Deep Brain Stimulation: Brain Pacemakers

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The human brain is one of the most crucial elements to the body. It controls important life functions such as movement, thought, and speech. Sometimes, certain disorders do not allow for the brain to function properly, which disrupts everyday activities. For example, if a person suffers from Epilepsy, they may have seizures which arise from disorderly impulses in the brain.

Deep brain stimulation (DBS) is a surgical treatment involving the placement of brain pacemaker into the brain. DBS sends electrical impulses to various places in the brain where abnormal activity may have been occurring. Therefore, DBS can help many disorders such as epilepsy, Parkinson's disease, Tourette syndrome, and dystonia by controlling the tremors in the brain.

The brain pacemaker involved in DBS has three main components. The implanted pulse generator is the actual battery of the system. It is generally placed near the clavicle. The extension is what connects the generator to the leads in the brain. The extension runs from the generator, behind the ear, and to the leads in various lobes of the brain. The leads deliver the actual impulse to the parts of the brain in need. There can be a number of leads depending on the patient's needs.

DBS can also be used to treat certain affective disorders such as depression and chronic pain. However, there is no actual evidence that DBS actually works for disorders such as depression. At the time being, there is only speculation through studies of patients that this technique works. It is not sure that DBS is an effective treatment for all depressed patients. For example, one study revealed that four out of six patients suffering from depression reported that they felt less of a burden on their lives and were more alert when the DBS was taking place. However, could this simply be due to the placebo effect? Could these patients simply feel these new feelings because they deeply want the treatment to work? These are the types of questions that cannot be answered thus far in the research process of DBS.

Aside from the ambiguity of the DBS process, there are also a number of side effects. During the surgery, the electrodes may be displaced because the brain tends to shift a lot. This causes the electrodes to exist in unnecessary places which may even cause personality change sin the patient. Also, after surgery there is risk for hallucinations, apathy, and even increased gambling.

To conclude, there is still a lot of research to be done with the deep brain stimulation process. However, if it proves to some day be successful, there is a lot of hope for the many people suffering from certain disorders.

Resources

- "Brain Pacemaker at AllExperts." *Expert Archive Questions*. Web. 25 Apr. 2010. <http://en.allexperts.com/e/b/br/brain_pacemaker.htm>.

- "Deep Brain Stimulation." *Wikipedia, the Free Encyclopedia*. Web. 25 Apr. 2010. <http://en.wikipedia.org/wiki/Deep_brain_stimulation>.

- Stein, Rob. "The Potential of 'Brain Pacemakers'" *Washington Post* (2004). Print.