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quency and intensity. Human studies, in 1988, documented its efficacy as a treatment for partial seizures and this has been augmented with open label studies emphasizing its effect in generalized seizures.

Epilepsy is a common disorder and seizure freedom has not been as common as desired. Complex partial seizures are very common and become the targets of our development of new devices. Vagus nerve stimulation is a novel approach to the treatment of seizures. It is a regular stimulation delivered to the vagus nerve through a coiled electrode in the neck that is generated by a small pacemaker size device in the chest. The vagus nerve was selected pragmatically because it is effective in reducing seizures and affecting the human and animal EEG. Its mechanism has been elusive but has been believed to involve basilar brainstem structures such as the locus ceruleus.

Clinical studies have shown double-blind efficacy in the reduction of seizures. Safety has not indicated vagal activity from the left vagus nerve affecting the heart, lungs, or stomach. The most common side effects are related to the stimulation and the activation of the recurrent laryngeal nerve producing vocal changes and other symptoms such as paresthesias and dysemia associated with contraction of laryngeal structures. The device is unaffected by magnetic fields and head MRIs are possible.

Because of its effect on the central nervous system and the lack of reports by patients on sedation, quality of life studies have been performed. Self reporting scales as well as cognitive scales have shown no cognitive decline and significant improvements in patients self report of quality of life.

In addition, an overall positive response from patients, independent of their seizure reductions, has suggested a positive effect in the treatment of depression. Preliminary studies in mood, performed by Dr. Harden at the University of Cornell, have shown statistically significant improvements in mood in treatment groups (mood scales including Cornell Dysthymia Scale, Hamilton Depression Scale, and Beck Depression Inventory). A preliminary study in the treatment of depression has shown similar findings in patients without epilepsy.

Vagal nerve stimulation is a successful new treatment for partial and generalized seizures. It additionally has the benefits of improvement in mood and the potential use for treatment and depression.

Can Basilar Migraine and Epilepsy Be Caused by the Same Disease Process

M.G. Sumner, D. Finkelstein, A Soyer, J. Smothers, P. Bernad
Neurology Services, Inc.
Washington, D.C.

A case is presented of a 68-year-old woman who has a 28-year history of basilar (Bickerstaff) migraine. She presented to the emergency room of a local hospital with a histroy of headache of 12 hours duration. The headache was throbbing, associated with increased visual impairment, and with the vomiting of greenish material. In the emergency room she had a tonic-clonic seizure. A lumbar puncture was done which revealed clear and colorless fluid with normal laboratory values. An MRI was done which showed bilateral occipital infarcts with gyriform enhancement and cortical atrophy; an MRI was done which showed normal vessels in the circle of Willis. The diagnosis was made of recurrent basilar migraine associated with bilateral occipital stroke and grand mal seizure.

The classic migraine described by Blau has a prodrome, aura, headache, and resolution. Bickerstaff discusses the concept that basilar migraine is associated disturbances of the basilar artery and its branches. These visual disturbances with the aura are related to hypoperfusion of the occipital cortex and the remainder of the symptoms of basilar migraine aura are associated with hypoperfusion of the brainstem. With these difficulties in perfusion there is an increase in small infarcts in this watershed territory. There are also EEG changes associated with the hypoperfusion. Certainly the most parsimonious explanation of this woman's problems is that she has basilar migraine associated with bilateral occipital infarcts, and these infarcts associated with hypoperfusion triggered a tonic-clonic seizure.

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