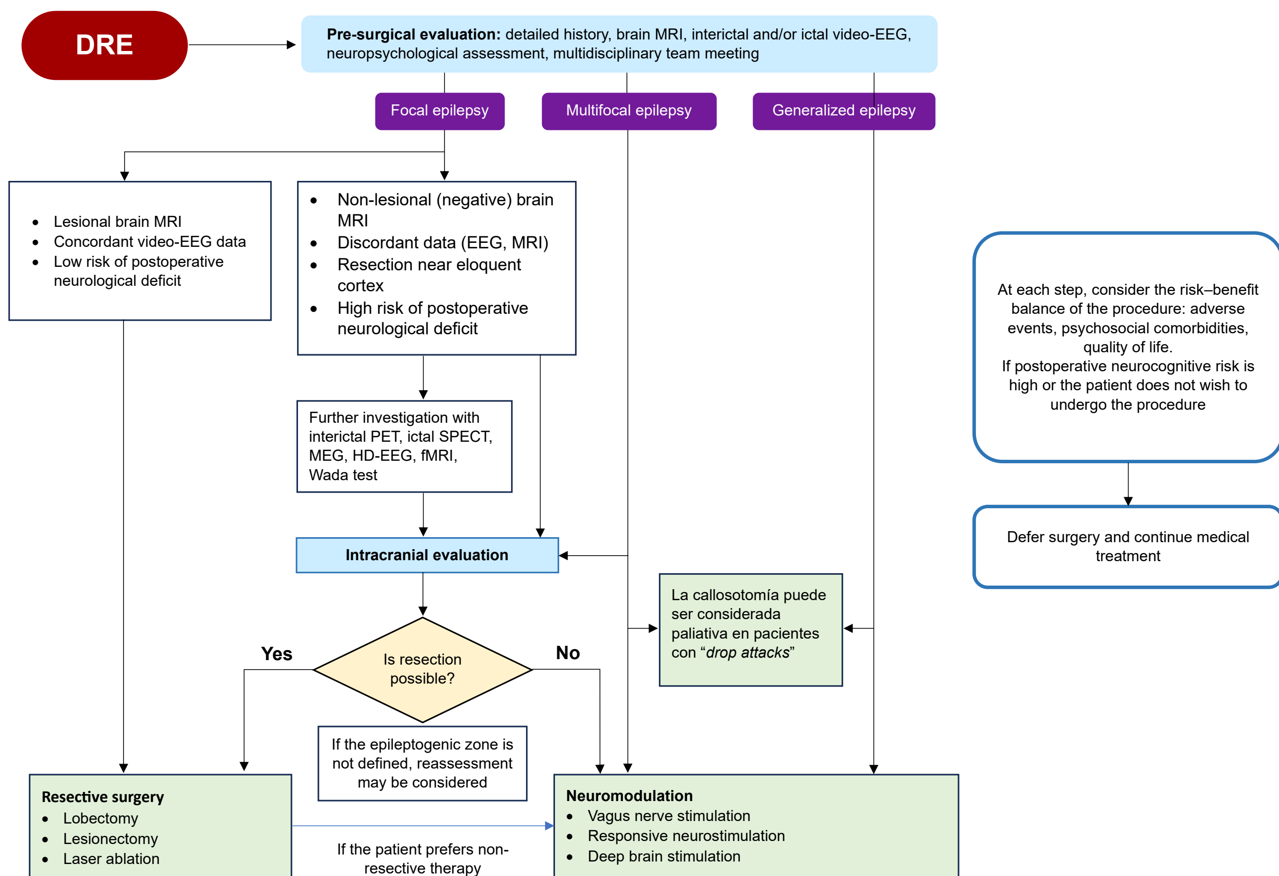

Figure 1. Proposed simplified surgical algorithm for DRE

DRE: drug-resistant epilepsy; MRI: magnetic resonance imaging; PET: positron emission tomography; EEG: electroencephalography; SPECT: single-photon emission computed tomography; MEG: magnetoencephalography; fMRI: functional magnetic resonance imaging.

In conclusion, epilepsy surgery continues to be underutilized despite its proven efficacy, partly due to the limited availability of epilepsy surgery programs and persistent misconceptions. Neurologists and pediatric neurologists must advocate for all patients with DRE to receive care in a specialized epilepsy center that offers various options to eliminate or reduce disability.

Author contributions

WDCR: Conceptualization, Writing – original draft.

Conflicts of interest

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