

Diagnosing Early Alzheimer's with PET Scan

Introduction

One in nine American's has Alzheimer's disease (AD).¹ AD is a progressive brain disorder in which the neurons in the brain stop functioning properly, lose connection and eventually die.³ In the brain there is a naturally occurring protein called beta-amyloid that is normally broken down, however in a AD patient it is not and it accumulates in the brain.² The accumulation of the beta-amyloid is what causes degradation of the nerve cells.⁵ In the past computed tomography (CT) and magnetic resonance imaging (MRI) were the modalities of choice to diagnose AD. Today, positron emission tomography (PET) is becoming the modality of choice for early diagnosis of AD.

PET SCAN

PET scan is a non-invasive and usually painless procedure unless receiving an intravenous injection.¹¹ A radiotracer will be injected and it will accumulate in the brain where it will be detected by an imaging device to provide pictures and molecular information.¹¹ Pittsburgh compound B (PIB) was the first radiotracer that was able to highlight beta-amyloid deposits in the brain of a living AD patient.¹ In the image, you can see the patient with Alzheimer's disease light up.

Conclusion

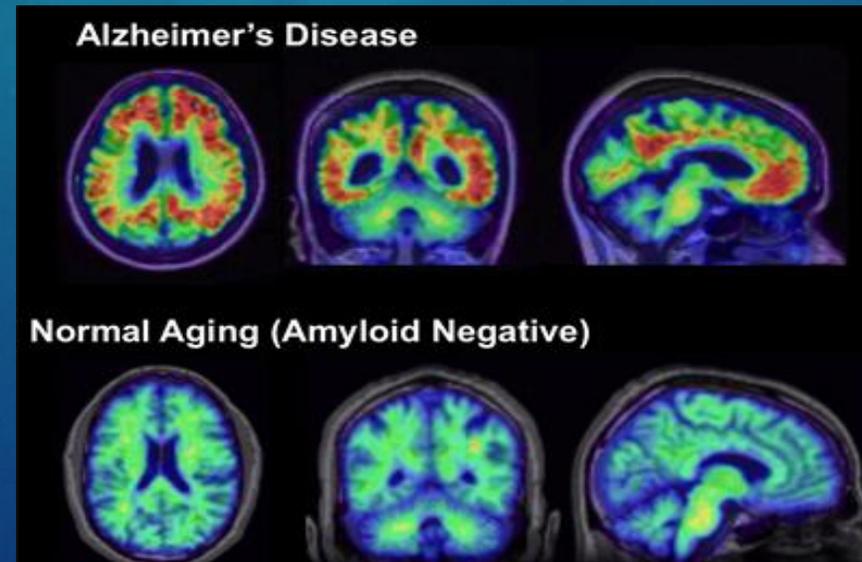
PET scan has brought Alzheimer's a long way. In the past, by the time a patient went to their doctor to get a workup done to see why their memory was failing, it was already too late. With PET scan and the use of radiotracers AD can be diagnosed in it's early stages and stopped in it's tracks. Giving those who have AD a better chance at life.

CT

CT takes multiple images of the body at different angles, which then makes up a series of images in cross section.⁷ A CT is usually done to rule out any other conditions that could cause the symptoms of AD. CT will often times reveal changes in the brain that are characteristics of late stage AD.⁷

Continued Research

There is a new drug that has been through trial phases. This drug is called Aducanumab. It reduces the beta-amyloid levels in the brain. Being able to reduce the build up of beta-amyloid in AD patients will reduce decline in memory and thinking skills.⁹



(Berkley School of Public Health, 2017)

MRI

MRI is an imaging test that uses radio waves and powerful magnets that create images of the body.¹⁰ MRI will create a 3-dimensional picture of the anatomy of interest. Structural MRI can be used in assessing atrophy and detecting changes in tissue characteristics.⁶ Functional MRI is used to test the integrity of the brain networks involving memory and other cognitive domains in aging and early AD.⁶

References

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