

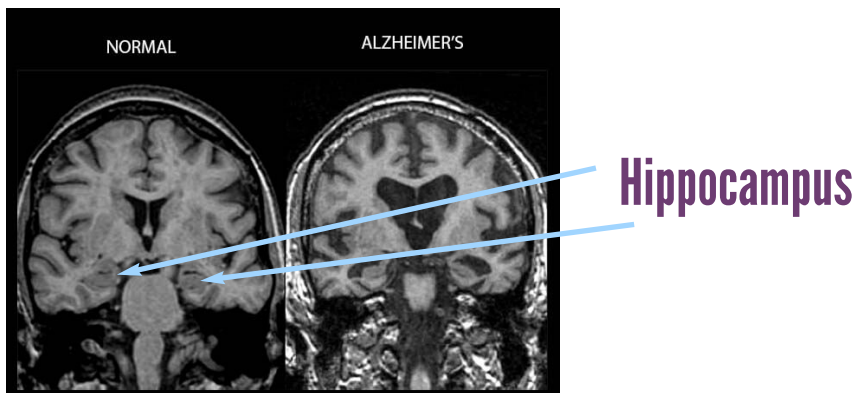
Brain Changes Associated With Cognitive Impairment & Dementia

Overview

There are changes that occur in the brain with cognitive impairment:

1. Brain atrophy
2. Oxidative stress
3. Accumulation of amyloid beta

Brain atrophy is the shrinking of brain tissue. When brain tissue shrinks and pulls away from itself, brain cells lose the ability to communicate with one another. It becomes, literally, hard-to-impossible to put two thoughts together.



https://www.hopkinsmedicine.org/sebin/d/k/Feature_Figure1_640.jpg

You can see in this MRI that the brain on the left has more white and light gray areas, which is healthy brain tissue. The MRI on the right shows the larger dark areas between and around the more shriveled lighter areas, which is...well, space - space between sections of what was once healthy brain tissue.

The hippocampus is a section of the brain responsible for forming and keeping memories. Look at how much more black space is around the hippocampus in the MRI on the right! With brain atrophy in diseases like Alzheimer's, your brain simply has no more access to your memory.

From a nutritional standpoint, healthy food and beverage choices along with other healthy self-care practices like regular physical activity and adequate sleep, work together to protect the brain from further atrophy and cognitive decline.

Oxidative stress just means **damage** to our cells – which include those that make up our brains and the blood vessels that supply our brains with oxygen and nutrients. Oxidative damage is caused by something you have probably heard about before: **free radicals**. Free radicals are unstable molecules that get into our bloodstream from **unhealthy foods** and other things, like cigarette smoke. It is their instability that causes them to damage our cells. Think of them as tiny weed-whackers that you accidentally drop into your flower bed. In this case, your brain tissues are the flowers and your blood vessels the delicate stems.



Brain Changes Associated With Cognitive Impairment & Dementia

Oxidative damage to the brain increases as we age, but it is accelerated by consuming unhealthy foods and beverages. Foods and beverages that contain antioxidants and omega-3 fats, which we will talk about below, are the antidote to free radicals and the oxidative damage done to your blood vessels and brain with unhealthy eating.

Amyloid beta is a waste product produced in the brain by normal brain activity. It is cleared from the brain with adequate, restful sleep. If it is not cleared, it forms sticky plaques that are a hallmark feature of Alzheimer's disease, and part of what causes the brain to stop working properly.

To prevent the build-up of amyloid beta in our brains it is important to get 7-9 hours of restful sleep per night. In terms of nutrition, there are foods and beverages that can negatively impact our sleep, so eliminating those will help you get the restful sleep your brain needs. This includes caffeine, alcohol, and sugar, and consuming high-sodium foods like potato chips and pizza in the evening.