

Imaging Takes on Alzheimer's Disease

RTS 1

Etiology

Alzheimer's Disease is something that can be hereditary or come from different etiologies. Research studies have shown that hypertension may play a role in AD. Neurotoxicity as well as excitotoxicity levels can sense if a patient may have Alzheimer's Disease.¹ If chromosomes such as 1, 14, and 21 have a mutation than they can lead to a person having AD.³ A person's diet can play a role into Alzheimer's Disease as well. If the patient is seen eating high levels of aluminum or metal ions it can lead to AD. It is still unclear what causes a person to get Alzheimer's Disease. Included in Table 1 are the stages of Alzheimer's Disease.

Imaging Modalities

Medical imaging can be used to help not only diagnose a patient with Alzheimer's Disease, but track the progress of it as well. Figure 1 displays a brain MRI of a patient that is known to have Alzheimer's Disease. It shows the highlighted areas around the temporal lobe that the doctor can use to look for changes. If a decrease in size of the lobe is noted than the patient may have AD. It is useful when looking for mild cognitive impairment within the brain. A PET scan can help show the progress of Alzheimer's Disease. Figure 2 shows how a normal brain should look and as the stages progress the brain is seen to be losing heat.

Table 1. Stages of Alzheimer's Disease ⁴

Stage	Memory	Language	V-S Skills	Executive Function	Daily Living
Mild	-Amnesia	-Decreased fluency	-Mildly abnormal	-Mildly abnormal	-IADL affected
Moderate	-Amnesia and memory impairment	-Anomia	-Moderately abnormal	-Moderately abnormal	-ADL affected
Severe	-Absent	-Aphasia	-Severely abnormal	-Unstable	-Totally Dependent

Imaging Modalities (Cont.)

The third imaging modality is a DTI Imaging of Alzheimer's Disease. Figure 3 is formed by putting the diffusion tensor image on top of a structural MRI. The marked area on the picture shows a reduction in Fibre-tract integrity.² The fornix can be seen with a lack of color in a patient that has Alzheimer's Disease. If multiple modalities are used in conjunction with each other it can lead the doctor to believe that a patient may have AD. Other tests are used as well such as mental and physical testing to determine the person's status. The stages of Alzheimer's Disease show the different kinds of skills and how they are effected.

Treatment

Alzheimer's Disease does not have a clear cure, but measures can be taken to help reduce the effects of it. Drugs can be taken by the person to slow down the progression with sleep patterns and behavior. Memory loss is something else that the medicine can help with.³ If the patient is to go untreated then the effects will continue to get worse.

References

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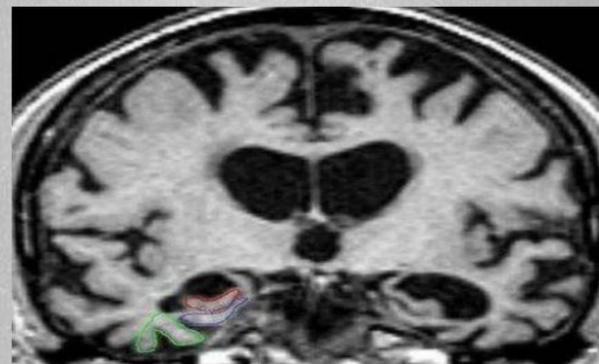


Figure #1. MRI scan of Alzheimer's Disease⁵

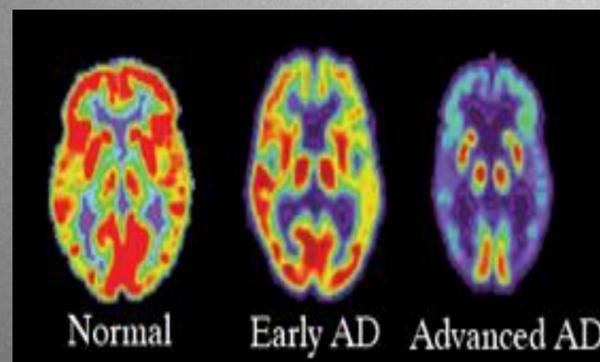


Figure #2. PET scan showing different stages of Alzheimer's Disease⁶

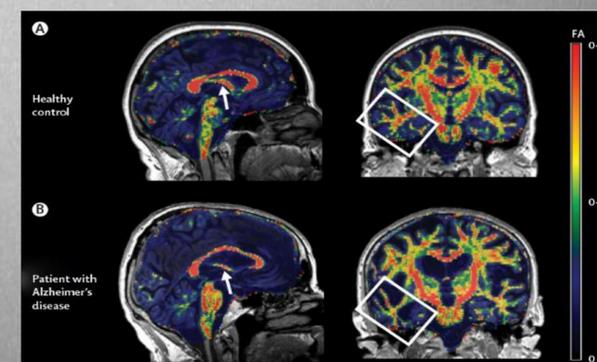


Figure #3. MRI DTI stacked on top of a structural MRI⁷