

Prime Living  
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Last month, we discussed the common causes of dementia in seniors. We highlighted research that points to common ground between the causes of vascular dementia and the causes of Alzheimer's disease, suggesting that atherosclerosis--hardening and narrowing of blood vessels--may underlie both processes. Let's look at this research and let's look at what the latest research tells us about reducing our risks for developing dementia as we age.

For some time, doctors have appreciated a relationship between a gene known as Apo E-4 and the risk of developing Alzheimer's disease. A person can have as many as four copies of this gene in their DNA and it is presently believed that if someone has two or more copies, their risk of developing Alzheimer's disease is 2 times higher than of a person with no copies. At one time, this gene held promise of becoming a clinical blood test that might reliably predict whether or not a person would develop Alzheimer's disease. However, that did not happen and today, there is no clinical test available that can either diagnose Alzheimer's disease or predict whether someone will develop the disease in their lifetime.

In 2002, an article published in the Annals of Internal Medicine demonstrated two remarkable findings: that the risk of Alzheimer's disease in an adult with high blood pressure was 2.6 times higher compared to someone with normal blood pressure and that risk of Alzheimer's disease in an adult with very elevated serum cholesterol was 2.8 times higher than someone with normal cholesterol. Up until that time, these high blood pressure and high cholesterol were only associated with atherosclerosis. But here was epidemiologic evidence these "atherosclerosis risk factors" carried a *higher* risk of developing Alzheimer's disease than Apo E-4, the so-called "Alzheimer's gene." These were remarkable findings and opened the door for further study into the association between atherosclerosis and Alzheimer's disease.

The next big revelation was published in 2005 in the journal Alzheimer's & Dementia. The authors performed detailed dietary histories on almost 600 adults in the Baltimore area and found that adults with a high dietary intake of the vitamin folic acid had a 66% lower incidence of Alzheimer's disease. Can you imagine a drug that boasted of reducing your risk of Alzheimer's disease by 66%? Wouldn't that be a scientific breakthrough? Folic acid is a naturally occurring vitamin found in fresh fruits and vegetables, especially green leafy vegetables.

The association between intake of fresh fruits and vegetables and cognitive function was corroborated later that same year. In a study published in the journal Neurology, researchers carefully examined the diets of over 3,700 adults in the Chicago area. They found that adults who ate on average four or more servings of vegetables each day had a 38% reduction in "age related cognitive decline,"--the slow steady decline in cognitive function that had been thought to be part of normal aging. This is an epidemiologic finding with tremendous implications: It suggests that normal aging does not necessarily cause deterioration in cognitive function. Rather, what we eat may play a key role in whether or not we experience a loss of our cognitive functions as we age.

In another article published in *Neurology* that same year, French researchers reported the results of their study of the diets of over 8,000 adults over the age of 65. They found that older adults who ate at least one serving of fresh fruits and vegetables each day reduced their risk of developing dementia by 28%. The authors also found that older adults who ate fish at least once a week reduced their risk of dementia by 35%.

Taken together, these studies and others point to a direct relationship between what we eat, the development of atherosclerosis, and our cognitive function. What is the nature of this relationship? Many researchers believe that the keys to understanding this relationship can be found in understanding homocysteine and Omega-3 fatty acids.

Doctors have known for many years that high levels of homocysteine in the blood are strongly associated with the development of atherosclerosis, especially heart attack and stroke. Homocysteine is an amino acid that comes from dietary protein. It is an essential ingredient in the formation of a chemical that our bodies make: methionine. Methionine is necessary for all nerve cells, or neurons, to function normally. Of course, neurons are what our brains are made of, and our brains are the center of our cognitive abilities. To convert homocysteine to methionine, our bodies require the presence of folic acid. If not enough folic acid is present, then not enough methionine is formed and this in turn will damage neurons and cause them to function poorly. Homocysteine builds up in the blood when it cannot be converted into methionine and a simple and widely available test can measure the level of homocysteine in the blood.

You have probably already heard of Omega-3 fatty acids. They are polyunsaturated fats - one of the “good fats”—and are found in nuts, seeds, and red salmon (but only *wild caught* salmon, not the farm raised variety). Research is just now being done to further explore the relationship between Omega-3 fatty acids and a variety of diseases. Early published results point to a strong relationship between the quantity of Omega-3 fatty acids in our diets and atherosclerotic processes, like heart attack and stroke. Of special relevance to seniors are several studies now under way that look into the relationship between Omega-3 fatty acids, Alzheimer’s disease, and late-life depression.

Emerging scientific evidence strongly suggests that our diets play an important role in the risk of developing Alzheimer’s disease and other forms of dementia. But the association between atherosclerosis and dementia means that other life style choices also play an important role. These other lifestyle choices include not smoking; controlling blood pressure, blood sugar, and cholesterol; regular exercise; moderate alcohol use; controlling stress; and maintaining a good body weight. So, there are choices each of us can make right now that can reduce our risk of atherosclerosis and dementia.

Finally, activities that keep the mind active and maintaining a network of social interactions are also known to be important in reducing the risk for dementia. As the old saying goes, “If you don’t use it, you lose it.”