Brain Surgery For Epilepsy Underutilized

Ten years ago, a landmark clinical trial in Canada demonstrated the unequivocal effectiveness of brain surgeries for treating uncontrolled epilepsy, but since then the procedure has not been widely adopted—in fact, it is dramatically underutilized according to a new study from the University of California, San Francisco (UCSF).

The study, published this month in the journal Neurology, showed that the number of Americans having the surgery has not changed in the decade since release of the effectiveness study, though surgical treatment is now uniformly encouraged by neurology and neurosurgery professional societies.

The U.S. Centers for Disease Control and Prevention estimates that 2 million Americans have epilepsy. Hundreds of thousands of these men, women and children suffer from uncontrolled seizures, but nationally only a few hundred are treated surgically each year with UCSF performing about 50 of the operations.

Among people who do have the operation, the study found, there are significant disparities by race and insurance status. White patients were more likely to have surgery than racial minorities, and privately insured patients were more likely to undergo surgery than those with Medicaid or Medicare.

"As a medical community, we are not practicing evidence-based medicine with regard to the treatment of patients who have epilepsy," said Edward Chang, MD, chief of adult epilepsy surgery in the UCSF Department of Neurological Surgery and the UCSF Epilepsy Center. "There are a lot of people who are taking medications and continuing to have seizures even though they can potentially be seizure-free."

A MODERN SURGERY FOR AN ANCIENT DISEASE

Epilepsy has been recognized as an important neurological condition since ancient times and its name means "seizures" in Greek. It can be inherited or it can be caused by anything that injures or irritates the brain. Hippocrates, the father of western medicine, described it in detail in his writings some 2,500 years ago, and it is believed to have afflicted many famous people throughout history, including Julius Caesar.

UCSF is one of the world's leading institutions involved in epilepsy research, with one of the few medical centers that has top-ranking departments in relevant areas: neurology, biomedical imaging, and neurosurgery.

Paul Garcia, MD, director of the clinical epilepsy program and a study co-author, said that most patients referred to UCSF for surgical evaluation have had uncontrolled seizures for many years despite trying several medications. Research

has shown that after the first two medicines fail, it is uncommon for patients to gain complete seizure control with medical treatment alone. Without control over their seizures, patients are at risk for physical injuries or even dying. Furthermore, the seizures often interfere with normal life activities such as driving, studying and working.

To see how widely this type of surgery has been used, Chang and neurosurgery resident Dario Englot, MD, PhD, accessed a national database of all of the surgeries across the United States for the last 20 years—a timeline centered on the Canadian study. They found that there has been no increase in the 10 years, even as diagnoses of epilepsy have increased along with the number of hospitalizations for seizures.

Part of the problem is awareness, both among patients and care providers, Chang said. New anticonvulsant drugs appear on the market often enough to provide physicians with new drug combinations for their patients to try. Brain surgery can be more daunting than having to swallow fistfuls of pills, even though surgery is much more effective for many people. The problem though is that new medications are not very effective if previous ones already failed, according to Chang. Epilepsy surgery in the modern era has been repeatedly shown to be safe and effective.

Also, many people with epilepsy are not getting the specialty care needed to properly identify the source of the seizures. The study found a significant trend that patients are being evaluated less at epilepsy centers and more at community hospitals often without dedicated epilepsy expertise. The result is that some patients may not receive an adequate workup, and in many cases, the source of the seizures can be very difficult to find without special expertise. "The success of epilepsy surgery totally depends upon the accurate localization of seizure onset region," Chang said.

The decade-old Canadian study showed that more than nearly two-thirds of all people who underwent surgery as part of the study in the 1990s were seizure-free. Fewer than 10 percent of patients in the study who relied on drugs alone achieved the same degree of freedom from seizures.

"Even though this important evidence was published 10 years ago now, we have not seen increases in the number of patients," Chang said. "We need to do better."

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