Title: Bio medi English

Alzheimer's Disease

- ✓ **Instructor: Travis L. St. Peter**
- ✓ **Institution: 충남대학교**
- ✓ **Dictated: 김윤정 장보윤 이정연 이유진**

[0:00]

Alzheimer's Disease

We are talking about Alzheimer's Disease.

It's Alzheimer's Disease, right?

This lecture today will be following along what we talked about last week.

Last week we talked about neuroscience.

Neuroscience is a study about the brain.

And the nerve system and neurotransmitters, chemicals in the brain, so today we're going to be talking about a lot of the same things.

We're going to be talking about how it relates to Alzheimer's Disease.

What area of the brain is affected with the Alzheimer's Disease, what behaviors will you see, someone with Alzheimer's Disease have, what neurotransmitters very briefly we talk about neurotransmitters.

We're going to talk about different types.

There are various types of Alzheimer's Disease, and there are different stages of Alzheimer's Disease.

Then, looking at the overview.

Alzheimer's Disease is a progressive disease that damages nerve cells.

Progressive means it happens over time, it starts slowly and then over time gets worse, and worse, and worse.

What's happening, cells in the brain are dying.

Also we're going to find out that there's some abnormal things happening or some abnormal things are seen inside the people's brains with Alzheimer's.

The communication.
We talked last week about these networks, neural networks that are connected in your brain.

They're breaking down, messages are not able to go through the brain and so the person is going to show some strange behaviors, going to have some problems with their functioning.

Alzheimer's Disease mostly damages the memory okay?

People's memory and also the learning language.

I told you the language reasoning is progressive so over time it might start with memory problems and then progresses to new areas of the brain and hurts different areas of functioning.

Okay, says here over time functions like long term memory, language and judgment decline.

It is the most common form of dementia.

What is dementia?

It tells you right here in the overview what is dementia.

Dementia is a loss losing your mental functions.

[3:17]

So when people get older all people as they get older they have a little bit of dementia.

You are losing some of your functioning. That is just part of aging.

But Alzheimer's Disease is a disease where you're losing more than average more than normal and you have some abnormal things happening in your brain.

So Alzheimer's Disease is not normal type of aging, it's a disease, it's a big problem, and we're talking about it today because Alzheimer's Disease is getting worse and worse.

It's not staying at the same level it's continuing to get worse in the world.

Okay, it's a progressive disease so when it gets to the final stages after about ten years, you get to the final stage of the Alzheimer's Disease usually and at this point the person cannot function alone at all and needs constant supervision,, someone needs to help the person walk, talk, and finally they die because they can't control any of their functioning.

Okay, there are two basic types of Alzheimer's Disease, we'll talk about it later in the lecture, but there is early onset Alzheimer's Disease, early onset means happening early before 65 years old.

Early onset.

And the other type of Alzheimer's Disease is called late onset Alzheimer's, and that is happening after 65.

So early and late, very basic.
;
The cause, what causes Alzheimer's Disease?

What is making this happen?

Why do people get Alzheimer's Disease?

That is a very good question because still science has not been able to find out exactly what is causing it.

We have some reasons we can look at people with Alzheimer's Disease and we see ah they have this problem and this problem.

Is that what is causing Alzheimer's Disease, or this that just a byproduct of Alzheimer's Disease?

So we don't really know, right now we don't know exactly the cause.

So it's very puzzling, very lot of questions okay?

And the last paragraph on the overview.

You can see some of the numbers.

In America, 4 million people suffer from Alzheimer's Disease.

That's a lot.

About 22 thousand people die from Alzheimer's Disease every year.

This is in America.

But, the scariest part, those numbers are pretty scary, 4 million people have Alzheimer's, 22 thousand die every year. Those are big numbers.

But the scariest part is the next sentence that they tell you about.

The Alzheimer's Association estimates that one in ten people over 65 and nearly 85,

oh I'm sorry, and nearly half of people over 65 have Alzheimer's Disease.

[6:40]

Okay, and I'm sorry here's the scariest part.

The number of Americans with Alzheimer's Disease is expected to increase to 14 million by 2050.

Okay, now what is that telling us?

It's telling us that in about 40 years, 35 40 years, right now we said 4 million people suffer from Alzheimer's but in 40 years there are going to be 14 million.

10 million more people suffering from Alzheimer's Disease.

So you know people live, people die and that's continuous.

But you can see that the number of Alzheimer's Disease are not staying at the same rate.

They're climbing [?7:29] higher. Look at this chart.

So you can see here here is 2010, okay.

The number of Alzheimer's patients, now this information is a little old but you can see here 6 million people, 6 million victims.

By 2050 we're looking at like 14 million 13 million people. So that number of Alzheimer's patients are getting higher and higher.

The disease is spreading and getting worse. If we don't find a cure, we don't find what the cause is, all of you are going to be in serious trouble when you get older, right?

So that's why we're talking about this today and that's why we're trying to, scientists are studying this disease so much.

Learning objectives, what do I want you to learn today?

We're going to talk about anatomy and anatomy you probably know is just inside the body.

For Alzheimer's Disease, what parts of the body are affected, what are we talking about the anatomy so I want you to understand the anatomy of all the Alzheimer's patients and their brains including the abnormal parts.

Identify and differentiate between the types of Alzheimer's Disease.

This is pretty basic, we're going to talk about two different types, three different diseases though.

[8:58]

Explain the possible causes of Alzheimer's, I told you we don't know exactly the cause but we're going to talk about possible causes of Alzheimer's Disease.

And the last thing we're going to talk about today is the risk factors so I want you to be able to describe the risk factors associated with Alzheimer's.

Risk factors just means things that can increase your chance of getting Alzheimer's Disease, what can make your chances higher getting Alzheimer's.

Risk factors just means things that can increase your chance of getting Alzheimer's Disease, what can make your chances higher getting Alzheimer's.

Okay good, now that is all review from our neuroscience lecture, just talking about neurons how our brains are working, how nerve cells are sending the messages okay.

Quickly if you look up here, today we talk about anatomy.

We're going to be talking about different areas of the brain right? Last week we talked about 4 lobes of the cortex, you probably remember those right? Probably not.

Anyways, Alzheimer's Disease is affecting first where first originates usually is in the temporal lobe.

What color temporal lobe? What color is the temporal lobe in this picture?

Take a guess, take a good good good guess.

Somebody please take a good good guess.

Good great green ! Good grief yes green green this green area is the temporal lobe.

For your test, you are going to need to know these lobes of the brain, there's only four not hard.

This is the temporal lobe. Now this is where memories if you remember last week, this is the lobe of the brain responsible for memory.

This area is very affected in Alzheimer's Disease.

All right, so temporal lobe. Also though, as Alzheimer's progresses, gets worse and worse, the damage spreads here and the damage spreads here. Okay and you probably don't remember but this is the frontal lobe.

[11:48]

And this here, is still, is pretty close to the temperal lobe, we can say here.

This is language, controls language. okay?
So, someone has Alzheimer's Disease

We're talking about has damage, neurons, memory, learning, language, and reasoning.

Reasoning, intelligence, judgement, language, memory, Okay.

따라하세요, "Hippocampus."

The hippocampus, this is part of your brain

Where is it located?

It tells you deep inside, the temporal lobe, we know temporal lobes are now.

You remember? It is this screen area.

The hippocampus is deep inside this area, so we have to go inside the cortex

And you probably don't remember, but last week in the neuron science lecture, we talked about 3 parts of the brain.

There were the 4 brains, which is the cortex, which is the top layer, the outer layer.

And we talked about mid-brain.

Mid- brain is the middle, is kind of like middle area of your brain, the mid-brain.

And then we talked about the hind-brain.

The hind-brain is back here, which means kind of behind.

Anyway, hippocampus is inside here, hippocampus is in the mid-brain, kind a get to go inside a little bit.

Why is the Hippocampus important?

This is where short-term memories are converted into a long-term memories.

I can give you a very good example for what we're talking about.

For example, last week's lecture, during the lecture, there were science maybe you were remembering a little bit during the lecture.

But, today, 1 week later, that has disappeared b/c that was in your short-term memory and that was not changed into your long-term memory.

It didn’t get changed over.

Your hippocampus was not working very good last week.

You didn't studied it very much, so it didn't get converted.

Anyway, the hippocampus is where short term memory can be changed into long term memory, the very important part of your brain.

With Alzheimer’s patient, that area has a lot of damage.

So, when you damaged the hippocampus, you're going to have a lot of trouble remembering things because you can't convert those memories. Okay?

[14:48]

So she was reading "the hippocampus often is atrophied.”

What does that means, "atrophied"?

Atrophied means getting smaller and getting weaker, shrinking,

You can see here.

Here's the normal brain, nice and fat and juicy.

Here's the Alzheimer’s brain. Dried and shriveled, atrophied.

Here's the memory part of the brain, the hippocampus.

Look at how full it is.

The square, very full.

Over here, wow, a lot of atrophied, shrinkage and damage.

So, that's what's happening.

Alzheimer’s people's brain

Let me give you another example. Atrophied.

Say I'm playing basketball. And I fall down and I break my arm, my arm’s broken.

Where do I go? Of course, I'll go to the hospital.

And what are they going to do for my broken arm? What do they do?

Here comes the beautiful Konglish, they put on a Gibs.

Okay, you should talk to someone from America, about a Gibs

They're like what r u talking about?

We don't ever hear that word, that's not English.

Anyway, but, It doesn't matter, It's called "cast"

We say "cast" in English. you get a cast on your arm. OK?

They give you a cast so you can't move it, cuz it needs to heal.

So you wear cast for 3weeks maybe 3 or 4 weeks, you were cast,

Finally the doctor takes your cast off.

Smelly arm and very white arm.

Anyway, if you look at your arms, you put them, your good arm and your bad arm, What do you notice about your arm? your broken arm now?

What happened to the mussels? What vocabulary word?

Yes!!!!! Your arm has atrophied!

If you look at your arms together, this arm's going to be the same, this arm's going to be smaller and weaker.

You try to pick up something, right, it's weaker and smaller, Your arm has atrophied.

[17:48]

That's what's happening Alzheimer's brains.

Your arm atrophied because you're not using it.

You can't use the mussels, so they get smaller.
Alzheimer's people's brains, neurons are dying.

Connections can't go through, so the brain is not being used.

That area is not being used.

So, it gets smaller. It atrophied.

So same thing. Getting weaker, getting smaller.

Okay and then, she was reading there are two abnormalities, two things that are not normal, abnormal in their brain.

One of these things, 따라하세요. “Beta amyloid plaques”

Beta amyloid is a protein, this is found inside Alzheimer’s people’s brains, we were talking about just a minute.

But it’s very sticky, black, plaque.

And it’s outside of the neurons.

So when the messages are trying to go through, It gets stuck in this plaque.

This plaque makes it difficult for the messages to go through the brain.

Another problem, abnormality is “neurofibrillary tangles”

Okay, what are these?

Inside your nerve cells in the neuron are micro tubule, micro meaning small, tubes like you guys know tubes.

So these micro tubules come down the axon, and you can see them here.

Here’s the healthy normal neuron, and this micro tubule, they are very straight, they’re in a good line.

Here is a protein, called “Tau” that makes micro tubules very straight and even messages come through very well.

The sax, we talked about last week, the sax, at the end of the neuron, are stimulated, and neurotransmitters are produced.

We can see here. Neurotransmitters.

Very beautiful, good.

And Alzheimer’s neurons, what’s happening?

Inside the cell body and inside the axon, are there micro tubule.

What’s happening is micro tubule protein, “tau” is breaking down.

[20:49]

And this micro tubule starts to tangled. They get all tangled up.

Kind of like your sleeping and you wake up, on your hair is tangled up.

These micro tubules are tangled up. They're breaking down and they're dying.

So we have these micro tubule problems, neurofibrillary tangles and we have these plaques.

What happens we get less, low transmitter being produced, you see all this [S?].

Here, we have decreased[S?], there's not allowed to [S?] or neuron transmitters.

Because his signal is terrible, can't get pass through.

Then we have the plaques outside of the neuron, which are blocking the messages even more.

So you can see causing big problems and Alzheimer's people's brain.

Okay, next!

So, is this causing Alzheimer's Disease? Don't' really know.

But we do know there are more of these abnormalities and Alzheimer's patience.

We don't know what's causing it or is it a product of Alzheimer's Disease.

Now what we're going to do there's a website, I want to show you, and will be a good review from last week and also talks about Alzheimer's Disease.

If you want to write down, actually you guys can get my power point if you want to study.

This might be helpful when you're studying.

Anyway, we talked about last week your brain weights about 3 pounds, your brain has 3 parts.

One part we talked about is cerebellum, which we talked about last week.

This is the part of your brain that has 4 lobes, we talked about cerebellum, this is the hind-brain, cerebellum, is the back of your head.

It gives you balance and coordination.

And we also talked about the brain-stem or the mid-brain.

And the mid-brain, sits beneath your cerebellum, It connects to brain spinal cord,

your life functions are controlled by your brain-stem.

[23:28]

Your life functions are controlled by your brain stem.

Okay. Here is just our brain's function because they are able to get oxygen.

How do our brains get oxygen? What brings your brain oxygen? Your...well, blood. Blood, right?

So, arteries bring your brain... the main arteries of your brain bring blood into your brain.

That's how you are able...your brain lives. Okay?

And, there's a whole number of blood vessels that go through your brain, and that's what it looks like.

You can see it the shape is exactly like your brain. All right?

Last week we talked about the cortex. We talked about the wrinkled cortex…called the neo cortex which makes a special because we can do higher level functioning.

This part of your brain is responsible for sensations, feelings.

You can see we talked about last week.

If you are remember the occipital lobe which is in back your brain and that controls the sights, vision, sounds, smells. All of your senses.

The occipital lobe. The frontal lobe. We talked about last week. Thinking, solving problems, planning.

We talked about the temporal lobe. Today we are talking about the temporal lobe.

The parietal lobe controls your movements and your orientation with other things.

We didn't talk about this yet, but you probably know your brain …we talked about how your brain has the right hemisphere and the left hemisphere.

The left half of your brain controls the right side of your body. So, left brain controls the right side of your body.

The right half of your brain controls the left side of your body. So, it's opposite. In most people, the language area is on the left.

Sometimes people might ask you they say, "Are you left brain or right brain?" What

does that mean? You have only one half of your brain? No.

It means...what they mean is usually left brain people are very good at language.

You are very good at Korean, writing Korean, language skills are good. And less good is your...not as good...math and science. Okay?

All of you are sitting in the class, so you must be right-brained. Maybe.

Left brain. Language, art and creative skills. Left brain. Right brain. Math, organization, making list, science. Right brain.

Okay, we've talked about nerve cells. There are the neurons, there are the cell bodies.

You can see the dendrites. You can see the dendrites here. And you can see the axons. Okay.

We talked about last week. Of course, we talked about electrochemical signals.

That start in the cell bodies and travel down the axon. Okay? And travel to the dendrites of another cell and get past a lobe.

Last week we talked about the synapse. There's an electrical charge. The electrochemical signal. Okay.

We can see the synapse here and also we can see the neurotransmitters.

We talked about last week.

The electrochemical signal. The electricity comes down your axon, stimulating tiny sets. We talked about this last week. The sets contain...will produce neurotransmitters...these chemicals.

These chemicals are then released into the synapse. This gap… and the neurotransmitters are picked up by another cell …and then sent along to more cells.

Here you can see ...we talked about neural science. Neural science uses different tests.

To test brain to see what areas of brain are being activated. What chemicals and what areas.

So we can see when you are reading words... when you are reading words...

What area are the brain? This area of the temporal lobe is responsible for language.

So, you can see that is where you have a lot of activity.

Hearing words. You can see again. Buried in the temporal lobe.

In this area of the temporal lobe. Which we are talking about today without Alzheimer's disease. Here's damage in here.

Thinking about words. Your thinking about words, you can see it is in your frontal lobe… your thinking.

Also without Alzheimer's disease, damage in this area. So a lot of language, word problems for people without Alzheimer's disease…and, saying words…you can see between the temporal lobe and the frontal lobe. Okay.

Back to the lecture. Now, we are going to talk about this different stages.

We talked Alzheimer's disease is progressive. Gets worse over time. So, what are the stages of Alzheimer's disease.

First of all, I told you guys Alzheimer's disease between 7 and 10 years...you can...Alzheimer's disease manifested in the brain…and...but it depends between...there's a lot of differences between people.

We are going to talk about these stages.

Some people go through stages quicker than others. Some people take a long time to go from one stage to another.

Other patients can go very quickly from early stage to the severe stage.

So it kind of depends on person. All right. Anyway, we will start with reading mild Alzheimer's disease.

Next. Okay. Mild. Mild Alzehimer's. Mild means not strong. Okay…but without Alzheimer's disease this still is not good. Mild Alzheimer's disease.

There's some impaired functioning. Impaired means not...there's some problem.

Some problem with functioning and with memory we talked about with judgment and little bit with personality.

You might notice some personality change. People without Alzheimer's disease can easily get lost.

They forget where they are going, what they are doing. 'Oh, where am I...what?'

Okay, so they can have problems remembering where they are.

Okay, so you can see. I told you guys anyone who is getting older is going to have some dementia.

Which is their mental functioning is getting worse. But without Alzheimer's disease, it's definitely more of a problem.

You notice more they are forgetting more, they are not remembering names, they forget words very often.

Also, because in social situations they are not remembering names, they are forgetting things.

So, they tend, Alzheimer's disease patients tend to not want to be social.

Not want to go around other people because it's embarrassing, right?

If they are forgetting who you are, they are still able to understand there's something wrong with me.

'What's happening? I can't remember these are my friends. And so, they don't want to see people because they feel foolish, they feel embarrassed, they don't want to make these mistakes.

So, socially they kind of withdraw. They go away. Okay. Good.

Again, this is the mild stage and these are things that you might start to notice.

Let's say you have a grandmother. And, you come home from school and you go into the refrigerator to get a soda.

And you open the refrigerator and your grandmother's purse in the refrigerator. And you go to your grandmother and you say, 'gran..why is your...'… 'What are you talking about...that's not mine...why did you put my purse in there?'

So you can see, she...memory problem...also she is getting angry quickly.

She thinks that you are trying to trick her or something. So she does this strange behavior, puts her purse in the fridge and then she gets angry.

So these are things that we will start to get you to understand. 'Oh, I think there are some problems, maybe Alzheimer's.'

My grandmother...says here. They made hold things...hold things of no value. Hold means collect. Okay? Collect things of no value.

I will give you an example of my grandmother.

My grandmother lived until 96, so she was...fairly...she was pretty old when she died…but when I was young, maybe 10-12 years old we used to visit my grandmother.

And I remember my grandmother had hearing aids because her hearing was not

good…and of course in the hearing aids, there are batteries. This tiny little round batteries.

My grandmother never threw away the batteries. She would collect them. She would hold them...collect them.

So when I go to her house, she had piles of these batteries and they are all stacked in like a nice pyramid.

So when I go to her house, I was always playing with these batteries. You know, I thought it was a lot of fun.

When I got older, I said to my mom. I said, 'Wow, what was that toy that grandmother had...those little beads?' She trap us those were her hearing aid batteries.

They were broken, not working. Woo...little strange.

So, these things kind of give you an idea that something little strange.

There's no value for those hearing aid batteries, but actually for me it was a lot of fun playing with those.
Okay. So asking repetitive questions that saying things over and over again.

🔊[35:05~47:00]

There’s no value for those hearing aid batteries.

But, actually for me it was a lot of fun playing with those.

Okay. So asking repetitive questions that saying things over and over again are holding things.

Okay, that’s mild Alzheimer’s.

Next, moderate Alzheimer’s Disease.

Okay, so here we go into moderate.

So, things are starting to get progressively worse.

They can’t organize their thoughts.

They can’t dress themselves the right way.

So, they forget kind of matching their clothes or putting on the right clothes for the occasion.

So they’re going to need little bit of help getting dressed.

So, a little bit of help with getting dress also incontinence, it says they at this stage they may have some incontinence.

What that mean…'incontinence' means, going to the bathroom.

They can't go to the bathroom on their own.

They forget, so they will be people without Alzheimer's Disease they have to wear diapers sometimes, right?..because they can't get to the bathroom.

Okay, so that is called incontinence.

So, you can see here the memories getting worse, right?

They can't remember their own family members.

Maybe they see you and they said, "Oh…" they think you are, your grandmother looks at you and she thinks that you're your mother, right?

"Oh…my daughter is here, good."

And you're "what?" and "I'm you're granddaughter."

So, there's some confusion trying to recognize who people are.

Might not recognize who you are, might think you're some stranger, okay?

You don't know what day it is, what season it is.

So, you can see if you don't know what season, you're going to be wearing maybe your grandmother puts on her shorts and t-shirt in the winter time.

And you have to say, "Oh, grandma, it's winter time."

Okay, so, starting to have a lot of problems with memory and judgment.

They tend to wander.

That means, just go walking somewhere.

So, it's very dangerous this stage to tell your grandma "I'm going to go for a walk.", "Okay.".

Moderate Alzheimer's, some people with Alzheimer's Disease, they go out and people never find them again.

They get lost and so they have to search sometimes they find them and they died.

Because it's the winter time and they go walking out and they fall in the snow and

people can't never find them.

So, there's a lot of danger because of at this stage Alzheimer's Disease, people can wander off.

Even bring him shopping to the grocery stores, supermarket.

They could wander and they don't remember who you are or they don't remember who people are.

They get scared, they get angry.

So, it can be a lot of problems.

So their communication problems are getting worse.

The language for them is getting worse.

So, they can't communicate.

We talked about paranoia.

At this stage, moderate stage there's a lot of paranoia where they think someone, you're trying to hurt them.

Or you did something intentionally to trying make difficult their situation.

So, they get paranoid and they might accuse you of doing things to them.

For example, putting her purse in the refrigerator, she thinks that you did it.

And she accuses you.

Acting out with anger and just having trouble socializing with people.

Okay. Last, severe Alzheimer's Disease.

Okay. Severe Alzheimer's Disease, so here, we can see the functioning is "Wow, really bad.".

Now, they can't walk, they can't sit up without help.

So this severe stage of Alzheimer's Disease there must be someone there one hundred percent of the time.

They can't do anything, they can't walk and they can't sit up.

They need help with every daily need, they're incontinent, we remember that?

They can't go to the bathroom.

So, they need to be wearing some special clothing or they need to have help getting to the bathroom.

Also, their language skills totally incoherent which means you can't understand what they're saying.

So, maybe just mumbling, you can't understand anything what they're saying.

And at this stage they can't recognize, they rarely can't recognize anyone.

So, even if it's a grandmother, her husband is there she can't even remember the person she seemed for fifty years.

She doesn't recognize who this is.

And who are her son or daughter or grandchildren, none of them.

Last part here, you can see how serious, swallowing problem.

Some of the Alzheimer's severe stage… of Alzheimer's forgets how to swallow.

So they have food in their mouth they don't remember how to swallow food.

So they can choke and they can barely eat.

So you can see this stage, very little things have to happened and then person is going to die. All right?

They need so much supervision.

Okay, so they are saying… Alzheimer's Disease, most of the time is not Alzheimer's Disease that actually kills the person.

It's usually some other reasons.

It's so gradual, so slow over time. It's progressive.

So usually, some of the Alzheimer's dies from a sickness like pneumonia or they get an infection or they fall and they get injured and they die from these things.

About, you can see here about eight to ten years after you died knows through the Alzheimer's Disease about eight to ten years, average.

Some people can live 20 years with Alzheimer's Disease.

But not common, 20 years.

Here you can see healthy brain, here's the hippocampus that we've been talking about , here's the cortex.

And we can see atrophy, we can see enlarged ventricles.

Ventricle is an open space in your brain.

So, the ventricles get bigger.

You can see the ventricles are getting bigger.

In here we can see severe Alzheimer's Disease, look at how this big ventricle is.

Severely enlarged ventricle, especially in the memory area.

The hippocampus is very atrophied.

And the cortex also, a lot of atrophy.

Now here we can see Alzheimer's Disease, we talked about this you can see the healthy brain here.

Advanced Alzheimer's, you can see the difference.

The amount of atrophy quite a bit.

It's amazing the person still living.

Okay? Here again you see the cortex levels up.

Here's the hippocampus so you can see the big space.

And ventricles you can see the circles here, the ventricles are much larger.

You can see the plaques, beta-amyloid plaques outside of neuron and neurofibrillary tangles inside the cell or that arrows are pointing…little difficult to see.

Beta-amyloid. You can see it here and group's together makes it very stick, or sticky.

Okay, here's the neurofibrillary tangles we're talking about.

You can see here, here's help this out.

And the micro tubules are straight and very paralleled and very even to each other.

You can see the black dots, the black areas here.

This is the protein I told you about called tau that is holding the tubules and that straight line.

There's the tau protein.

But then you can see here there the tangles are breaking down.

There's a lot of gaps in here spaces, empty space.

The protein is breaking down and causes these things to tangle up.

So you can see all this is all tangled up in here.

Here's the different stages you can see quickly.

Earliest Alzheimer's, mild to moderate Alzheimer's, and severe Alzheimer's.

You can see how it's progressing, spreading to the brain.

Earliest stage of Alzheimer's, the temporal lobe.

And here's the hippocampus, learning in memory.

Thinking and planning, a little bit.

This is the earliest stage, mild Alzheimer's.

Moderate Alzheimer's Disease.

Again memory, thinking and planning are getting worse.

But now we're starting to more into the speaking and understanding speech.

So, here come in the language problems.

Moving into different area of the temporal lobe.

And here is your parietal lobe of the brain, so starting move into parietal lobe which is your sense of things that are around you.

So kind of how you relate to objects.

And the last part, severe Alzheimer's Disease.

Most of the cortex is seriously damaged.

So we can see, here's the cortex there's damage every area of the cortex.

In the visual's lose there are ability to communicate, to recognize family, and to take care for themselves.

Completely unable to be independent.

So, those are the stages.

Now types.

Type of Alzheimer's, I'll do this part quickly.

Three types actually I'm sorry.

We talked about only two types of Alzheimer's Disease.

Early before sixty-five, and late after sixty-five.

Early on set is not common.