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Does Cancer Have a Benefit?- Your immune System Might Think So.

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ABSTRACT

Cancer has been present in species for over 240 million years. Most modern-day species get cancer. Perhaps there are benefits to cancer that your immune system has identified that we have overlooked. If cancer had no benefit, wouldn't it have been deselected from the genome by now? In our industrial society where calories are abundant cancers are more closely linked to metabolic syndrome and chronic inflammation. Perhaps cancer is an ancient "Pragmatic Switch to Combat Metabolic Syndrome"? Cancer might exist to convert large amounts of glucose to lactate and protect the organs from excess glucose while limiting exposure to toxic oxygen- Warburg Effect.

Introduction

In humans, cancer is a complex set of illnesses with many manifestations. About 10% of cancers are hereditary and about 15% are a result of infections. Cancers in the wild appear to be associated with infection. An example is the Tasmanian devil which is plagued by: devil facial tumors which are spread by biting. The remaining 75% are largely unknown in origin but are associated with metabolic syndrome and chronic inflammation, which is common in our calorie-abundant industrial society with both humans and captive animals.

Discussion

In a high-glucose environment, the immune system is less aggressive and becomes less active. This is curious because the immune system requires energy to operate, and this seems counterintuitive. This could explain the old saying "Starve a cold and feed a fever." It also could explain why people with diabetes are at high risk of Covid and cancer [1,2]. The immune system does another curious thing. In most cases, it ignores the cancer cell and its vast circulatory network. The immune system is very good at identifying damaged or mutant cells or cells that have been compromised by a virus and targeting them for apoptosis. Not so with cancer cells. The cancer cell uses the body's own CD47 marker to evade the immune system [3]. This is more curious because researchers have found malignant cancers such as osteosarcoma in turtle bones dating back 240 million years. Dinosaurs such as T-Rex had non-Hodgkin lymphoma. These cancers imply that these ancient creatures also suffered soft tissue cancers which were not preserved in the fossil record [4].

One would think cancer would have been deselected within the genome by now. Let's go one step further, the immune system can learn in real-time about virtually any virus and create an antibody. The immune system can target infected and mutant cells for apoptosis using the killer T cells. The immune system can differentiate between good and bad bacteria about their location in the intestine. Yet with all these capabilities, why does the immune system largely ignore cancer cells even though cancer is visually and structurally different? These two curiosities can be linked with one hypothesis: cancer is an ancient method of the body dealing with metabolic syndrome. This was proposed in the article "Cancer—A Pragmatic Switch to Combat Metabolic Syndrome? 2023 by the Author. Let's examine some interesting facts about cancer and ask, "If it's been around for at least 240 million years could cancer have some benefits?"

Possible Benefits of Cancer

Almost always, cancers do not utilize oxidative phosphorylation of glucose for energy production, but demonstrate a dramatically increased uptake of glucose and glycolysis of glucose into lactate, even in the presence of abundant oxygen (Warburg effect). Cancer can consume 10 to 100 times more glucose than a normal cell. Cancer's by-product is lactate which can be consumed by every cell in the body and is non-toxic to organs. A good measure of the extent of cancer in the body is to measure the level of lactate. Let us not forget that the body has chosen two toxic and powerful components, the element oxygen and the compound glucose, to create power or ATP. Cancer converts glucose into lactate without the need for oxygen. So, the problem solved is lower toxic glucose which prevents the damage to internal organs, and less oxygen, which can damage all cells through oxidation. The result is lactate which can be stored as fat and is non-toxic to the body.

Now you say cancer is a deadly condition. That is true. But let's think about the cycle of life. In the spring and summer, there are abundant calories. The number of calories available in the fall drops. Then comes the very lean winter where many animals need to live off their fat stores of summer. Cancer has another interesting property; it cannot survive in a low-calorie, low-glucose environment, it will apoptosis or turn back to normal. In a calorie-limited low glucose environment, the normal cell can go into starvation mode. It is interesting that people who try to lose weight through starvation frequently gain more weight as the body adjusts to the low-calorie environment. As for cancer, it cannot tolerate a low-calorie environment and will apoptosis [5,6]. So perhaps cancer existed in the ancient genome to solve the problem that if the animal found a large number of calories, instead of passing them out during the fat months or damaging organs and starving during the winter months, the animal could convert the surplus glucose to lactate with high conversion cells called cancer. Then, when the lean months occurred and a low-calorie (Glucose) environment, these special cells could revert back to normal or simply die off. We all have taste buds for sweets (glucose/fructose), fats, and salt. All of these are scarce in the wild, long before industrialization created a year-round high-calorie environment. Another interesting fact is people on a high-fat diet suffer higher rates of acute myeloid leukemia. In both human and animal models, increased consumption of a high-saturated-fat diet has been linked to vascular dysfunction and cognitive impairments [7]. When a person has leukemia, the plaques are reduced. Is cancer trying to prevent this problem?

Let's talk about the immune system again. Let's say for cancer to operate, the body would need a high-glucose environment. That then triggers the need for the immune system to be degraded and which allows angiogenesis and visually different cells to flourish to consume large amounts of glucose. Those cells are called cancer cells. If you look at a cancer tumor, this is a very large vascular network. Why again would the body tolerate this for 240 million years, unless there was a benefit? Cancer does another curious thing. In the case of the large main tumor, it secretes inhibitors that suppress secondary tumors. If cancer was some random occurrence, this would not happen. But if the body is trying to maintain control of this dangerous group of cells, it makes sense. There seems to be too much logic for a random cell that is just growing wildly, out of control. Further examples are the microenvironment signals that can override the phenotypic effects on oncogenic mutations and normalize cell behavior. An example is a transplanted cancer cell into an embryonic tissue environment that causes cancer cells to adapt to non-cancerous phenotypes and normal control of proliferation [8]. The current model for cancer says that the cell's DNA has mutated causing uncontrolled growth, angiogenesis, and immunosuppression. If the DNA is damaged, how is it possible for the cell to revert to normal cells when placed in a healthy environment? The point of this series of papers is to suggest it's the environment that causes a switch to be turned on and not damage to the DNA. Cancer has the purpose of turning excessive glucose into lactate without oxygen.

Conclusion

For 240 million years, a cell that is visually and functionally different from other cells, which can initiate angiogenesis and hide from the immune systems, has existed in many creatures; why is that? Now consider all of the above stated; the distribution of the causes of cancers in humans are: 10% hereditary, 15% caused by infections, but the remaining 70-75% of cancers are of unknown origin but are strongly linked to metabolic syndrome and inflammation. Perhaps cancer is a "Pragmatic Switch to Control Metabolic Syndrome". Further, perhaps the viral and hereditary causes of cancer are simply changing the switch's sensitivity causing cancer to engage more easily. Perhaps the treatment to run away (malignant) cancer is a low glucose environment as proposed by Wilhelm Brünings [5]. Maybe the popular Mediterranean diet and exercise does help prevent this switch from being turned on because of its lower glycemic load. Further research is needed to confirm these linkages.

"Our food should be our medicine and our medicine should be our food. If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health"- Hippocrates.

References

1. Claras J (2023) Cancer—A Pragmatic Switch to Combat Metabolic Syndrome? Oncol Rev.
2. Harding JL, Shaw JE, Peeters A, Cartensen B, Magliano DJ (2015) Cancer Risk Among People with Type 1 and Type 2 Diabetes: Disentangling True Associations, Detection Bias, and Reverse Causation. Diabetes Care 38: 264-270.
3. Ravindra Majeti, Mark P Chao, Ash A Alizadeh, Wendy W Pang, Irving Weissman, et al. (2009) CD47 Is an Adverse Prognostic Factor and Therapeutic Antibody Target on Human Acute Myeloid Leukemia Stem Cells. 138(2): P286-299.

4. Yara Haridy, Florian Witzmann, Patrick Asbach, Rainer R Schoch, Nadia Fröbisch, et al. (2019) MD4 Triassic Cancer—Osteosarcoma in a 240-Million-Year-Old Stem-Turtle. JAMA Oncol 5(3): 425-426.

5. Klement RJ (2019) Wilhelm Brünings' Forgotten Contribution to the Metabolic Treatment of Cancer Utilizing Hypoglycemia and a Very Low Carbohydrate (Ketogenic) Diet. J Traditional Complement Med 9(3): 192-200.

6. Naveed S, Aslam M, Ahmad A (2014) Starvation Based Differential Chemotherapy: A Novel Approach for Cancer Treatment. Oman Med J 29(6): 391-398.

7. Francois Hermetet, Rony Mshaik, John Simonet, Patrick Callier, Laurent Delva, et al. (2020) High-fat diet intensifies MLL-AF9-induced acute myeloid leukemia through activation of the FLT3 signaling in mouse primitive hematopoietic cells. Scientific Reports 10, Article number: 16187.

8. Kasemeier-Kulesa JC, Teddy JM, Postovit LM, Seftor EA, Seftor RE, et al. (2008) Reprogramming Multipotent Tumor Cells with the Embryonic Neural Crest Microenvironment. Dev Dyn 237(10): 2657-2666.

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