

The sad truth

Aging is an inevitable truth of life. And while the process is often associated with the accumulation of wisdom and experience, it is also a time of declining health and ultimately, mortality. Alzheimer's and Parkinson's disease, rheumatoid arthritis, atherosclerosis, cardiovascular disease (CVD), macular degeneration and diabetes are just a few of the chronic diseases that begin to take hold. The majority of patients with a chronic disease are over 65 years old and, in the U.S. alone, 80% of the elderly population has at least one chronic disease. Seventy percent of deaths are due to these chronic conditions. Is there any good news here?

A reason behind it

Many of these chronic diseases have been linked to unhealthy lifestyles that include tobacco and alcohol abuse, stress, physical inactivity and consumption of a high fat diet and red meat. The American College of Preventive Medicine has reported that most chronic diseases can be prevented by changing lifestyles. For instance, a study involving 23,000 participants found that a healthy lifestyle led to a 78% decrease in the risk of developing CVD, type 2 diabetes, cancer and stroke [1].

Chronic inflammation as a unifying cause

One important link between aging and chronic disease is the presence of inflammation, the unhealthy kind. You are probably asking if there is such a thing as healthy inflammation. The answer is yes, there is. In general, inflammation is the body's natural response to tissue injury or irritation. This leads to an increase in blood flow, redness and pain, as the body tries to remove the offending organism and start the healing process. This process is highly regulated such that one group of mediators initiates the response and another group modulates or stops it, maintaining a delicate balance in order for proper healing to occur. In chronic inflammation, however, this balance is disrupted such that inflammatory pathways are persistently activated. The result is that cells in the heart, brain, walls of the arteries and other organs in the body are damaged leading to disease.

Researchers have identified a large number of inflammatory markers associated with chronic diseases that include cytokines, chemokines, proinflammatory enzymes, proteins, adhesion molecules and transcription factors [2]. The list of diseases associated with the presence of these markers is equally as long and is likely to grow longer. Inflammation has been linked to breast cancer [3], colon [4] and prostate cancer[5, 6], CVD [7], rheumatoid arthritis [8], multiple sclerosis [9, 10], Crohn's disease [11] and diabetes [12, 13].

Is there a silver lining to this grim tale?

If you don't smoke, eat nutritious foods and exercise regularly you can have a significant impact on whether you will succumb to a number of these diseases as you age. Consuming spices, nuts, whole-grain cereals, legumes, fruits and vegetables has been associated with significantly lowering your risk. Why? Fruits and vegetables contain essential vitamins, minerals, fiber, and phytochemicals that protect from chronic diseases. More than 25,000 phytochemicals have been identified that may protect against various cancers through their ability to target many signaling pathways in cells [14]. For instance, a number of fruits and vegetables have been found to suppress the production of the inflammatory agents involved in arthritis [15]. Lupeol, a phytosterol found in a large number of fruits and vegetable such as cabbage, pepper, cucumber, strawberries, guava and several medicinal plants, is an important contributor to this anti-inflammatory effect [15]. Turmeric, cinnamon and clove are among several spices that have been shown to block the inflammation thought to contribute to diabetes [16] as well as lower blood sugar, improve your lipid profile, and reduce blood pressure.

Take home message

Chronic inflammation has been linked to a large number of diseases ranging from cardiovascular disease to cancer and neurological disorders. A few simple lifestyle changes may go a long way towards protecting you from the ravages of these modern day diseases. Maybe it's time to follow your mother's advice and 'eat your vegetables' along with a few other healthy snacks.

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