

Kinetic Study of Cancer Proliferation and Reversal Processes

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Introduction

We conduct a study by using simulation and kinetic methods to understand cancer development, metastasis, reversal processes, and the effects of doing exercise on the apparent rate constants. Our preliminary findings may enable some cancer patients to see what might be wrong in the current treatment model. While data we used cannot be used to make general comparisons between systems (e.g. between different persons), they shed some light on the failure of cancer fights and failure of finding cures in the current medical framework. Our findings will enable cancer patients to use Health Optimization Methodology to cure or control cancer. Original article will be published in three months. We hope readers can provide feedback to each of those key findings. We will address some points in our next posts.

Preliminary findings

All data used in this study cannot be used to make general comparisons in any way. It is used to enable cancer patients to use Health Optimization Methodology to cure cancer.

1. The simulations show that cancer progression is a very slow process. The latent time for most solid cancers are from 4 to 10 years (longest being 70 years). There is no irreversible step in human biochemistry. A large number of cancer self-healing and cancer miracles imply that cancer can be reversed by altering apparent rates in a similar time scale.

2. Given big differences in biochemical processes between cancer proliferation and normal cell activities, cancer could be cured by using anything such as foods, herbs, animal by-products, air, water, soils (organic compounds and minerals), stones (minerals), lifestyle, mind regulation, faith, entertainment, etc. IF it can alter the apparent rate constants.

3. Any attempt to cure cancer in minutes, hours, or days will not succeed. Killing every cancer cell is not equal to curing a cancer. A real cure must alter body's physiology, immune system, and biological mind (certain signals from the brain) so that the cancer is in a track of reducing cancer cell population. A true cure is not about killing "every cancer cell" but to create physiological bias

against cancer cells and uncontrolled proliferation behaviors.

4. To cure an advance cancer containing 5 billion cells from 1 to 6 years, the apparent rate constants would be from -0.01 to -0.05. Those time windows would be respectively equivalent to 1% to 5% daily reduction of cancer cells.

5. A daily cell reduction rates of 1% to 5% cancer cells can be achieved by reducing empirical glucose flux (glucose traveling speed toward cells) by 30% to 60% for cancer cells inside the tumor, by increasing oxygen level carried in blood by up to 30%. That is equivalent to an increase of the oxygen/glucose ratio (a special ratio having a unit, this parameter may be amended) by 2 to 4.3 times. Exercise can also adversely affect cancer proliferation by temperature raise, mechanical vibrations together with more than twenty well established mechanisms. There is no theoretical base to doubt on exercise's power to lower cancer proliferation rate. The only question is by how much and how to achieve the required daily cell reduction rate.

6. Anyone can stop and reverse a cancer in development before the point a detectable tumor can be diagnosed. Tens of thousands methods would work but exercise is the best one because it can be easily tailored for anyone. It is free and safest, and can strengthen the body. Exercise is especially important to middle-aged people who carry undetectable cancer by fairly high probabilities.

7. The failure of exercises in curing cancer can be attributed to poor designs or insufficient efforts, as measured by time-averaged or accumulated values. To reach a required rate constant reduction, exercise must be done in sufficient duration, multiple sessions, and best timings to achieve reasonable time-averaged or cumulative effects. All exercise studies we know involving exercises fail short of MET (metabolic equivalent) and fail to focus on exercise details. Even so, studies have consistently shown that a causal exercise with as little as 18 MET weak hours can improve cancer patient's quality of life.

8. Cancer cannot be cured by doing brief exercise each day. Regular interruptions can neutralize previously achieved improvements. Exercise breaks caused by illnesses can restart the curing progress. Insufficient efforts will not bring the rate constant to zero or negative. While any exercise can help, exercise must be designed for individual persons to achieve the maximum effects in the shortest time. For a patient with advanced cancer with massive cancer cells, the fight in the first 3 months require strong willpower because it takes time to deliver many of exercise's long-term effects.

9. Given the human body's 37 trillion cells with billions of cells in any organ, nearly all cancer patients (including most normal people) must have multiple cancer cells in different locations in different times, some of the cancer cells can develop into tumors with big time lags. Thus, cutting off the first tumor will not cure second, third, and Nth tumor in line. Second, cancer metastasis must happen from the very beginning notwithstanding the contrary consensus. Even the cell division of the first cancer cell in a location might cause one of the daughter cells to move to a new location, but such a cancer cell is killed by the

immune system at very high chance. However, when the tumor becomes larger and larger, the frequencies of metastasis cancer cells become higher and higher while the immune system becomes weaker and weaker, metastasis cancer cells can settle down and proliferate in new locations with certainty. There must be multiple locations. For most patients, a third cancer-causing process caused by genetic damages by chemotherapy and radiotherapy will further complicate the original and metastasis processes. No doubt, original cancer development, cancer metastasis and the treatment-induced process are random quantitative processes. Any attempt to treat all those processes by using the binary system will not succeed. Anyone can find a massive number of cases reflecting multiple cancer eruptions, multiple cancer returns, and multiple secondary tumors in every corner of the world.

10. Cancer drugs are tens to hundreds times more powerful than doing exercise in killing cancer cells, but cannot bring down cancer cell numbers to vanishing levels by administering a limited number of treatment cycles. A super cancer drug with a power to kill 90% cancer cells each day can get rid of cancer cells in just five rounds, but such a drug could ruin everything in the body. The drug cannot improve the compromised immune system and cannot really cure the cancer, nor stop a new cancer from developing.

11. Chemotherapy may be able to kill the last cancer cell by using endless cycles, it can damage tissue cells, some of which will pass damaged DNA to daughter cells by chance. Chemotherapy can also seriously damage organs, and will make the compromised immune system worse. Thus, damaged cells may develop a different cancer (whose genetic composition is different from the first one). One or more tumors in line would show up in different locations at different times, and appear as “returned cancer” in much shorter times than original cancer development time.

12. Changes in cancer cell number and change in cancer development direction cannot be reliably assessed by using any modern diagnostic method. It is technically impossible to determine instantaneous effects of any slow cures such as exercises, foods, lifestyle and mind regulation. Any assurance of “no cancer cells” based on incompetent or useless data will mislead cancer patients, and cause patients not to make continuous fights. This is the number-one reason for most cancer returns and eventual deaths. Patients should be taught to ignore medical data and make continuous efforts to create physiological bias against uncontrolled cell proliferation.

13. Exercise can strengthen the human immune system by improving energy metabolism of immune cells and their proliferation, and may restore the body's immunity through the CNS regulations involving cancer biomarkers (our theory which cannot be proved by current methods used in medicine). While chemotherapy can also reduce cancer biomarker concentration, it compromises CNS functions and thus could not help the body completely recover the immune system. That is why exercise can cure cancer, but man-made drugs cannot.

14. The structural and functional approach consistently fails to cure

chronic diseases including cancer. Attempts to fix structural defects by fixing a biological function or using a super drug to correct a biological function or defect for any chronic disease have never worked well. It only helps control symptoms. Any man-made drug clashes with one or more gene-encoded proteins and one or more intermediate compounds. A full database of evidence can be established by collecting the FDA's drug approval and removal records, the massive drug injury cases in case reports, plus the centuries of failure to find cures.

15. Cancer patients have not been enabled to use kinetic and balance approach to slowly alter rate processes in light of cancer cell cycles. If they understand cancer rate constants and daily cell number changing pattern, and use the health optimization methodology to fight cancer, nine of ten cancer deaths could be prevented.

16. The key point is that rates of reversals for cancer and all chronic diseases are so slow that modern medicine cannot see and use them in the fast-action medical framework. This is why modern medicine cannot recognize or refuses to acknowledge any cure that requires half a year to several years to accomplish.

Although this kinetic study focuses on exercises as cure, the methodology can be modified for other cancer fighting measures. The methodology, as modified, is equally useful in guiding people in fighting all other chronic diseases such as heart diseases. There is no incurable disease in the world. A small number of diseases are difficult to cure because their causes are very unclear. Even though, they might be cured by using a methodology that is compatible with human genes and does not clash with natural laws.