Nervous system, parkinsons disease.

The central nervous system consists of two parts, the brain and the spinal cord. The central nervous system sends impulses throughout the body and coordinates the activity of all body parts. It contains of millions of nerve cells, axons, and dendrites. Nerve cells are cells in the nervous system that transfer electrochemical signaling, The axons are the primary transmission lines of the nervous system.

Secondary System:

The circulatory systems function is to send oxygen enriched blood, throughout the body, and to help stabilize body temperature and photo maintain homeostasis. Our Brain receives 20% of the blood circulated in the body, so you can understand how detrimental it can be when the circulatory system isn't functioning properly and poor circulation occurs in the brain. With a small drop in circulation, dizziness and headaches is common, as well as loss of memory, lethargy, and lack of mental clarity. The Poor circulation can be caused by something as simple as cholesterol build up in arteries, or may be a bigger issue. In order for the brain and entire nervous system to be working properly and efficiently, the circulatory system also needs to be as well. Even when too much blood is one area, it affects the nerves, take for example when your foot becomes numb, falls asleep, or you feel " pins and needles", the change in circulation in that area temporarily damages the nerves causing them to function incorrectly. That's just in the nerves in the foot, imagine what happens when the blood circulation in the brain fluctuate.

Drug Treatments:

There are two different types of drugs used to treat Parkinson’s disease. One being a dopamine drug called Ledovopa, and another an antichilinergics drug. That drug is used to restore the natural chemical balance of the brain by diminishing the overproduction of acetylcholine (the cause of the Parkinson’s symptoms, which is over produced due to the lack of production of dopamine), a neurotransmitter.

How does dopamine Conduct nerve cells??

Electrical impulses that pass along the axon of the nerve cell to reach the synaptic knob. When this happens dopamine is released. The dopamine passes along the synapse (the gap) to the nerve cell receptors in the next cell. This cycle repeats to other nerve cells.

The drug treatment works not to stop brain cell degeneration but rather to minimize the effects of that cell degeneration. By increasing Dopamine levels and “ inactivating” some of the acetylcholine.

Nerve fibers that release dopamine are located in the Corpus striatum and link to the Substania nigra. This part of the brain I right above the spinal cord (a major part of the central nervous system). In Parkinson’s disease the basal ganglia cells produce less dopamine. The Levodopa drugs improve the tremors, ridgety, posture and slowness. However it is important to note that older patients are sometimes unable to continue this drug treatment because they cannot handle the larger doses of Levodopa that is needed to control symptoms.

Dopamine’s chemical structure is and it is a chemical compound in the brain. Its chemical structure in words is C8 H11 N O2. Carbon, hydrogen and nitrogen are all elements that are found throughout the body.

Research question

How can our knowledge of the nervous system and the production of dopamine in the brain develop treatment of Parkinson’s disease in a male patient of 65 in stage 2?

Hypothesis

Through further developing Deep brain stimulation, we believe that by injecting dopamine into the patient directly we can further eliminate the over production of acetylcholine which will stop the progression of Parkinson’s and get rid of the current symptoms.

Procedure

Parkinson’s disease is dealt with the central nervous system where one is unable to control the movements of the body due to the insufficient amount of dopamine cells produced in the brain. When diagnosed with the disease, symptoms that may appear are tremor, rigidity, stiffness, or slowness in body movement. Parkinson disease can be both chronic and progressive; can occur for a long period of time and symptoms can grow worse over time. The disease is to be found most popular in males above the age of 50. Based on our knowledge of the nervous system and the production of dopamine in the brain, we’ve concluded some ideas of treatments in a male patient of 65 with Parkinson disease in stage 2. By the male patient being 65 and in stage two,

he exhibits enough symptoms for us to see the effects Parkinson has in the patient, but still have the ability of the progression of the symptoms of other stages. In the disease there are 5 different stages. In stage one, one is to experience mild symptoms. They'll probably have the presence of tremors or shakings in one of the limbs. In stage two, the disease affects the side of the body as well as the limbs. It becomes harder for the patient to maintain balance, and it becomes difficult for them to complete physical tasks. For stage 3, the symptoms become more severe. For the patients it becomes a problem to stand and inability to walk straight. In stage 4, other then having severe symptoms, walking is limited and rigidity. Bradykinesia may appear, which is slowness in execution of movement. It becomes harder for them to continue daily life routines, and they become dependent on other to help them get around. In stage five the patient has no control what so ever over its body or any physical movement. It becomes reliant on others to walk him or herself, to hold on to someone or something while standing, and the patient usually requires a one on one nursing care. He or she is unable to live alone without the helps of others.

Treatment Options:

Through our research and our case study, it is clear our hypothesis is currently impossible. We now we cant inject Dopamine into the brain during the Deep Brain Stimulation procedure. However we as doctors have come up with short term and long term treatments. Our short term treatment for our patient is to immediately prescribe Ledovopa and an antichilinergics drug to slow down the over production of acetylcholine. This short term treatment will make our patient's symptoms of Parkinson's Disease less severe and

allow him to live life in a more independent way. When looking at our graph this drug treatment is quite effective in regulating the chemical balance in the brain. Our long term treatment for our patient is less of a treatment but rather a plan to continue research in the future. Parkinson’s Disease still does not have a cure. We hope as optimistic doctors that a cure will be developed within the next 10 years. Though our hypothesis of dopamine injection directly into the brain is currently impossible through further development and experimentation with the chemical markup of Dopamine we hope we can reverse Parkinson’s Disease. This reversal will not only prevent the symptoms from progressing but it would also reverse the symptoms that are already present.

Analysis:

The study: Coping with Advanced Parkinson’s Disease relates to our patient because it was a treatment of Parkinson’s in two steps. The first being a 400 mg drug treatment. And the second being LENS (low energy neurofeedback system). LENS like Deep Brain Stimulation is a procedure using radio waves these waves “ feed back the person’s own dominant frequency at an offset (variation of that dominant frequency” (Larson 416). LENS was developed by Dr. Len Ochs. Although they are different procedures they both deal with changing the frequencies of the patients brain in hopes of restoring chemical homeostasis and are surgical treatments to Parkinson’s. Though the case study is not exactly like our patient (this man is in a further stage and older) the approach that Richard Brown took (with two steps) follows our two treatment plans of an immediate drug treatment and a long term investment

into creating an ideal surgical procedure to “ cure” the disease, or at least create a reversal on the occurring symptoms.

Conclusion:

We conclude that as doctors we initially made a mistake. We originally hypothesized that we could inject the chemical neurotransmitter, dopamine directly into the brain during Deep Brain Stimulation Surgery. Through research and further knowledge n what the brain can and cannot accept we are now positive that hypothesis would not only harm the patient, but it would also not help cure Parkinson’s disease (or relieve the symptoms). The main thing as doctors that we learned through our research and analysis, is that the brain’s neurotransmitters, acetylcholine, dopamine, seotonin, endorphins, norepinephrine, GABA, and glutamate have a chemical balance that when deficient is the cause of many cureless diseases. These diseases such as Parkinson’s, Alzheimer’s, Multiple Sclerosis, and schizophrenia are all without a onetime procedure that will serve as a cure for the diseases. We think a reason that this is, is because the brain is an organ that cannot be transplanted, it is an organ that one single hit to it can shut the entire body down. Because of the brains direct connection to the spinal chord and its role in the central nervous system, how to “ fix” the brain is still an organ that the medical world has yet to concur. In further understanding the brain, doctors will uncover the secret to curing these inoperable diseases.