

Commentary on the Practice of Medicine (3): Anti-Aging Through a Dialectic Standpoint

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AGING AND ANTI-AGING

Aging is characterized by a progressive loss of physiological integrity, leading to impaired function and increased vulnerability to major human diseases and death [1]. But what if we can control the rate of aging to some extent? Wouldn't it be rational in this case to use the word anti-aging? Well, this is definitely a controversial and complex issue. You may have heard of the invariant rate of aging hypothesis which states that "each species has a set rate of aging. Therefore, all members of the same species live to approximately the same age. Translated into human lives, this means that our attempt to prolong human lives is not working [2]". Nevertheless, here we are not talking about prolonging human life span, but human health span. Needless to say, that we can definitely accelerate our process of aging through inadequate life style, poor diet, lack of exercises, insufficient sleep, toxic contaminations, and so on. Therefore, to work on the opposite direction would be an attempt to delay the aging process. Does it sound right to you?

WHY DO WE AGE?

There is no straight answer for that. The most comprehensive and cited article about the aging process is "The hallmarks of aging" [1], published in 2013 by Cell, a peer-reviewed scientific journal publishing research papers across a broad range of disciplines within life sciences. The hallmarks of aging are related to complex denominators of aging, named as such: genomic instability, telomere attrition, epigenetic alterations, loss of proteostasis, deregulated nutrient sensing, mitochondrial dysfunction, cellular senescence, stem cell exhaustion, and altered intercellular communication [1]. Most of these technical terms from the scientific literature are very difficult to explain to our patients. However, in the context of Nutrition, it is easier to say that aging is the process of accumulation of molecular damage through the years [3]. The damage refers to biochemical processes, mainly inflammation, but, also, other processes such as oxidation and acidification, considering that they are all connected. The question I made to myself

when I read the interesting article "Ageing, science and the cosmetics industry [3]", published by the European Molecular Biology Organization (EMBO) Report in 2005, was: if we know what damages the cells at the molecular level, could we effectively have some control on the accumulation of damage, that is, could we halt or delay it somehow?

THE MYTH OF TITHONUS AND EOS

In the XXI century, many scientists started to consider aging and longevity as two different fields of research [3]. To use a current aphorism: some want to add years to our lives, others want to add life to our years [3]. Just like Paolo Giacomoni in his article mentioned above - "Ageing, science and the cosmetics industry [3]" - when I am asked about the possibility of increasing longevity, I usually recall the Greek myth of Tithonus and Eos. Tithonus was a young mortal man who fell in love with the immortal goddess of dawn, Eos. Afraid that she would outlive her loved one, Eos asked Zeus to grant Tithonus eternal life, but realized later that she should have asked for his eternal youth. He grew older and older until he was so worn and withered that only his voice was left. That is to say: what increases longevity may not necessarily improve the quality of life. I just want to reinforce that the focus of this article has nothing to do with increasing lifespan. The idea is to highlight how to reduce molecular damage accumulation and to actually slow down the rate of the aging process to improve someone's health span and increase average life expectation.

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INFLAMMATION AND PHOTO-AGING

How to delay the process of aging is very easy to understand when we think about what we can do to prevent ultraviolet radiation-induced photo-aging [4] - the aging of the skin caused by sun light exposure. Even the use of broad-spectrum sunscreens can actually reduce the inflammation that the sun causes on the skin - heat, redness, swelling and pain - but, considering that inflammation and oxidation are always together, could the use of an oral anti-inflammatory and antioxidant plant extract have a more effective effect on the protectiveness of the skin? I have a good clinical experience on that. In fact, it can. That's what we call oral photo-protection of the skin. But what happens outside, on the skin, I mean, the reduction of inflammation, can also happen inside the body. Therefore, the use of an anti-inflammatory and antioxidant diet and supplements is proposed to help to control inflammation and related processes. In our context, to reduce damage accumulation at the molecular level.

A CLEVER OPERATIONAL SYSTEM FOR AGE MANAGEMENT

According to Paolo Giacomoni, it became necessary to define aging in an operational way, with mathematical operations, once this definition allows scientists to assess quantitatively whether a treatment has the capacity to provoke, accelerate, hinder, slow down or even reverse the aging process [3]. This was what inspired me to start the age management protocol, if it is correct to call it that way. How do we do that? Controlling systematically the biochemical parameters that may reflect molecular damage - such as us-CRP, fibrinogen, ferritin, HbA1c, homocysteine, levels of antioxidant vitamins and minerals (zinc, manganese, copper, selenium, vitamin C, vitamin E, vitamin A), among many other laboratory tests that, when altered, reflect somehow damage accumulation in the body. Another test that it is very useful is the omega-3 index test or cellular inflammation test, which measures the ratio between arachidonic acid (AA) and eicosapentaenoic acid (EPA), making it easier to emphasize the importance of an anti-inflammatory diet and/or omega-3 fatty acid supplementation [5]. As I said in the previous article of this series, to maintain health, it is not enough that these results are within the "normal" range, but they've got to be optimal. This is the idea of a health optimization program.

A MATTER OF INTERPRETATION

True that we have seen a lot of "promises" to delay, deter or even reverse the process of aging. In fact, the fountain of youth has been a longing for mankind since ancient times. More recently the word "ageless" has been used with a very strong aesthetic connotation, consisting of interventions on the body in a continuous search for "looking younger", other than actually "keeping young" in a broader sense. But, in our context, as a clinical nutrition practitioner, what I do is

simply maintain an offer of anti-inflammatory and antioxidant protection to the body through diet and supplements. I also include an adequate supply of alkalinizing nutrients, once acidification goes together with inflammation and oxidation. An antiglycant approach to the diet and methylation support are also considered essential. Therefore, I am not talking about miraculous injections or procedures to deter, delay or reverse the process of aging, but simply make use of "normal" foods and supplements to help to delay the damage accumulation process that inevitably will happen through the years to all of us, regardless of, so far, whatever we do.

ACCUSED AGAIN?

Oddly enough, I was accused of having "my own" theory of aging. How come? I believe the references I usually give to my publications were not taken into account. Also, on top of that, I was accused of violating the article 18 of the Brazilian Code of Medical Ethics. Art. 18. Physicians are prohibited from disobeying the judgments and resolutions of the Federal and Regional Councils of Medicine or disrespecting them. In this case, I didn't respect the 1999/2012 official resolution of the Federal Council of Medicine (not updated so far, although the world has greatly changed since) which says: 1) medical doctors who prescribe methods to stop aging can even be punished by losing their professional registration; 2) Brazilian physicians who prescribe therapies with the specific objective of curbing aging, practices known as anti-aging, will be subject to penalties provided for ethical-professional processes. My arguments are: I don't use any particular method, which by definition is some sort of procedure or technique to execute a plan or reach some determined goals. I work with the basic concepts of Nutrition which are mostly related to recover or improve health with diet and nutritional supplements what I do after a pretty thorough nutritional, metabolic and hormonal evaluation. To delay the aging process is much more a consequence of the treatments that I prescribe than their first intention. It's quite easy to grab the idea once we understand the concept of accumulation of molecular damage with inflammation, oxidation and so on: if we optimize the parameters that reflect this damage, we are going against the whole process of aging and related diseases that go along with it. Also, the treatments I prescribe are not at all specific, consisting of vitamins, minerals, essential fatty acids and amino-acids, and, quite often, some well-known plant extracts, mostly adaptogens, used since ancient times in the eastern medicine, such as *Rhodiola rosea* and *Panax ginseng*. The formulas are personalized to attend the patients' needs. I must also say that the patients never come to me because they wish to delay the process of aging. Either they come because they wish to age with better quality of life and are looking for some professional advice or because they want to improve their health, complaining of fatigue, insomnia, anxiety, digestive problems, food intolerances, brain fog, hair loss, in short, a number of complaints that are ever so

common in the last decades. But, never mind, let's leave these accusations behind: it is time to look at the aging process through a dialectic standpoint.

THE ANTI-AGING CONCEPT: DOESN'T IT NEED A QUALITATIVE LEAP?

Life, in general, and science, in particular, both are immersed in this on-going and endless process of searching for the truth. Dialectics may be defined as a method of examining and discussing opposing or complementary ideas in order to find the truth. The dialectical theory tells us that we have only temporary synthesis and that we are always reaching some new conclusions. In our context, I think we are most in need of a new synthesis about the concept and the use of the word anti-aging. I googled "anti-aging" today and found approximately 448.000.000 results; "antiaging", 10.700.000 results; "anti-ageing", 20.900.000 results; and "antiaging", 1.590.000 results. On PubMed, "antiaging", 7.713 results; "anti-ageing", 889 results. These spellings are all used. The point is: nowadays this is a common word, a word used in many contexts, including Nutrition [6-9], Dermatology [10-12] Preventive Geriatrics [13], Plastic Surgery [14], Cosmetology [4,15,16], and related areas [17,18]. So, how could I have been accused of using the word "anti-aging"? I must say that I shall do my upmost to update it and give a real qualitative leap in the meaning and approved use of this word. It's necessary to disconnect it from sensationalism, opportunism and indefensible medical malpractice. Let's make it simple, Let's make it nice. Let's make it related to real preventive care. To age healthier (and happier), basically. With love and glory.

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