

## The Cause of Cancer from the Point of View of the New Theory of CVD

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**Received:** April 02, 2018; **Published:** April 10, 2018

Volume 2 Issue 1 April 2017

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### Introduction

This report discusses new data on the mechanism of cancer. In fact, these materials form the basis of the old cancer theory proclaimed by the German scientist Otto Warburg about 100 years ago. In 1931, the theory that cancer occurs as a result of an energy metabolism disorder won the Nobel Prize for Germany scientist. Back in 1924, Warburg found out that healthy cells generate energy due to the oxidative decomposition of organic acids in mitochondria, and tumor and cancer cells, on the contrary, receive energy through the non-oxidative decomposition of glucose. The transition to an oxygen-free energy method, according to Warburg, leads to the Autonomous uncontrolled existence of the cell: it begins to behave as an independent organism, striving for reproduction. On the basis of this discovery, scientist have suggested that cancer can be regarded as a mitochondrial disease. However, a clear and detailed biochemical justification of the theory for about 80 years was absent. Therefore, for many years, not all researchers have followed this theory, there were other opinions on the mechanism and etiology of cancer. And in 2008, staff members from Boston College and Washington University School of Medicine, USA, has received new evidence to support the theory of Otto Warburg on the origin of cancer [1-6]. So, biochemical justification appeared, but still, the official medicine in the last 10 years did not consider this theory clear and complete. The problem proved more complex. Oncologists, still, were not guided by this theory as the main and only.

No answer to the main questions.

1. What exactly is the primary?
2. What mechanism causes disorders of energy metabolism?
3. Why there is an increase in the acidity of the body in cancer-prone areas?
4. What is the role of the immune system?
5. What is the relationship between CVD and certain types of cancer?

### Results

In 2011-2018 years a group of physicists from Russia made the assumption [7-25], what is the cause and mechanism of many CVD and cancer? (We emphasize that the congenital pathologies of the cardiovascular system are not considered in this article). In diseases, arteriovenous anastomoses (AVA) actively participate. AVA should exist and open due to stress, prolonged anxiety, increase in arterial pressure. Open AVA can lead to slow or even stop the capillary circulation in some groups of cells of various organs. With hypodynamia, these slowing blood circulation can be long. The cause of the locks lies at the macro level. Observed changes at the micro level (disruption of

**Citation:** Vladimir Ermoshkin. "The Cause of Cancer from the Point of View of the New Theory of CVD". *Chronicle of Medicine and Surgery* 2.1 (2018): 88-93.

energy metabolism, increased acidity, biochemical micro processes, and hormonal regulation) are primarily a pathological consequence of macro-effects on the body, such as the impact of gravity and atmospheric pressure on the whole body, including the cardiovascular system. We emphasize that most often in the early stages of ischemia and hypoxia, it happens that not all organs one thing-temporarily and not all cells of organ lacks oxygen and nutrition, but only individual, scattered on the body, the most "remote" cells or groups of cells, where the pressure gradient between arterioles and venules is critically small due to high venous pressure.

Developing a New Theory of CVD, my research group showed that the presence of the large arteriovenous anastomoses (AVA) in the vascular system of the person and their not optimal functioning can lead to many diseases: arrhythmias, congestive heart failure, diabetes, capillary stasis, liver fibrosis, atherosclerosis, cancer, systemic inflammation, and other. This is why many CVDs and different types of cancer are in practice pairwise correlated.

The need to open AVA's, apparently caused due to the sharp lifts of systemic arterial pressure (AP) during times of stress, with the large physical or psychological loads. After a part of the blood flows into the veins, blood pressure decreases. The opening\closing of large AVA leads to a jumps in blood pressure, it is the syndrome of «Ermoshkin-Lukyanchenko» [8]. It can be assumed than a large AVA in a healthy person who is in a calm state should be tightly closed, because the energy of the heart pump should be used sparingly. Obviously, with prolonged open AVA, the myocardium performs additional useless work.

Due to the decrease in the volume of arterial blood, there is an imbalance in the volumes of arterial and venous blood in the direction of an increase in the volume of venous blood. Increased pressure in the venous system can lead to pulsations of the liver, to the overflow of the hollow veins and in the future to the pulsations of the column of venous blood in them. These pulsations during heart attacks can be observed on the cervical veins. Throbbing volume of venous blood exerts a mechanical effect on the right atrium, generates a mechanical wave traveling along the myocardium, which leads to mechanically induced arrhythmias, including paroxysmal atrial and ventricular tachycardias. The fluctuations of the column of venous blood correspond to the resonant frequencies of the cardiovascular system, therefore, the heart rate with tachycardia is quite stable, and the heart rate does not depend on the phase of respiratory movements. This type of myocardial arousal suggests that the sinus node for the period of a tachycardia attack is in a passive mode and is waiting for the first opportunity to take control of the triggering of cardiomyocyte excitation. In addition to the mechanical triggering of arrhythmia due to open AVA, there is an even more important supposed scientific discovery. After a while after the opening of the AVA lumen, pressure increases not only in the hollow veins, but also in some groups of small veins and venules. Thus, from the point of confluence of AVA to the veins, the overpressure spreads not only upwards through the hollow vein to the right atrium and cervical veins, but also downwards, spreading, as the venous valves become damaged, more down and more down, to the smallest veins.

There is evidence that AVA can exist between the mesenteric artery and portal vein [26]. At the initial stage of hemostasis there are edemas, while the biochemical and mechanical properties of venous blood change, it becomes dense and dirty in the stagnation zones, its fluidity decreases. But as a normal, physically inactive person lives, day by day, the pressure gradient between some arterioles and venules remains critically small, which leads to a lack of perfusion of individual organs, to microscopic blockages of capillary circulation, scattered across tissues, to ischemia, to abdominal obesity, to oxidative stress. In fact, in critical cases blood slowed movement or stopped throught arteriolas and throught venules. There are edema (swelling), because there are leakages of blood through the thin walls of blood vessels. This pathology may eventually lead to the micro thrombosis of small vessels, and then to thrombosis of larger vessels, mainly the veins.

In zones or micro-zones, where capillary circulation for a long time blocked open AVA, there is stagnation of fluids, acidosis, pH of interstitial fluid is reduced to critical levels, and it begins the cell death. In the conditions of lack of oxygen there are destructions and mutations of cells, there are cancer cells. Immune and neuromoral responses to this pathology are activated, and this condition can last for years. The problem, why the immune system at some point in life cannot perform the task of destroying all tumor cells, is the violation of perfusion of all liquids. Because of the interlocking of the arterial and venous blood caused by open AVA is a violation of the transportation of immune cells through the vascular system. To destroy the autonomously emerging cancer cells, it is necessary to find

these cells and to approach these cells. In fact, cells of the immune system and cancer cells should approach each other at a distance of interaction, i.e. "contact". It is in this, in the absence of a gradient of pressure for the movement of blood and lymph in some areas, is the inability of the immune system to destroy cancerous tumors.

In areas where capillary circulation is blocked for a long time by open AVA, there is stagnation of liquids, acidosis, pH of the intercellular fluid decreases to critical levels, cell necrosis begins. Immune and neuromoral responses to this pathology are activated, and this condition can last for years. Acidic medium is when  $\text{pH} < 6.9$ , it is a state of rotting and fermentation. Inadequate "work" AVA and a specific way of life determine those "acidified" human organs in which over time can occur malignant tumors. Apparently, this is the main mechanism of cancer. Recall that at  $\text{pH} < 6.9$  biochemists say about acidification, and at  $\text{pH} > 7.3-7.4$  talking about the alkalisation of the body.

Here is what some researchers from different countries say about acidic media.

1. Dr. George Creel, from Cleveland, one of the world's leading surgeons, openly States: "all deaths from disease are nothing but the end point of acid saturation of the body. Conversely, it is impossible to imagine the formation of cancer cells in the human body, cleanse the body from acids, eating foods that trigger alkaline and consuming adequate amounts of clean water and avoiding toxic products and products that cause the acid reaction. In General, cancer is not contagious and is not inherited... what is inherited - so it is eating habits, environment and way of life, with all its consequences."
2. Menken wrote: "the Struggle for life is the struggle against acid. Aging, lack of energy, bad mood and headaches, heart disease, allergies, eczema, urticaria, asthma, atherosclerosis is nothing more than the accumulation of acids."
3. Dr. Theodore A. Baroudi says in his book "Alkaline or die": "In fact, it does not matter the countless names of illnesses. It is important that all of them occur for one reason: the pollution of the body with acid."
4. Dr. Robert O. Young said: "An increase in the acidity of the body is the cause of all degenerative diseases. When the balance is disturbed and the body begins to produce and store more acids and toxic waste than it can process, he States this a variety of diseases."
5. American scientists Moffitt Cancer Center and the school of medicine of Wayne State University investigated the level of acidity in solid tumors to determine whether the pH level is important for the spread of cancer cells in the surrounding tissue. They found that the acid microenvironment was able to control the growth of cancer cells and suggested that an increase in pH would inhibit the further spread of the tumor, providing therapeutic opportunities to slow the progression of cancer.
6. The author of the study Dr. Robert J. Gillies said, "The Acidity in solid tumors is the result of increased enzymatic metabolism combined with poor delivery of blood to tissues. We have long observed in the microscope for experimental animals and found that tumor invasion does not occur in organs with normal or almost normal pH. Also, when we neutralized the acidity with sodium bicarbonate, the tumor spread was stopped."
7. Doctor, Professor Neumyvakin I. P. from Russia: "Acid-alkaline balance affects our health, our life, our longevity... From cancer need to be treated with the help of baking soda, hydrogen peroxide, calcium, silicon."

So, in the fight against cancer comes the "moment of truth": puzzle is fully formed. Most of the cause-and-effect relationships of the macro chain and micro clinical events began to manifest themselves. Of course, it is possible to deepen our knowledge in some biochemical, biophysical interactions and genetic features of diseases. These details are waiting to be explored in the future.

What else do we need to conjecture and prove the mechanism of occurrence of cancer in parts of the macro processes prior to the disease? Apparently, the New Theory range of evidence is finished: first, a stressful situations, a sharp increase in blood pressure, improper lifestyle, then because of the open and long closed AVA blocking of the capillary circulation in some organs, then a venous plethora, tissue edema, congestion with the lack of oxygen, heart failures, then an increase in acidity of tissue due to necrosis of certain groups of cells, loss of calcium and beginning of pathological biochemical processes and, finally, the emergence of cancer cells and tumors.

How to protect yourself, how to be treated? This is a separate and very important issue. Of course, the transition to alkaline foods and moderate alkalization of the body are beneficial. These activities are likely to inhibit the development of pathology, but completely

prevent and cure cancer will not provide. The best prevention is moderate exercise, swimming, proper nutrition, special breathing exercises, medicines that help to deliver oxygen to vulnerable organs, medicines against acidosis. The purpose of all procedures should be the same - the restoration of normal blood circulation in all organs, for all cells. «Treat» basically need anastomosis AVA, because open AVA lead to blockages of blood circulation, to necrosis, to an increase in acidity of fluids, to “malfunctions” of the immune system due to blockages of the movement of immune cells to the zones of the emergence of primary cancer cells!

Recall also that open AVA are the cause of the overflow hollow vein and of mechanically induced types of arrhythmias. Researches are ongoing.

### Conclusions

1. The new Theory of CVD and cancer, starting from 2011, continues to develop productively.
2. Thanks to the New Theory of CVD and Cancer, the old 1931 theory of the Nobel laureate Otto Warburg about the causes of the appearance of cancer cells now looks logical and practically complete. Dr. Otto Warburg, 100 years ago, made only the first step in understanding the mechanism of cancer.
3. Open AVA-anastomoses sometimes closed with greater delays than necessary, or pathologically gap. The damaging effects of increased venous pressure lead to fluid stagnation in the lower half of the body, cardiac arrhythmia, many other cardiovascular diseases and cancer.
4. Apparently, cancerous tumors grow only because there comes a time when immune cells cannot reach the cancers due to the violation of the traffic of immune cells, due to “plugs” in the vascular system due to open AVA.
5. What to do right now? My opinion. It is necessary to create more sensitive medical equipment to search for AVA are pathologically open in the human body, it is possible to replace them with artificial, more sensitive with electronics. Because the valves myocardium the doctors replaced with artificial, and pathological anastomoses AVA yet overlooked. To develop an instrument for the suppression of mechanical impulses, running through the hollow veins and leading to premature excitation of the myocardium.
6. Prevention from CVD and cancer should include: daily physical activity, proper nutrition, breathing exercises, exciting work and a happy life.
7. Some experiments are needed to confirm the universality of the New Theory.

### Summary

So, thanks to the new analytical Theory are confirmed by the following well-known facts.

1. Yes, cancer cells can occur in almost any organ, where there is a long stagnation of arterial and venous blood, stagnation of inter-cellular and lymphatic fluid.
2. Yes, necrosis of individual cells, as well as the occurrence of cancer cells in a healthy person, continuously takes place. But these cells are continuously neutralized by the immune system with sufficient blood flow.
3. Yes, with ischemia, necrosis, burns and injuries can occur a variety of damage to the DNA of cells and their mutations.
4. Yes, there may be cancerous tumors of different types, because the stagnation of blood can be in different organs. Today more than 100 types of oncological diseases are known and each kind has to be treated according to the individual recipe. That is why there are great difficulties in the medical choice of treatment.
5. Yes, there is no contradiction between the new Theory and the observed clinical events: various carcinogens (nicotine, some chemicals, medicines, etc.) can increase the likelihood of cancer in the human body by increasing the free radicals.
6. Yes, there is no contradiction between the new Theory and the observed clinical events: viruses and bacteria may contribute to the occurrence of tumors.
7. Yes, with age, of course, increases the likelihood of cancer due to lack of exercise in the elderly, due to possible abdominal obesity, due to the reduction of pH of liquids, due to the fall in blood flow, due to the accumulation of cell mutations, due to tissue fibrosis. Obviously, fibrosis itself disrupts capillary circulation and, as a consequence, blocks the movement of immune cells.

8. Yes, aspirin can reduce cancer mortality, because aspirin dilutes the blood, which contributes to a better movement of blood plasma, faster detection and destruction of cancer cells through immune cells.
9. Yes, the modern sedentary lifestyle is essentially the MAIN FACTOR in the problem of the origin of cancerous tumors of different types, because to maintain the viability of all cells in all organs of the required daily load on all the muscles and blood vessels, should normal blood circulation in all organs. The most effective from the stagnation of the maximum possible movement of the diaphragm is attained by any considerable physical exertion and special breathing exercises. Normal blood flow through all the capillaries is a guarantee of sufficient effectiveness of the immune system to destroy cells with damaged DNA.

Thus, according to the new Theory, the problem of cancer control can be reduced to periodic medical examinations, the detection of zones of stagnation of liquids or poor blood circulation due to the non-optimal functioning of AVA, the identification of zones of low pH, the identification of zones with low temperatures, and the identification of zones of increased necrosis of tissues.

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