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Treatment and Management of Drug-Resistant Epilepsy

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Perspective

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DESCRIPTION

Drug Resistant Epilepsy (DRE), also known as refractory epilepsy or pharma co-resistant epilepsy, is defined as the inability to achieve sustained seizure freedom after adequate trials of two well-tolerated and appropriately chosen and used antiepileptic drugs (AED schedules) (as monotherapies or in combination). With each failed AED, the chances of the next medicine achieving seizure freedom decrease. After two failed AEDs, for example, the likelihood of the third achieving seizure independence is roughly 4%. Drug-resistant epilepsy is usually diagnosed after several years of uncontrollable seizures, but it is usually visible much sooner. Drug-resistant epilepsy affects about 30% of patients with the condition. When two AED regimens have failed to generate prolonged seizure-freedom, it is critical to begin alternative seizure-controlling medications.

The Seizure control is important because uncontrolled seizures, particularly generalised tonic clonic seizures, can damage the brain and raise the risk of SUDEP (Sudden Unexpected Death in Epilepsy). The first stage is for physicians to refer their DRE patients to an epilepsy clinic for a presurgical examination in order to determine whether or not they are candidates for epilepsy surgery. Patients who are not surgical candidates, refuse brain surgery, or whose brain surgery fails to provide long-term results.

In epilepsy surgery, a distinction can be made between resective and disconnective procedures. In a resective procedure the area of the brain that causes the seizures is removed. In a disconnective procedure the neural

connections in the brain that allow the seizures to spread are disconnected. In most cases epilepsy surgery is only an option when the area of the brain that causes the seizures so called epileptic focus can be clearly identified and is not responsible for critical functions such as language. Several imaging techniques such as magnetic resonance tomography and functional techniques like electro-corticography are used to demarcate the epileptic focus clearly.

One of the most prevalent types of epilepsy in adolescents and adults is Temporal Lobe Epilepsy (TLE), in which the epileptic focus is in the temporal lobe. As a result, temporal lobe resection is the most common epilepsy surgery technique, in which the entire temporal lobe or just a portion of the temporal lobe, such as the hippocampus or amygdala, is removed. Between 40 and 60% of people who have their temporal lobe resection remain seizure-free for the rest of their lives. The surgery itself is quite safe, with a 0% mortality rate. A temporal lobe resection has a 3 to 7% chance of causing neurologic problems.

Corpus callosotomy is a palliative surgery for epilepsy that is particularly severe. The corpus callosum is a huge nerve fibre bundle that links the two sides of the brain. The corpus callosum can be separated to prevent seizures from spreading from one brain hemisphere to the other. Patients with so-called drop attacks, which carry a significant risk of harm and in which the epileptic centre is not clearly delineated, are the most common candidates for this operation. A corpus callosotomy seldom results in seizure independence, but it does reduce the severity of dangerous drop attacks in half of the patients. There is a chance that language will be compromised temporarily or permanently after a corpus callosotomy, among other procedures. This surgery is a modern modification of the radical hemispherectomy, which involves removing one hemisphere of the brain to prevent seizures from spreading to the other. Only a portion of the hemisphere is removed in the functioning form, but the connections to the opposite cerebral hemisphere are severed. Only patients under the age of 13 with severe damage or deformity of one hemisphere, individuals with Sturge Weber syndrome, or patients with Rasmussen's encephalitis are candidates for this surgery. In nearly 80% of patients, functional hemispherectomy can provide long-term seizure freedom, but at the cost of hemiplegia and hemianopsy. The mortality rate is roughly 1% to 2%, and 5% of patients develop hydrocephalus.

Vagus Nerve Stimulation (VNS) entails the placement of a pacemaker-like generator beneath the skin in the chest area, which sends electrical impulses to the left vagus nerve in the neck on an intermittent basis. The vagus nerve transmits the impulses to the brain, which helps to prevent electrical disruptions that trigger seizures. The antiepileptic impact of vagus nerve stimulation improves over time: after two years, around half of VNS patients have had at least a 50% reduction in seizures and the average seizure decrease after ten years is roughly 75%. Furthermore, most patients' alertness and quality-of-life improve dramatically during the first year of Vagus Nerve Stimulation (VNS has a considerable anti-depressant impact and is licenced for depression in some countries).