DOPAMINE, AND ITS EFFECT ON THE HUMAN BRAIN

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Summary. In this article, we look at how dopamine acts on our body, and what positive and negative can be seen behind dopamine. Of course, such an important hormone deserves much more careful consideration. Dopamine is responsible for motivation in our body. But do not think that "this is why I am so lazy - dopamine is not enough," no you are lazy simply, because lazy or there is no need to strain. Dopamine is produced behind the "motivation," and not in front of it. Because there is no desire - then there is no dopamine. There is a desire - here is dopamine to help, just act. Yes, people are different, someone can naturally have an overpriced background of dopamine, impulsive people who 5 minutes ago decided to buy a mobile phone and are already calling the store, even if they do not need it. But the vast majority live stably and smoothly and strain, there is no need to try. The association of a lack of dopamine with Parkinson's disease was established by Gornikevich using a fairly simple color reaction. However, the role of dopamine as a neurotransmitter was revealed by another scientist - Arvid Karlsson (Nobel Prize in Physiology or Medicine for 2000). Before him, dopamine was considered only a precursor to noradrenaline, and not a signalling substance. It was in Karlsson's experiments with reserpine that a direct connection was established between the level of dopamine and motor functions. With the development of biochemistry and molecular biology, it became possible to study in more detail the functions of this neurotransmitter. From his role in coordinating movements to explaining the actions of some antipsychotics and psychostimulants. Also, many researchers consider metabolic disorders of this neurotransmitter as one of the causes of schizophrenia, i.e., there is a "dopamine theory of schizophrenia."

Keywords: Dopamine, brain, hormones, motivation.

Relevance: Dopamine is a neurotransmitter that "fuels" excitement and interest. This phenomenon can be seen by example: "I decided to wipe the mirrors in the car, I don't remember anything further, but I washed the whole car." Dopamine helps to go further in its interests and creates a sense of reward for fulfilling its goals. But there is a big trouble with dopamine - it will improve the mood, even lying on the couch and fantasizing what achievements are coming tomorrow, and therefore it can create the illusion of success. Nothing positive has happened yet, but the brain has already accepted the award.

How does dopamine work?
Dopamine is produced in the hippocampus and in the black substance of the brain. There are at least 5 dopamine receptors, each has its own function. D1, D2, D3, D4, D5, they are conditionally divided into 2 subgroups by the similarity of the structure, in the first D1 and D5, in the second D2, D3, D4.
D1 - the most common in the CNS. Along with D5, they participate in the expression of neurotrophic factors, that is, contribute to an increase in the number of nerve cells and participate in energy processes through the stimulation of adenylate cyclase, which cleaves ATP.

The group D2, D3, D4 is associated with the emotional and intellectual properties of dopamine. By the way, the increased activity of these receptors provokes the development of schizophrenia. Cocaine and Amphetamine seriously increase the production of dopamine, depleting its supplies and blocking its reuptake. The load on all dopamine receptors increases, therefore, the regular use of narcotic stimulants and stamps psychos one after another.

If you briefly generalize, then D1 and D5 give precisely energy/forces, and 2, 3 and 4 - emotions.

Deficiency and excess of dopamine.

A dopaminergic system is a whole matrix, although structurally similar to a tree. Dopamine is produced in certain parts of the brain, then it has several distribution paths across the brain, all the same as thick branches on a tree, each path branches/crushes further.

There may be such a situation that in one pathway dopamine becomes too much, in the other there is little, but these are deviations, and dopamine, without serious pharmacology, rises and decreases in all pathways approximately proportionally.

There are many ways, we will not score our heads, we will consider the main ones, and the first is nigrostriary, 80% of all dopamine moves in this way.

The lack of a neurotransmitter will mean a decrease in motor activity, a decrease in attention. Deep negative effects are shown when about 85% of receptors are depressed along the way. With normal nutrition, intellectual labor and sports, the likelihood of bad effects is extremely low.

Excess dopamine in the nigrostriar pathway - tremor, hyperactivity.

The 2nd and 3rd paths of the neurotransmitter movement: mesolimbic and mesocortical. They already regulate the level of motivation, pleasure and reward.

When there is little dopamine in this path - apathy, suicidal thoughts, nothing is wanted and nothing is needed, everything is meaningless. When there is a lot - everyone needs something from me, everyone is angry, fixated, addicted to something.

In medical practice, there is such a syndrome as obsessive-compulsive disorder. It correlates with temporal dopamine excess in the mesolimbic and mesocortical pathway.

Means neurosis of obsessive conditions. This disorder is present in 3% of people on a regular basis. If you see a person who puts things in a certain order from day to day or rubs dust 2 times a day and falls into hysteria, if something goes wrong, then he is a little crazy) This disease is determined in different ways, a person can be shadowed in childhood or in the years of youth, can go to physical places (bench, street, house), can to things/objects. And the line between normal habit and neurosis is thin. If, conditionally, I am used to having breakfast with fried eggs, but this morning they are not there and I can calmly eat something else, then this is normal if I run faster to the store - then neurosis. Another interesting point: with stress, excess dopamine is converted into noradrenaline and adrenaline.
Dopamine pros:
1. makes a person more determined and entrepreneurial
2. improves mood.
3. improves RAM
4. creates more energy.

Dopamine cons:
1. Unpredictability of behavior
2. Regular change of desires, I want everything at once.

Dopamine-enhancing supplements:
1. Bromkriptin
2. Ladasten
3. Fenotropil
4. Tyrosine
5. L-Dopa
6. Kabergolin

Dopamine-lowering supplements:
1. Neuroleptics
2. Haloperidol
3. Aminazine
4. Acetylcholine (excess)
5. GABA (excess)

To date, only the genes of our parents lay down the genetic level of dopamine. In the vast majority of situations, the dopamine level is within the reference values. It is different for everyone, and even determines the type of character. Therefore, we understand in advance that most likely you have this neurotransmitter normal.

Perhaps soon a person will be able to choose his own natural amount of dopamine through changes in the genetic code, with mice this is already possible. Time will tell if it’s bad or good.

Conclusion:
1. Dopamine or Dopamine is an important neurotransmitter and hormone, often its level is responsible not only for intellectual abilities, but also for success, in general, in life. It is important not to receive false positive emotions associated with dopamine, that is, it is more useful to do what improves a person in the long run, and not to deceive his brain by playing some game on a phone.
2. Dopamine is the main active ingredient when taking stimulating drugs.
3. Like any substance, it has pros and cons, we try to neutralize cons.

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