

Understanding Alzheimer's Disease

Webcast

April 22, 2008

Sandra Weintraub, Ph.D.

Please remember the opinions expressed on Patient Power are not necessarily the views of Northwestern Memorial Hospital, its medical staff or Patient Power. Our discussions are not a substitute for seeking medical advice or care from your own doctor. That's how you'll get care that's most appropriate for you.

Introduction

Andrew Schorr:

Hello, and welcome once again to another edition of Patient Power on HealthNet at www.nmh.org and Patient Power sponsored every two weeks by Northwestern Memorial Hospital. Now I don't know about you but as I age, both for me and my family members, I worry about our mind kind of going, if you will. It could be memory loss or speech problems, dementia and of course a word that has become pretty scary as we go on and we learn more about it is Alzheimer's. Does it run in our family? Would it be in store for us as we get older and of course not always knowing the other names, but there are other forms of dementia. Where do they come into play?

So we have with us on this edition of Patient Power a noted expert at Northwestern and that is Dr. Sandra Weintraub. Dr. Weintraub is the Clinical Core Director of Northwestern's Cognitive Neurology and Alzheimer's Disease Center (CNADC). Dr. Weintraub thanks for being with us on Patient Power.

Dr. Weintraub:

Oh, you are very welcome.

Andrew Schorr:

So there we are, let's say mom can't find her keys anymore, or sometimes I call her up and she doesn't say my name right off the bat, or we talk about her best friend, and she is searching for the name and doesn't seem to recognize people as well. Well is that Alzheimer's right off the bat and what about if it is somebody younger in the family, not somebody in their 70s or 80s but somebody in their 40s or 50s? It could be a number of things now. Am I right?

Dr. Weintraub:

Yes. You have actually asked a number of questions in your single comment, and so maybe I could address each one of them.

Andrew Schorr:

Sure.

Dr. Weintraub:

First of all as people get older, and this is a phenomenon that you begin to notice, believe it or not, as early as in your 30s, you are just not as able to remember things as well as you used to. Of course, that gets complicated by the fact that as we get older our lives get more complex. So things that you just could remember in the past you now have to write down, or you have to have a calendar. This is what we are calling "age-related cognitive change". It really occurs throughout the lifespan, but it becomes quite obvious once you get into your 50s or 60s. It's not just something that is annoying, but you might be misplacing objects, or you go into a room, and you don't remember what you went there for, or you are trying to think of somebody's name, and it is someone who you know really well, and the name isn't coming up.

We are trying to determine if these symptoms are not really symptoms, but part of the normal aging process. The question is, where does normal aging end and more serious memory loss that we associate with Alzheimer's disease begin? In very, very, very early states of Alzheimer's it's hard to tell that without having a specialized examination. Even when the illness is advanced a little bit, it still might be difficult.

Let's say you go to your primary care physician's office and say, 'Well, you know I'm not remembering things.' You are likely to get as a response, 'Well it's okay. I don't remember things either,' because people just don't remember as well when they get older. But there comes a point where, if that forgetfulness is happening several times a day, getting worse over time, then that becomes a lot more concerning.

You also mentioned something about if a younger person notices these things...

Andrew Schorr:

Right.

Dr. Weintraub:

If somebody in their 40s is behaving like somebody in their 60s then we are concerned about that person because that might tell us that there is an acceleration of what we would call the normal aging process. Something that can be very helpful, and that's my specialty, is a neuropsychological evaluation of your thinking capacities. Results are compared with standards for people your age and with your level of education.

Diagnosing Alzheimer's Disease

Andrew Schorr:

Now can you simply do like a MRI of the brain or something like that and then just say, 'Oh, we can see this change therefore it is this condition or that condition?'

Dr. Weintraub:

That's not possible right now. It's hoped that there are going to be automated ways of looking at MRI scans where you can measure changes in the brain's volume over time. That will require you to have had a baseline scan. In Alzheimer's disease, the area of the brain that we are very concerned about is called the hippocampus. It is deep in the temporal lobe. The hippocampus over time gets smaller and smaller and smaller in comparison to individuals of the same age who don't have the exaggerated memory loss of Alzheimer's disease. We know the hippocampus is very important for your ability to recall, 'Okay, where was I yesterday?' or "What did I do a week ago?" Going back in the relatively short term and trying to reconstruct your reality.

So the MRI scan right now is not helpful. In fact it's often misleading because you don't see anything on the MRI scan. You can't see the pathological changes of Alzheimer's. Some people don't even have brain atrophy, especially in the early stages, and so the MRI report will often come back "unremarkable" or "normal for age", and in fact the person could be in the even intermediate stages of a dementia. The MRI scan is done because there are other illnesses that mimic Alzheimer's so that it helps to rule out other causes.

Causes and Characteristics of Dementia

Andrew Schorr:

Okay, let's put Alzheimer's in the context of dementia in general. How much of the time is it Alzheimer's, and then what other kinds of things could it be?

Dr. Weintraub:

Dementia, as you know, is a descriptive term. It refers to a change in a person's thinking abilities from a prior level of functioning, to the point where that change begins to interfere with your ability to carry on customary, routine activities. That definition is associated with literally hundreds of things that can cause such a clinical picture. In fact, however, Alzheimer's is the most common cause of dementia over the age of 65, but there are certainly other causes.

For example, sometimes people who are in stages of bereavement after losing a spouse, become very depressed. So depression can mimic some of the symptoms, not all of the symptoms, but some of the symptoms of Alzheimer's. You may feel scattered, you can't remember things, your mind really isn't on what's going on in

the present because you're preoccupied, and so you'll forget something that somebody told you or that you said.

Other causes have to do with medical illness elsewhere in the body that temporarily affects your brain's ability to function. So for example, thyroid dysfunction; if your thyroid values are not normal, that can affect the physiological milieu in which the brain is functioning and cause you to have temporary changes in mental function. As soon as the thyroid is corrected then you will return to your baseline level. Dementia caused by correctable conditions are sometimes called the "reversible" or the "treatable" dementias.

Other causes of dementia that are less amenable to being reversed are things like multiple strokes. So you have one stroke, and you may get some changes in cognitive function. Then you have another stroke, and then you get some more changes, another stroke, and so the symptoms pile up over time. Alzheimer's is a neurodegenerative disorder which means that the brain cells are degenerating over time and actually ultimately dying. There are other forms of neuronal degeneration, for example, Pick's disease or Lewy body disease, are other types of neuropathology. What they all have in common is that they interfere with the brain's normal transmission from one cell to another and cause these cells to malfunction and ultimately stop functioning.

Andrew Schorr:

So as I listen to this if someone in my family was exhibiting behavior like this and it was changing over time, first of all it would be scary to all of us. It would seem like you want an evaluation by someone such as at Northwestern's Alzheimer's Disease Center to really see could this be Alzheimer's or could it be something else, and then get the care that's right for that.

Dr. Weintraub:

Yes. That would be extremely important because we have seen a number of individuals where the diagnosis is not Alzheimer's disease. It used to be that nobody got diagnosed with Alzheimer's in the late 1970s, and we didn't really know all that much about it. Now it seems like everybody's being diagnosed with Alzheimer's who has some cognitive change. It might not be Alzheimer's but there is no way to know without a workup.

The reason that you need to have a more extensive workup than, say, if you were going to try to find out if you had diabetes, is that there is no blood test for Alzheimer's. There is no biological marker where we could take a blood sample and say this person definitely has Alzheimer's disease. That's why it's a longer procedure but one that's really informative. In addition to trying to make a diagnosis, as we are working with patients, we can figure out what their strengths

and weaknesses are, and than can arm us to work with the family and the patient to try to make some suggestions for behavioral interventions at home that might help ease some of the burden.

Andrew Schorr:

Now if grandpa had Alzheimer's and maybe died with Alzheimer's and now his offspring, you know mom or dad is exhibiting some of the same things, do we jump to the conclusion that there is necessarily a family history and a genetic link?

Dr. Weintraub:

No, well, I should say yes and no. If grandpa had Alzheimer's and grandpa's brother and one of his sisters had Alzheimer's and then mom has Alzheimer's and mom's brother's has Alzheimer's then we are talking about a very, very tiny group of people in the overall Alzheimer's population, probably no more than 2-5 percent of individuals, where it is inherited via an autosomal dominant mode of inheritance. That's like Huntington's disease where if one parent is carrying the gene the offspring have a 50/50 chance of getting it. That is by no means the majority of cases of Alzheimer's.

Alzheimer's Effect on the Brain

Andrew Schorr:

Okay, help us understand with Alzheimer's since as the population ages we are going to be hearing more about it. I think it's about five million Americans now, but certainly that number will go up as the baby-boomers get older. So as this bubble in the population gets older it will increase, and there will be lots of concerns about it. What is going on in the brain first of all? You said it's like shrinking over time. Is that the way to think of it?

Dr. Weintraub:

The shrinking is the end result, and the question is "What is causing the shrinkage?" Shrinkage, or "atrophy", is being caused by the fact that nerve cells are dying. The brain is fashioned in such a way that there is tissue, and it's called gray matter made up of nerve cells, and white matter made up of the fibers that connect cells with each other. Bathing the brain and in the center of the brain is fluid, the cerebrospinal fluid. That cushions the brain so that it doesn't get easily damaged.

Well if a part of the brain, if some of the cells are lost and they actually die, then there is a space there, and the cerebral spinal fluid fills the space. So the atrophy that you hear people talking about is the spaces that are created by dying nerve cells. What's causing the nerve cells to die is the Nobel Prize winning question. We have no idea why this process starts. We have a few ideas about who might be at more risk, but we couldn't specifically say, 'Well okay, you are definitely going to

have Alzheimer's in a few years from now.' So the way in which we try to understand this is by looking at the brain cells, and the two pathological features that are most prevalent in Alzheimer's are called neurofibrillary tangles and senile neuritic plaques. Those two features have abnormal proteins; proteins that have gone on awry from their normal constitution.

Some researchers believe that one of the proteins, tau, is responsible for the Alzheimer changes and causes, is really the key starter of all this. Others believe that it is the amyloid, beta amyloid protein that goes awry. Then there are yet others who believe that both of those proteins are just down-the-road effects of some other earlier process.

One hypothesis that has been put forth by Dr. Mesulam in our center is that you are born with the brain cells that have to last you all your life. They don't regenerate themselves but they have to be "plastic" to reflect the changes in thinking abilities. So the ones in the hippocampus, which is the memory center, probably have to work a lot harder than other brain cells because their job is to update reality from moment-to-moment. If you can think of a computer that is constantly working because reality is changing by the moment, through time and in different places. So the idea is that these cells are with you for the long haul, and they start to wear out. It is the wear-and-tear of the aging process. On top of that it looks like everything that has been identified as a risk factor for Alzheimer's disease challenges nerve cell plasticity. So his theory is that the need for nerve cell plasticity is really the prime mover. Then, as the plasticity cannot keep up with the burden of having to remember things, there is a breakdown in the system which causes tau and amyloid to become abnormal.

These are basically theories, and people are looking at all of these mechanisms. We know that inflammation plays a role in neuronal cell death. In women, after menopause, it may be important to keep estrogen on tap because estrogen is protective of nerve cells. People who drink a lot or people who do illicit drugs, any insult, is an insult on your very hard-working neurons who aren't getting a break. So that's one of the ideas about what causes this.

Treatment Options and Slowing Progress of the Disease

Andrew Schorr:

Now I have a bunch of questions about prevention or slowing the progress, but where are we with treatments because there are medications that are advertised but my understanding is while they may help lessen the symptoms, they don't stop the course of the disease?

Dr. Weintraub:

That's correct. However, we are now facing a new generation of medications that could potentially have disease-altering properties. You may have heard of an amyloid "vaccine" where you are treated with medication that helps reduce the number of neuritic plaques in the brain. Initially one of the trials of that medication resulted in serious side effects, and so they stopped the trial, but now they are winding up to do more of these trials. The new medications will attempt to affect the pathology itself and alter the course of the disease.

For sure what you said about the available medications, they are definitely intended for symptomatic relief. For those of us who have been in this field for a long time, where we didn't have even symptomatic relief, it's gratifying to know that you could at least postpone nursing home placement or have someone be more functional for another year or two beyond what would happen without these medications.

Andrew Schorr:

Absolutely. It makes a huge difference. Let's talk then about how do you know what's right for a given patient. So you do this workup. You know what you are dealing with. If it turns out to be Alzheimer's then are you able to estimate what stage it's at, and do you have any clue for that individual patient how quickly it will progress?

Dr. Weintraub:

The staging question is fairly simple. There are a number of staging instruments that will tell us the level of dementia severity. How severe is this? Is this questionable? Is it mild, moderate or severe? Then there are staging instruments for the late stages because even there you may have somebody who's living for a year or two but really completely nonfunctional. So there are some instruments that stage in more detail the later stages. We also look at the level of functional ability in daily living activities.

The harder thing is to predict the duration. We know that it is anywhere from 5 to 20 years with an average of about 10 years from noticeable symptoms to death, but there is tremendous variability. One way in which we approach it in our clinic is by following people and seeing them every year. In that way can get a trajectory, but even that doesn't help us all that much because you can have some surprises too at different stages of illness.

Andrew Schorr:

Okay now people wonder about is there anything they can do to either slow the progress themselves or prevent it. So there has been a lot in the paper and news coverage about if you do crossword puzzles and play bridge and word games and all these sorts of things it can keep your mind young. What do we know about these sorts of activities when it comes to Alzheimer's?

Dr. Weintraub:

Some of the studies are epidemiologic. What that means is that you take a group of people and you follow them, and you see what are they doing in their lives, and then you measure their mental functions, and you find out that those who have been doing crossword puzzles are scoring higher on tests of cognitive functions than those who haven't been doing crossword puzzles. Well that's very different from taking a group of people and saying, 'Okay, you are going to do crossword puzzles for the next five years, and you (another group) aren't going to do anything. You are just going to sit at home and watch TV or not do anything or go swimming instead of doing crossword puzzles.' The latter type of study hasn't really hasn't been done yet.

There are some studies, there's one study called "ACTIVE" that was done at Washington University where they train seniors in cognitive functions and show that you really can have an impact by using your mind and learning to keep intellectually stimulated that you can improve cognitive scores. What we don't know from that study is how long that effect lasts, and whether it generalizes to things beyond the skills that you are trained with.

We know that whatever you do for your heart is good for your brain. So healthy diet, exercise, sleep, and other factors. There is some evidence to suggest that people who exercise don't show as much decline and are more cognitively fit than people who are sedentary. Insomnia and other sleep disorders, such as sleep apnea, can have a major impact on cognition and are potentially treatable. Depression is also treatable. Our advice to make sure that you are giving your brain the best advantage is, "Treat whatever you can."

Andrew Schorr:

Yes, I try to be active. I keep that in mind as I go for sure. Let me ask you this. So when, and you've alluded to it, when someone is diagnosed with one of these conditions, particularly Alzheimer's, it's a family diagnosis. While as you said you don't always know the trajectory was the word you used, right off the bat we know that there is a freight train coming, or maybe has already arrived, and it is a big change for everybody. Does your center help the family through that? I know there are other resources that come to bear, and there is the Alzheimer's Association and other kinds of groups, but still people are coming in for medical tests and guidance so I imagine it requires sort of multidisciplinary support and not just for the person with the diagnosis.

Multidisciplinary Approach and Quality Care

Dr. Weintraub:

Yes, absolutely. Our team is Multidisciplinary with a capital "M." We have neurologists, neuropsychologists, psychiatrists and social workers, and all of these

disciplines will meet with the patient and the family. We get social work involved very, very early on so that families can put together a framework within which they are going to view this illness and how they are going to work with it, what resources they will need and what is available out in the community.

Families bring different levels of strength and weaknesses to the situation, and so by trying to figure out early on how they have coped with hardship in the past, we can assess how they are going to deal with this illness now? So we are very, very much attuned to those needs. Also sometimes the individual with Alzheimer's may have some behavioral changes. They may become agitated or paranoid or depressed so we also have psychiatric consultation to try to figure out will medications help, is there something going on between the caregiver and the person with Alzheimer's that is causing situations to escalate and making people unhappy? We have services for individuals with early stage disease who are aware of their symptoms and who benefit from group support. So we pay a lot of attention to that in addition to also inviting people to participate in research.

Andrew Schorr:

Is there any surgical approach that comes into play for either Alzheimer's or these other dementias?

Dr. Weintraub:

Not that I would recommend with any degree of enthusiasm.

Andrew Schorr:

Okay, well that's pretty definitive. People are obviously searching for answers, and depending upon where they go maybe somebody will say, 'Oh I can help with that,' or people become desperate, and they see something in the paper where they think you know you go across the border, and there is some answer that Northwestern is keeping from you, but it sounds like you, Dr. Weintraub and your team are very committed to trying to make a difference in this.

Dr. Weintraub:

We certainly are. Our motto is "Don't do any harm." Families often will ask me, 'Well, what would you do?' or 'How would you treat? Would you go and have this special treatment for your loved one?' My advice is that if it is not going to hurt the patient and it isn't going to clean out the family financially, go ahead and do it. Examples of things that fall in that category are massage- feels good and not harmful. But if it is anything that could potentially worsen your disease, does not have any scientific support, and costs a lot of money, I would advise against it. Let's face it there are people out there who will take advantage of individuals with Alzheimer's disease because they are so desperate, So you may just find yourself several thousand dollars lighter and no nearer to a cure or any other kind of help.

Andrew Schorr:

I want to ask you about that for a second. You know often people think that the traditional medical establishment is trying to keep things from you, and that there is somebody off in the corner of the world or the corner of the Internet who has the answer that you haven't heard about, but it would seem to me with you and your colleagues around the world working for a cure or prevention for Alzheimer's, better understanding of that and other dementias that if there was a breakthrough, and you referred to it earlier, somebody would be winning the Noble Prize. It would be a big deal, and you wouldn't have to go far to hear about it.

Dr. Weintraub:

That's my belief, and I tell my patients sometimes that my most devout wish is that I would be out of a job because that would mean that there would be no more Alzheimer's.

Andrew Schorr:

Okay, so I just want to recap some of this. So first of all 60 percent of the time with some of these symptoms that we have just described, the memory loss and being disoriented and not knowing, remembering somebody's name and things like that, that particularly in an older person, but it could...

Dr. Weintraub:

Yes, and that is a very special "particularly." It's got to be in an older person.

Andrew Schorr:

Yes, and then we'd say well 60 percent of the time that would likely be Alzheimer's, but it could be other things. So you need to differentiate. If it is in a younger person, I know this is a special interest of yours, so a 40 year old or 45-year-old then it could well be something else, and you want to zero in on that too because the approaches are different.

Dr. Weintraub:

Oh yes, and in the younger person by the way, the symptoms are less likely to be memory loss and more likely to be a total change in personality so that initially these individuals will get diagnosed with a psychiatric disorder like bipolar disorder or depression or even schizophrenia because their behavior becomes so outrageous. Then it isn't until a year or two goes by where it becomes clear, when other cognitive symptoms start to develop as the disease worsens, that it is really a brain disease and not psychiatric disorder.

Andrew Schorr:

And that could be that frontotemporal dementia or FTD?

Dr. Weintraub:

Frontotemporal dementia, right.

Andrew Schorr:

Well again, it sounds like to me like if we are concerned about a loved one or ourselves for that matter, that in these days there is a complexity here and trials going on as well that you mentioned, that we'd do well to have a consultation with your Alzheimer's Disease Center at Northwestern.

Dr. Weintraub:

Yes, and at the very least it would give you a baseline. We all have had our blood pressure taken. We've all had our pulse taken. We've had our sugar levels measured. We have our cholesterol tested. Nobody has measured our brain function in years of going to our annual doctors' visits. So in fact when people do come to me, one of the biggest tasks I have is to figure out what might you have been like cognitively at their very best. So I would encourage everyone to get their brain tested when they are in their 50s so that at least there is a yardstick, and you have a baseline measure. Then, should symptoms develop later on, there will be something to compare them with.

Andrew Schorr:

And I know in talking about this with you a lot of us don't want to face up to it. So if there are some symptoms in ourselves or a loved one we kind of want to overlook it if we can. Some of it is of course a natural part of aging, but it may not be. So I would urge people to pursue it further. I know we have in our family. You don't know what the news is going to bring; what's going to come back, but I think it's better to know what you are dealing with than not. Wouldn't you agree doctor?

Dr. Weintraub:

Oh, yes. There is no question about that in my mind. Obviously if the news comes back negatively then that's hard to take. On the other hand, then you know what you are dealing with. You know what you're facing, and then you can get help. If you don't know what you're facing you can't get help.

Andrew Schorr:

Well I want to thank you for your devotion with your team there at Northwestern and the Alzheimer's Disease Center to help people both with Alzheimer's or understand when it could be something else as well. I hope maybe you'll win the Nobel Prize or one of your colleagues at Northwestern, but I think that would be just great, and as I get older and my friends, and we have more and more of a clear and present worry about this, that I sure hope there is that breakthrough coming. All the best to you Dr. Weintraub.

Dr. Weintraub:

Well thank you so much; it's been a pleasure.

Andrew Schorr:

Thank you. That's Dr. Sandra Weintraub and she is Professor of Psychiatry and Behavioral Sciences and Neurology at Northwestern University's Feinberg School of Medicine, and she is also the Clinical Core Director at the Northwestern Cognitive Neurology and Alzheimer's Disease Center. This is what we do on Patient Power every two weeks on HealthNet brought to you by Northwestern Memorial Hospital. Thanks for joining us. I'm Andrew Schorr; we'll see you next time.

Please remember the opinions expressed on Patient Power are not necessarily the views of Northwestern Memorial Hospital, its medical staff or Patient Power. Our discussions are not a substitute for seeking medical advice or care from your own doctor. That's how you'll get care that's most appropriate for you.