

ARTICLE: "The Role of Dopamine in Parkinson's Disease and Other Symptoms"

Dopamine is a very complex neurotransmitter of the brain which is a precursor of adrenaline (epinephrine). Dopamine is involved in the perception of pleasure, motivation, addiction, attention and even lust. It is easy to see how drugs like cocaine and heroin affect (increase) Dopamine levels and how this increases the heightened sense of pleasure or motivation and addiction in the brain.

However, today's article is not to discuss the role of dopamine in addiction but rather some of the unusual symptoms seen in Parkinson's disease. Parkinson's disease? You might wonder how pleasure and addiction have anything to do with this disorder which slows our movements, causes tremors, stiffness, decreased balance and causes havoc on a large percentage of the population. Parkinson's disease is directly related to Dopamine levels. One must first understand what Dopamine does to understand what a lack of Dopamine causes. Therefore, having at least a basic understanding of the neurotransmitter is important to understanding the movement disorder.

I look at Dopamine sort of like a teeter totter. Too much Dopamine and you have psychosis, hallucinations, schizophrenia and delusion. This can be accompanied by pleasure and addiction when in the context of illicit drugs such as cocaine and heroin. However, too little Dopamine can result in the movement disorders described in Parkinson's disease (PD). In my teeter totter example, too little Dopamine results in Parkinson's type movement disorders and too much Dopamine results in psychosis and addiction.

Treatment of Parkinson's disease requires that the levels of Dopamine be increased to decrease the bradykinesia (slow movement), rigidity, tremors, and loss of balance which occurs with Parkinson's disease. By raising Dopamine levels slightly, symptoms can be reduced and patient's quality of life can be markedly improved. There are drugs which increase the Dopamine in the patient's system. However, if one understands the role of Dopamine in the brain in other respects it is easy to see how a Parkinson's patient could also suffer from unusual symptoms. In fact, over 50% of Parkinson's patients suffer from Parkinson's disease psychosis (PD psychosis). This includes hallucinations, delusions and paranoia simply as a result of having the disease itself. Add on the effects of medication which increases Dopamine levels and the patient can have magnified levels of these really serious side effects. Hallucinations include seeing or hearing things that aren't real such as a small little man that runs around the house or a voice which speaks to the patient. Delusions are believing things that aren't true—others are stealing from you, being unfaithful to you or putting you in harms way. Paranoia is believing that people are talking about you or trying to access your money or other self-pursuitorial perceptions. People often hide these Dopamine related symptoms from their doctor or family because they actually believe the voices or are simply embarrassed about them.

In some cases, the medication is cause of the PD psychosis and balancing the medication can be beneficial in reducing the patient's psychotic symptoms. However, patients who have had Parkinson's for some time or are more elderly, have increased experiences of PD psychosis simply by having Parkinson's longer and suffering the symptoms of it for more time. P Therefore, it is difficult to determine whether or not the patient is suffering PD psychosis as a result of medication related changes or as a result of simply having the disease. The behavior of symptoms is often the only clue, ie when grandma started on her PD medication she started hallucinating or when grandma's dose was adjusted she began hearing voices. This is the clue that the medication has caused the symptoms. When the patient is simply having PD psychosis as a result of having Parkinson's disease, often no changes have been made.

My article is a simplification of what is actually happening in the brain, however, I find that understanding this on a basic level is useful for the patient and family and it usually makes good sense that too much Dopamine is not a good thing while too little Dopamine is also not a good thing and patients understand the difference.

As a practitioner of physical therapy for patients with Parkinson's disease I find that working with the physician and family is often equally important to the physical therapy that I provide for the rehabilitative process and I may be the only person that the patient confides in that they are having hallucinations. This is often extremely helpful for the doctor and family, not to mention the patient.

For more information on Parkinson's psychosis and the complications of Parkinson's disease, speak to your physician. For information on rehabilitation of Parkinson's disease, I would invite you to call the clinic for a no cost consultation for a Gary Sobol's Parkinson's Network rehabilitation program which we are implementing in the clinic.