

“All human body systems and organs disorders as a function of herpesviruses HSV latency and apoptosis survival strategy, in the example nervous system, brain electric disorder – epilepsy, a new approach.” Author: Piotr Chuptyś

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Herpes HSV latency causes epilepsy and much more.

Lack of “beauty” is deadly dangerous.

All human body systems and organs disorders as a function of herpesviruses HSV latency and apoptosis survival strategy , in the example nervous system, brain electric disorder – epilepsy , a new approach.

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“If you have Herpesvirus in You than this paper is about You.”

DOI: 10.5281/zenodo.3473945

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Translated from polish into english with google translator participation.

Poland, Dębica, July-August 2019

1. Information - Viruses.

„**Viruses** (Latin: virus 'poison, venom') - complex organic molecules with no cellular structure, made of proteins and nucleic acids. They contain genetic material in the form of RNA (RNA viruses) or DNA (DNA viruses), but show both the characteristics of cellular living organisms and inanimate matter. According to André Lwoff's definition, a virus is an infectious, potentially pathogenic nucleoprotein that exists only in the form of one nucleic acid, reproducing genetic material, unable to divide outside the cell. Viruses are not able to reproduce themselves. To replicate their own genes, they carry out the multiplication process using a copying apparatus contained in living cells. They can infect all types of organisms, from animals and plants to bacteria and archaea. Despite the still unknown in detail mechanisms of viral infections at the organism level, with the current state of knowledge, two main types of infection can be distinguished, based on the place of occurrence of the virus: local infections - viruses occur in a specific organ or tissue and do not spread to the whole organism and generalized infections - especially applies to feverish diseases. The most important target organs are skin, liver, lungs, nervous system and kidneys. Treatment of a viral infection is difficult because viruses do not have their own metabolism that could be blocked, as is done with antibiotics for bacteria. Most methods involve limiting the further development of infection, which converts the viral disease into a chronic disease. The situation is complicated by the fact that viral infections can be accompanied by bacterial infections. Infections may recur (virus latency) or show up after a very long time. Many viral diseases are still incurable. In addition, oncogenic viruses are associated with the development of cancer. A given type of virus contains only one type of nucleic acid (DNA or RNA), although during the development inside the cell usually a second type of acid is synthesized. Because of cellular parasitism, viruses have proteins on their surface that allow them to attack the right cells. Outside the cell, they do not show any metabolism, are not able to grow or reproduce. The multiplication of viruses depends on the type of nucleic acid that is in the virion.” [1] quotation; *Wikipedia polish and english language*, CC BY-SA 3.0

„**A virus containing dsDNA** is a virus that after entering the cell first begins to produce the so-called "Early mRNA" on the DNA matrix derived from virion. Usually, one of the genes contained in the viral genome and read by early mRNA is DNA-dependent DNA polymerase, which amplifies viral DNA. Only from such amplified DNA molecules is the production of "late mRNA" encoding capsomers and other proteins involved in virion assembly.” [2] quotation; *Wikipedia polish and english language*, CC BY-SA 3.0

„**Herpes** is a large family of DNA viruses that cause infections and certain diseases in animals, including humans. Members of this family are also known as herpesviruses. The family name comes from the Greek word herpein ("crawl"), referring to the spread of skin lesions, usually including blisters, visible in symptoms of herpes simplex 1, herpes simplex 2 and herpes zoster (shingles). In 1971, the International Committee on Virus Taxonomy (ICTV) established Herpesvirus as a genus with 23 viruses in four groups. Latent, recurrent infections are typical for this group of viruses, although the maiden name does not refer to delay. Herpes can cause latent or lytic infections. At least five Herpesviridae species - HSV-1 and HSV-2 (both can cause oral herpes and genital herpes), varicella and shingles virus (cause of varicella and herpes zoster), Epstein-Barr virus (associated with several diseases, including mononucleosis and

some cancers) and cytomegalovirus - are extremely common in humans. Over 90% of adults have been infected with at least one of them, and the latent form of the virus remains in almost all people. It is known that nine types of herpes virus infect people: herpes simplex viruses 1 and 2 (HSV-1 and HSV-2, also known as HHV1 and HHV2), varicella and shingles virus (VZV, which can also be called its name ICTV, HHV -3), Epstein-Barr virus (EBV or HHV-4), human cytomegalovirus (HCMV or HHV-5), human herpesvirus 6A and 6B (HHV-6A and HHV-6B), human herpesvirus 7 (HHV-7) , and herpesvirus associated with Kaposi's sarcoma (KSHV, also known as HHV-8). In total, over 130 herpesviruses are known, some of which come from mammals, birds, fish, reptiles, amphibians and molluscs. Herpesviruses are known for their ability to cause infection throughout their lives. One way is to avoid the immune system. Herpes has many different ways to avoid the immune system. „[3] quotation; *Wikipedia polish and english language*, CC BY-SA 3.0

„**Herpes simplex virus 1 and 2 (HSV-1 and HSV-2)**, also known as taxonomic names Human alpha-herpesvirus 1 and Human alpha-herpesvirus 2, are two members of the human family Herpesviridae, a set of viruses that mostly cause human viral infections . The natural host of HSV is human, but in vitro they can also multiply in other animal cells. The source of infection is only people, both with herpes eruptions and those with asymptomatic infection. It can spread through direct contact, it can also pass from mother to fetus or newborn (perinatal infection). The first way of spreading is most important: in most cases, infection occurs up to 2 years after birth or during delivery. The herpes virus can survive in the nerve cells of the infected organism (so-called virus latency).” [4] quotation; *Wikipedia polish and english language*, CC BY-SA 3.0

„A common feature of herpesviruses is latency, which can be defined as the absence of infectious viral particles in the host cell while being able to produce them under favorable conditions. During latency, the entire viral genome is in the cell and its expression is very limited. Two conditions must be met for a given infection to be classified as a latent infection. The infection must be persistent, i.e. maintained despite the response from the host's immune system, as well as in the face of other adverse signals in the cell's environment. This must be a reversible infection, so under certain circumstances the virus reactivates, i.e. the viral genes are fully expressed with the simultaneous production of daughter virions, which is referred to as productive infection. Latency is a cell-specific phenomenon, which means that the virus only causes latent infection in specific cells. The division of herpesviruses into subfamilies reflects their tropism to different types of host cells: alpha-herpesviruses establish latent infection mainly in neurons, beta-herpesviruses - in hematopoietic cell subpopulations, whereas the lymphocyte site of latency is gamma-herpesviruses (Table 1).” [5] quotation; Dariusz Miszczak, Anna Słońska, Anna Golke, Joanna Cymerys „Strategie przetrwania herpeswirusów-latencja i apoptoza. 2013, CC Open Access phmd.pl

„Table 1. Replication target cells and cells latently infected by herpesviruses.”

Subfamily	Virus	Replication Target Cells	Latent infected cells
Alphaherpesvirinae	HSV-1	epithelial and keratinocytes	neurons
	HSV-2	epithelial and keratinocytes	neurons
	VZV	epithelial, endothelial, Langerhans, keratinocytes, T lymphocytes, sebocytes, monocytes, peripheral blood mononuclear cells	neurons
	BHV-1	epithelial	neurons
	EHV-1	epithelial, leukocytes	leukocytes, neurons
Betaherpesvirinae	PRV	epithelial	neurons
	HCMV	macrophages, dendritic cells, epithelial cells, smooth muscle cells, endothelial cells and fibroblasts	CD34 bone marrow cells + monocytes
	HHV-6	lymphocytes T	bone marrow progenitor cells
	HHV-7	lymphocytes T	lymphocytes T
	Gammaherpesvirinae	EBV	lymphocytes B i epithelial cells
HHV-8		lymphocytes	lymphocytes B

[6] source of the table; Dariusz Mischczak, Anna Słońska, Anna Golke, Joanna Cymerys „Strategie przetrwania herpeswirusów- latencja i apoptoza. 2013, CC Open Access phmd.pl

„One of the defense mechanisms directed against intracellular pathogens is programmed cell death, i.e. apoptosis. During apoptosis, proteins and nucleic acids of both the cell and the virus that invade it are degraded. In this way, the death of the infected cell prevents the spread of infection. It is in the "interest" of viruses to prevent the destruction of cells that are the place of their replication. Moreover, in the case of herpesvirus, whose main strategy of survival in the environment is the ability to determine latent infection, the possibility of blocking cell death by acting on apoptotic pathways plays a major role.” [7] quotation; Dariusz Mischczak, Anna Słońska, Anna Golke, Joanna Cymerys „Strategie przetrwania herpeswirusów- latencja i apoptoza. 2013, CC Open Access phmd.pl

„In the process of apoptosis, the following stages can be distinguished - the initiator (excitation) phase, during which cells receive signals that can lead to the activation of PCD pathways, the executive phase including signal transduction to the system of direct death contractors and associated with the activation of proteases and their regulators, as well as a destruction phase during which active proteases destroy cellular structures, both directly and indirectly, by activating other enzymes. In this phase, DNA fragmentation, destruction of the cytoskeleton, formation of apoptotic bodies and their phagocytosis by surrounding, intact cells of the tissue or organ occur.” [8] quotation; Dariusz Mischczak, Anna Słońska, Anna Golke, Joanna Cymerys „Strategie przetrwania herpeswirusów- latencja i apoptoza. 2013, CC Open Access phmd.pl

„During evolution, viruses developed mechanisms of interfering with the pathways of apoptosis in order to adapt the cell's life and death to its own needs. On the one hand, viruses

block apoptosis, preventing premature cell death, since their replication is completely dependent on it. On the other hand, some viruses have the ability to induce apoptosis, so that they can more easily spread to neighboring cells without causing an inflammatory response. They can also interfere with apoptosis pathways at various stages of their course. Viral gene products can affect cell signaling, interferon-induced apoptosis, and can also be Bcl-2 protein homologs, caspase inhibitors, cell cycle manipulators, oxidative stress regulators, protein kinases, transcription factors and factors acting on the endoplasmic reticulum to be able to multiply effectively in the cell. [9] quotation; Dariusz Miszczak, Anna Słońska, Anna Golke, Joanna Cymerys „Strategie przetrwania herpeswirusów-latencja i apoptoza. 2013, CC Open Access phmd.pl

„Activation of the virus can occur under the influence of external factors (stress, cold, menstruation, weakness of the body, etc.), less often spontaneously. The virus is mainly the cause of inflammatory changes at the border of the skin and mucosa (around the lips and genitals), and more rarely conjunctivitis, keratitis or herpetic encephalitis. Herpes simplex viruses are also probably associated with cervical cancer, but it is not a direct, independent etiological factor (mainly HHV-2). HSV-1 infection is a strong risk factor in the development of Alzheimer's disease. As already mentioned, HHV-1 and HHV-2 are difficult to distinguish, although this is not impossible. However, it turns out that this is mainly relevant in epidemiological studies, because the treatment of diseases caused by both species is the same, and the clinical symptoms of the disease are usually very characteristic and easy to recognize. In the laboratory, HHV-1 and HHV-2 can be identified by serological reactions, e.g. complement fixation, specific methods using monoclonal antibodies are used, e.g. ELISA and immunofluorescence methods.” [10] quotation; *Wikipedia polish and english language, CC BY-SA 3.0*

2. Information - Nervous system.

„**The nervous system** (Latin: systema nervosum) - a set of specialized cells that remain in complex functional and structural relationships with each other, responsible for controlling the body's activity. The nervous system is able to detect specific changes occurring in the environment and thus trigger an appropriate response of the body.” [11] quotation; *Wikipedia polish and english language, CC BY-SA 3.0*

„**Nerve cells** are characterized by the ability to produce, pass on to other cells, and receive specific signals from other cells, as well as the ability to transform this signal when it is transmitted from cell to cell. This signal is electrochemical. Certain types of nerve cells are able to produce this signal due to external influences, such as mechanical deformation of the nerve cell, or the action of electromagnetic radiation in the visible light. Other nerve cells are able to give such a signal to muscle cells for which it is an impulse that controls muscle contraction and relaxation. Thus, a certain type of nerve cell, or a group of such cells, is able to register the interacting stimulus, on this basis generate a signal that when sent to specific muscle cells causes contraction and relaxation of specific muscles, and thus causes a motor response in response to the acting stimulus. For such a reaction to be possible, nerve cells must structurally and functionally connect this place of the body affected by the stimulus to the place of the body that performs the reaction. Therefore, the nerve cells that make up the nervous system are not arbitrarily distributed, but they form specific circuits or networks of

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interconnected cells that send signals within them from the origin to the destination. Nerve cells work closely with glial cells, which play helper roles, including take part in the nutrition of nerve cells, synthesize certain chemicals, and then pass them on to nerve cells." [12] quotation; *Wikipedia polish and english language, CC BY-SA 3.0*

„The importance and complexity of the structure of the nervous system increases with the degree of evolutionary development of organisms. First of all, with the evolutionary development, the complication of those parts of the nerve cell network that modulate the signals sent between the start and end points increases. As a result, more developed organisms are characterized by richer behavioral activity and greater freedom in shaping their reactions, going beyond the physiological stimulus-reaction automatism. But in addition to receiving stimuli from the external environment, modifying its own activity on this basis and controlling behavior, the nervous system also controls - in more developed organisms - the work of internal organs, external secretion glands (secreting e.g. sweat), and internal (secreting hormones) , regulates homeostasis, also creates phenomena such as sleep and emotions. In vertebrates, which also include man, the nervous system forms a focused, central central system (in the form of the spinal cord and brain), and a looser, diffuse peripheral system, ensuring nerve connections between the central system and the rest of the body." [13] quotation; *Wikipedia polish and english language, CC BY-SA 3.0*

„**Electroencephalography (EEG)** - a non-invasive diagnostic method for testing bioelectrical brain function with an electroencephalograph. The test consists in placing the electrodes on the skin surface, which register changes in the electric potential on the skin surface, resulting from the activity of neurons of the cerebral cortex, and after their appropriate strengthening create a record from them - an electroencephalogram. EEG tests are performed for monitoring and diagnosis in the following situations: epilepsy , sleep disorders, coma and death of the brain, organic brain diseases, poisoning with neurotoxic substances." [14] quotation; *Wikipedia polish and english language, CC BY-SA 3.0*

„**Epilepsy** - a group of chronic neurological disorders characterized by epileptic seizures. Seizure is an expression of transient brain dysfunction, consisting of excessive and rapid, spontaneous bioelectrical discharges in nerve cells. Seizures are episodes of varying severity, from short and almost unnoticeable to long, severe shocks. Seizures recur and do not have a direct cause, while seizures arising from a specific cause do not have to be associated with this disease." [15] quotation; *Wikipedia polish and english language, CC BY-SA 3.0*

„In most cases, the cause of the disease is unknown, with many people developing epilepsy, including due to brain injury, stroke, brain tumor, as well as drug use and alcohol abuse. Seizures are the result of excessive, incorrect activity of the nerve cells of the cerebral cortex. Diagnosis is usually based on the elimination of other diseases that may produce similar symptoms (e.g. syncope) and checking for the immediate causes of these symptoms. The diagnosis of epilepsy is usually confirmed by an electroencephalogram (EEG)." [16] quotation; *Wikipedia polish and english language, CC BY-SA 3.0*

„Epilepsy is incurable, but in almost 70% of cases its attacks can be controlled with medication. In cases of no response to medication, surgery, neurostimulation, or diet changes can be considered. Epilepsy is not always a lifelong disease, and many people get so much better that taking medication becomes unnecessary." [17] quotation; *Wikipedia polish and english language, CC BY-SA 3.0*

„About 1% of people worldwide (65 million) suffer from epilepsy, with almost 80% of them living in developing countries. The number of cases increases with age. In developed countries, new cases of epilepsy are mainly reported in infants and the elderly; in developing countries, however, in older children and young people. This is due to a difference in the causes of the disease. About 5-10% of all people experience an unprovoked seizure before the age of 80, and the likelihood of a second seizure is 40 to 50%. "[18] quotation; *Wikipedia polish and english language*, CC BY-SA 3.0

„Epilepsy has a long-term risk of recurrent seizures. These seizures can have different types, depending on which part of the brain is involved and the age of the patient. Seizures are the most common type (60%) of seizures. Two-thirds of them begin as focal seizures (which can then become generalized), while a third initially appears as generalized seizures. The remaining 40% are seizures, examples of which are seizures involving a temporary loss of consciousness, the seizure lasts about 10 seconds. "[19] quotation; *Wikipedia polish and english language*, CC BY-SA 3.0

„Focal seizures are usually preceded by an aura, i.e. symptoms that herald seizure. These may be sensory (visual, auditory and olfactory), mental, autonomic or motor disorders. Convulsions can begin in one muscle group and spread to other, adjacent groups, this condition is called a Jackson seizure. There may be automatisms, i.e. automatic actions without conscious thinking. They usually involve simple, repetitive movements (munching, etc.) or more complex (an example is an attempt to lift an object). Epilepsy is not a single disease, but a symptom of various disorders. By definition, seizures occur suddenly and do not have a specific cause, such as an acute illness. The causes of epilepsy may be related to genetic or structural background and metabolic disorders, but in 60% of cases the cause is unknown." [20] quotation; *Wikipedia polish and english language*, CC BY-SA 3.0

„Treatment of epilepsy involves the administration of anticonvulsants, often throughout the patient's life. The choice of anticonvulsant medicine depends on the type of seizure, epileptic syndrome, other medications used, other health problems, the patient's age and lifestyle. The use of a single drug is initially recommended. Adverse reactions have been reported in 10% to 90% of patients depending on the method and source of the data obtained. Most side effects are dose-related and are mild, for example mood swings, drowsiness or unsteady gait. Some medications cause unwanted non-dose related side effects (e.g. rash), liver toxicity or bone marrow depression. Slow discontinuation may be justified in some patients who have not had seizures for two to four years. However, relapses occur in a third of patients, most often during the first six months. Discontinuation of the drug is possible in about 70% of children and 60% of adults. Epilepsy is not curable, however, by taking the drug you can get effective control of seizures in approximately 70% of patients. Among generalized seizure cases, over 80% can be well controlled with medication, with only 50% for focal seizures. One indicator of long-term results is the number of seizures occurring in the first six months. Other factors that increase unfavorable prognosis include poor response to initial treatment, generalized seizures, family history of epilepsy, psychiatric disorders, and EEG recording indicative of generalized epileptic activity. Epilepsy is one of the most common serious neurological disorders that affects around 65 million people worldwide. 1% of the 20-year-old population and 3% of the 75-year-old population suffer from it. Stigma often affects epilepsy worldwide. It can have a negative financial, social, and cultural impact. Predictive seizure includes attempts to predict epileptic seizure before it occurs based on EEG. As of

2011, there is no effective mechanism to predict seizures." [21] quotation; *Wikipedia polish and english language, CC BY-SA 3.0*

3. Case.

Child 6 years, weight 21 kg. Up to the age of 2 the child was developing properly, while from the age of 2-3 speech problems were diagnosed in such a way that the child used a very limited number of nouns and sound-imitative words (type: bum, yum, siii), did not use verbs and did not build correct sentences and had increasing difficulty in communicating with the peers. Despite its differences, it was still accepted by the family, in kindergarten and by friends. Up to the age of 5, parents sought the advice of family doctors, specialists doctors, the child participated in classes with a speech therapist, the search also covered other specialists, rehabilitators, psychologists. Generally, parents came across the opinion that they should wait and not worry up to 5 years, because everything can improve naturally. After the holidays, when the child turned 5 years old, the psychological and pedagogical counseling center was asked for the second time. Parents obtained information about the need to consult a child neurologist. The child lives in a small town, hence the difficulty in accessing a specialist. As a result of a lucky coincidence, the circumstance managed to get very quickly to a high-class specialist who, before diagnosis, ordered EEG tests in sleep. The tests were carried out in a well-known facility, but the study had to be stopped, because during the process of falling asleep and waking up the child electrical disorders appeared, suggesting that the test with light stimulation may be inadvisable. The parents associated the fact that the child can use few new words during the day, which it learned, but the next day could not, recall or associate the same words. The moment of occurrence of disturbances during the day and "forgetting" of the words indicated that the words from temporary memory acquired during wakefulness did not go to permanent memory, or were not recorded permanently during sleep. Interestingly, there is possibility to accurately identify the location of this electrical disorder by recordings of EEG. Up to the age of 5, the child was developing properly in many other areas than speech, in social terms it was limited in meeting new children and as a result of lack of communication, it closed in itself. The doctor diagnosed the child as a person with epileptic speech aphasia of unknown origin. Neither the disorder had any explanation nor the fact that the child had been developing properly for some time. The literature available to parents did not allow to draw other conclusions. The child received symptomatic treatment in the form of valproic acid (popular Depakin) at a dose of 200 mg in the morning and evening, hoping that the disorder and symptoms will disappear with time. Throughout the entire 7 months, the child had an additional 5 days a week, 20-30 minutes classes with a speech therapist, and had pre-school and out-of-school contact with peers. Despite the disability certificate and the special education support in the form of individual speech therapy exercises, additional extracurricular development activities such as art, progress in teaching the child was very small. The child began using only a few new nouns.

One day the "sudden" change came unexpectedly after the end of the preschool year and at the beginning of the summer holidays. A child who did not use verbs could say that "it does not like crowd". For parents of a child that does not use verbs, the correct use of an uncountable noun from the "advanced, i.e. difficult to explain-count" category was a big surprise. It turned out that in the middle of June 2019 the child had a rash that was diagnosed by the doctor as erythema, a viral infection that is not treated, anyone just need to stand. The end of pre-school year was characterized by many cases of erythema. The child's father, knowing that inosine paranobex is a popular publicly available antiviral drug, began to administer it at the dose indicated by the manufacturer, adequate to the weight of the child. The goal was to reduce symptoms and accelerate recovery. Surprisingly, after a period of about 5 days, it turned out that the child began to learn more words. Dad bought the medicine in a dose 2 times stronger, "forte". He converted dose and the child started receiving it immediately. Progress was proper but after about 2 weeks, there was a regression in the child's ability to learn new words. Dad concluded that he was mistaken in associating parosobex inosine and the child's progress in learning new words. Unexpectedly in the evening, it turned out that the child began to receive by mistake a dose 4 times smaller than that indicated as a therapeutic dose. After the correct dosage was restored, the ability to absorb new words returned. This drug is authorized without a prescription, is widely regarded as an antiviral drug, its dosage is known and no information about its possible side effects with Depakin can be found in the available literature. The dosage of valproate was not changed. The child began to receive both drugs simultaneously, Depakine at a dose of 200 mg (288.2 mg / ml of active substance) and Inozyne paranobex 4ml (Neosine forte active substance 500mg / 5 ml). The number of words used and their understanding began to increase, and the use of verbs appeared. It was not a "rapid" change in the type of super ability, only the child began to study at a "normal" pace. There were also changes in the child's behavior, i.e. the child began to sing, started cycling, bravely dived in the pool and became more confident. In the post-holiday period, the child returned to kindergarten, where, compared to the period of 3 months earlier, it began to learn new vocabulary quickly and give surprising speeches. It is extremely important and necessary to perform additional work to try to align the level of vocabulary of a child with peers before taking up compulsory education, which will positively affect its development and reduce the differences resulting from a 2-3 year delay and will not allow the exclusion of the child from the group of peers. At the beginning of October 2019, the child was admitted to the hospital with skin patches that after an hour disappeared, after the administration of anti-allergic drugs but due to caution the doctors hospitalized the child. The blood test did not reveal any significant deviations, and the occurring ones indicated the viral nature of the disorder. After informing the doctor about the observations, treatment and possibly all circumstances, the case was ordered for a test for Herpes Simplex HSV-1/2 IgG and IgM virus. The IgG result was within the negative result, indicating that the child had already passed such a virus and IgM as positive. [22] Piotr Chuptyś, CC BY-NC-ND 4.0 int.

4. Synthesis – conclusions.

The quoted knowledge of Herpes-type viruses and epileptic disorders is complementary and combined. To date, viruses of the HSV type 1 and 2, one can get the impression that they are widely treated indulgently as viruses mainly harming beauty - herpes. **The general knowledge cited above and the example indicate that disorders and dysfunctions in the work of organs and systems of the human body are caused by viruses of the Herpes group, which through their latent form disturb electrically the work of the nervous system in a way that is recognized as symptomatic and asymptomatic epileptic disorder, which results in a lack of proper control by brain over elements of the human body organs and systems or disorders its functionality in action.** Many health disorders result in symptoms typical of neurological diseases, but in light of the above findings, any disease can be caused by the revealed mechanism. Hints should also be sought in the body's response to current treatment, and previously classified as side or side effects. **This mechanism also explains the ineffectiveness in the treatment of chronic health disorders .** In the case of speech disorders, brain dysfunction in itself causes a typical brain disorder, hence the "greater" ease of observation [22] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*

Observation allows us to conclude that the example reveals a mechanism which effects go far beyond the example itself. The difficulty of making this observation is due to the fact that commonly the treating person has short contact with the patient, and the changes themselves are stretched in time and it is difficult to identify the source of the changes. The very way the virus survives makes its observation "almost" impossible to carry out because the hiding function is just that. If the researcher-observer could notice the spore-like form of the virus, then the body would certainly be able to, meaning "masking" would not be effective. In the example, the restoration of part of the memory functionality can only be seen in the long term, because the restoration of this functionality does not cause "super power" or extraordinary abilities in a person, it only restores normal functionality and normal ability to remember words. In the impact assessment, it is safe to say that this is not viagra and therefore the effects are significantly delayed. If the child acquired the disorder at the age of 3, regaining the ability to learn at the age of 6, has a break of 3 years to catch up-rehabilitation, having "restored" skills and continues to learn at a normal pace. Undoubtedly, there is also a delayed effect of regeneration of a part of the disturbed organism, which does not occur immediately. [22] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*

In particular, it should be noted that disorders with epileptic-type symptoms have known sources as mechanical damage - including physical (including brain tumor, stroke), genetic and a large group of unknown causes. It should be noted that the above mechanism is included in the unknown group and due to the prevalence of Herpes viruses it may constitute a significant part of it. It can be stated that every person who has been infected with the Herpes virus has their hidden "somewhere" nervous system. Some are more fortunate and others less fortunate when it comes to its locations and effects. [22] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*

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It is extremely important that the treatment against virus latency should be performed under the supervision of a specialist doctor, because, as can be inferred from the example; the more effectively we remove the virus, the more likely it is to spill into the nervous system. Such spillage may be rapid due to the fact that, as he indicates again; the spread of the virus affects the nervous system, including the brain, where symptoms can be as violent as unpredictable. [22] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*

At the present state of knowledge, permanent full recovery does not seem possible, if only because of the reproduction method and the prevalence of Herpes viruses. At this point, it should be realized that, assuming that it was possible to fully cure any case in 100%, after a "kiss" of a person it seems that a healthy person will be reinfected. However, you cannot fail to receive treatment despite the fact that it may be chronic. The healing process itself brings and exceeds the expected results. One of the keys in the future is to achieve permanent immunity. [22] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*

The disclosed mechanism will undoubtedly have an impact on the study and discovery of the specific functions of individual parts of the brain, because the latent form causes electrical disturbance of specific areas, and observation of EEG and other forms of brain imaging will undoubtedly reveal new unknown functions of specific parts of the brain. [22] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*

Here, when referring to electronics and computer science, pay attention to the literature on the subject and vocabulary. Because to understand the mechanism you need to introduce "virtual" concepts such as signal source, conductive link and "receiver" of the signal. A virus latency disorder can affect any of these elements due to similarity in construction. It should be noted that the control (correct signal) disturbance may also have several forms, i.e. no signal, or "illegible" signals disturbed for the organ or system, or distorted, i.e. the signal degrading the "link" and "receiver" of the organ or system. [22] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*

From a psychological point of view, treated people and caregivers must be aware of the medical risks and consequences of psychological changes, i.e. changes in behavior and directly in the patient's habits during the treatment process towards viral latency. [22] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*

It should be made clear at the end that the occurring disorders and their type are caused by the latent form of the Herpes virus, depending on the type of Herpes virus, where in the brain or other part of the nervous system the latent infection will focus and how extensive the source of the latent infection will be. Each specific place in the nervous system or brain has its function, so the latent disorder is not just brain disorders, but it can affect any part of the body. At this point, think of any organ or system of the human body or behavior because its control system is located in the brain and is controlled through the rest of the nervous system. Unfortunately, it may not be controlled caused by electrical disorders of the latent form of the Herpesvirus. [22] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*

It is possible that special attention to the above-mentioned mechanism should pay attention and consider specialists how; transplantologists, in particular in connection with the issue of rejecting or increasing the chances of successful transplants, oncologists in connection with

“All human body systems and organs disorders as a function of herpesviruses HSV latency and apoptosis survival strategy, in the example nervous system, brain electric disorder – epilepsy, a new approach.” Author: Piotr Chuptyś

the effects of permanent disorder in the lack of control over body elements and their effects in a long time, psychiatrists behavior disorders, geriatrics, where the effects of long-term disorders will be most noticeable . Actually everyone, for obvious reasons, will mention only; internists, cardiologists, allergists, dermatologists, gynecologists, rheumatologists, immunologists, ophthalmologists, pediatricians. It seems that the facts cited generally add an additional and important way of diagnostics in medicine, pointing to a common disorder and reveal its effects by reducing the area of unknown causes, in proportion to the prevalence of Herpes viruses. [23] *Piotr Chuptyś, CC BY-NC-ND 4.0 int.*