International Journal Dental and Medical Sciences Research
Volume 3, Issue 3, May - June 2021 pp 196-201 www.ijdmsrjournal.com ISSN: 2582-6018

Alzheimer’s Disease

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Submitted: 15-05-2021 Revised: 26-05-2021 Accepted: 28-05-2021

A degenerative brain disease of unknown cause that is the most common form of dementia, that usually starts in late middle age or in old age, that results in progressive memory loss, impaired thinking, disorientation, and changes in personality and mood, and that is marked histologically by the degeneration of brain neurons especially in the cerebral cortex and by the presence of neurofibrillary tangles and plaques containing beta-amyloid ·
Behavioural problems, such as mood swings and agitation, may also be a part of the progression of Alzheimer's disease.

The ability to differentiate normal aging-related memory changes from the impairments associated with dementia, including Alzheimer disease …

Researchers in California have created mice carrying the gene for beta-amyloid protein, the principal component of the plaques riddling the brains of people with Alzheimer's.

EPIDEMIOLOGY

Among people aged 65, 2-3% show signs of the disease, while 25 - 50% of people aged 85 have symptoms of Alzheimer's and an even greater number have some of the pathological hallmarks of the disease without the characteristic symptoms. Every five years after the age of 65, the probability of having the disease doubles. The share of Alzheimer's patients over the age of 85 is the fastest growing segment of the Alzheimer's disease population in the US, although current estimates suggest the 75-84 population has about the same number of patients as the over 85 population

INCIDENCE IN INDIA

A COHORT STUDY WAS CONDUCTED BETWEEN THE PERIOD 2001-2011 TO ESTIMATE THE INCIDENCE OF ALZHEIMER’S DISEASE IN THE POPULATION OF TRIVANDRUM.

The results indicate high incidence of AD in this cohort of Kerala population, higher than reported previously from India though lower than developed countries. Suggestions that the incidence of AD is lower in Asia than in Europe and North America are based on very few Asian incidence studies, most of which are from eastern Asia, Japan, China, and Taiwan with reporting rates from 5.1 to 8.9 per 1000 person-years among seniors aged ≥65 years. Incidence of AD among seniors aged ≥65 years in Trivandrum, standardized against the age distribution of the year 2000 US population, was 9.19 per 1000, lower than the 17.5 per 100 found by similar methods, in the Monongahela Valley of Pennsylvania and lower than 1.15% in Shanghai and 15.7% in Anhui, in China. However, the Anhui study population excluded the illiterate, follow-up was for 1 year, and an algorithmic dementia diagnosis procedure was used. The incidence rates in this cohort, nevertheless, was much higher than 4.7 per 1000 found in rural Ballabgarh in India, this study was based on a limited follow-up of 1 year. The Ballabgarh cohort was largely rural illiterate older adults. In contrast, COAT cohort is largely literate, urban, and semi-urban population with better Human Development Index (HDI) of 0.64 versus 0.54 in Ballabgarh and 0.5 in India, and longer life expectancy at birth in years 74 versus 66.2 in Ballabgarh and 63.5 in India. The result emphasizes that there are substantial regional differences in AD incidence within the heterogeneous population of India.

Ongoing research on risk factors

Risk factors are characteristics of the person, lifestyle, environment, and genetic background that contribute to the likelihood of getting a disease. Risk factors on their own are not causes of a disease. Risk factors represent an increased chance, but not a certainty, that Alzheimer’s disease will develop. Similarly, having little or no exposure to known risk factors does not necessarily protect a person from developing the disease.
Some risk factors are modifiable, which means they can be changed (e.g., smoking, high blood pressure); other risk factors are non-modifiable, which means they cannot be changed (e.g., age, genetic makeup

Modifiable risk factors

High cholesterol levels in the blood, high blood pressure, diabetes, smoking and obesity are the major modifiable risk factors for cardiovascular diseases, including heart disease and stroke. The risk factors for cardiovascular disease represent risk factors for both Alzheimer's disease and vascular dementia. These cardiovascular risk factors are more common in older age groups.

Smoking

Cigarette smoking is causally related to a wide range of diseases including many forms of cancer, cardiovascular disease and diabetes. . The evidence is strong and consistent that smokers (vs. non-smokers or ex-smokers) are at a 45% higher risk of developing Alzheimer’s disease. They are also at a higher risk of developing vascular dementia (although the evidence is not quite as strong) and even other forms of dementia. Also, ex-smokers reduce their risk by not smoking. This is an encouraging finding for dementia prevention, suggesting, as with other adverse impacts of smoking, that the increased risk of dementia can be avoided by quitting smoking.

High blood pressure

People who have high blood pressure (hypertension) in midlife are on average more likely to develop dementia compared to those with normal blood pressure. High blood pressure affects the heart, the arteries and blood circulation so it increases the risk of developing Alzheimer’s disease, particularly vascular dementia. Research has shown that treating high blood pressure with physical activity and better diet can bring the risk down and if this is not successful, with appropriate medications.

Diabetes

Research has shown that type 2 diabetes in midlife is associated with increased risk of dementia, Alzheimer’s disease, vascular dementia and cognitive impairment. In fact, people who have type 2 diabetes are, on average, twice as likely to develop dementia compared to those without diabetes.

High cholesterol

People with high total cholesterol levels in midlife are on average more likely to develop dementia compared to those with normal total cholesterol. Research has shown that people who have their high cholesterol treated with drugs called “statins” have a lower risk of dementia. So treating high cholesterol is important for both heart and brain health. High cholesterol is an important risk factor for hypertension and diabetes and also contributes independently to cardiovascular risk.

Obesity and lack of physical activity

Both obesity and lack of physical activity are important risk factors for diabetes and high blood pressure, and should, therefore, also be taken into consideration. Obesity in midlife may increase the risk of dementia.

Other risk factors

Alcohol

Alcohol is ranked fifth among the most important risk factors for death and disability worldwide and it has been implicated as a causal factor for more than 200 diseases and injuries, including major non-communicable diseases such as liver cirrhosis, some cancers and cardiovascular disease.

People who drink moderate amounts of alcohol have the lowest risk of developing dementia. Those who don’t drink any alcohol at all have a slightly higher risk. Those who drink excessively have the highest risk.

Low levels of formal education

Research shows that education lowers the risk of dementia. The quality and quantity of education, that protects against dementia, remains to be clarified.

Depression

People who experience depression in later life or have a history of depression may also develop dementia. However, the relationship between depression and dementia is still unclear. Many researchers believe that depression is a risk factor for dementia, whereas others believe it may be an early symptom of the disease.

Head injuries

People who experience severe or repeated head injuries are at increased risk of developing dementia. It is possible that deposits that form in the brain as a result of the injury may be linked to the onset of dementia.

Non-modifiable risk factors

Age

Alzheimer’s disease is not a normal part of aging but age is the strongest known risk factor for Alzheimer's disease. But this does not mean that most people develop the disease as they age. Most do not. Some younger people, in their 40s or 50s, are diagnosed with the young (early) onset form of the disease. After the age of 65, the risk of

developing Alzheimer's disease doubles approximately every five years. The older you become, the higher the risk – 1 in 20 Canadians over age 65 and 1 in 4 of those over age 85 have Alzheimer’s disease.

It is well-established that aging can impair the body's self-repair mechanisms, including in the brain. And, many of the cardiovascular risk factors increase with age, such as high blood pressure, heart disease, and high cholesterol.

Family history and genetics

Most Alzheimer’s disease does not run in families and is described as “sporadic”. Rare cases of Alzheimer’s disease are inherited or “familial’.

Familial Alzheimer's disease

Familial Alzheimer’s disease accounts for less than 5% of all cases of Alzheimer’s disease. This form of the disease runs in families. If a person has familial Alzheimer’s disease, each of his/her children has an increased chance of inheriting the disease-causing gene and developing Alzheimer’s disease.

Familial Alzheimer’s disease is due to changes or alterations in specific genes that can be directly passed on from parent to child. Three familial Alzheimer’s disease risk genes have been discovered so far: the PS1, PS2, and APP genes. If you have an alteration in any one of these genes, you will have a greater chance of developing young (early) onset familial Alzheimer’s disease. Researchers are searching for other genes that might be associated with familial Alzheimer’s disease.

Sporadic Alzheimer’s disease

The most common form of Alzheimer’s disease is called sporadic Alzheimer’s disease. Sporadic Alzheimer’s disease is due to a complex combination of our genes, our environment, and our lifestyle. The single greatest risk factor for developing sporadic Alzheimer’s disease is aging. Most cases begin after age 60-65 years.

Gender

There has been some debate that women may be more likely to develop Alzheimer’s disease than men. The international evidence has not consistently shown this to be true. More research is required to determine if other factors than age may heighten a women’s chances of developing Alzheimer’s disease.

Other

Other medical conditions that can increase a person's chances of developing dementia include Parkinson's disease, multiple sclerosis, chronic kidney disease and HIV. Down syndrome and some other learning disabilities also increase a person's risk of dementia.

Stages of Alzheimer's

Alzheimer's disease typically progresses slowly in three general stages — mild (early stage), moderate (middle stage), and severe (late stage). Since Alzheimer's affects people in different ways, each person will experience symptoms - or progress through Alzheimer's stages - differently.

Overview of disease progression
Mild Alzheimer's (early stage)
Moderate Alzheimer's (middle stage)
Severe Alzheimer's (late stage)
Overview of disease progression

Did you know?

People with cognitive changes caused by Mild Cognitive Impairment (MCI) have an increased risk of developing Alzheimer's or another dementia. However, not all people with MCI develop Alzheimer's.

Learn More

The symptoms of Alzheimer's disease worsen over time, although the rate at which the disease progresses varies. On average, a person with Alzheimer's lives four to eight years after diagnosis, but can live as long as 20 years, depending on other factors.

Changes in the brain related to Alzheimer's begin years before any signs of the disease. This time period, which can last for years, is referred to as preclinical Alzheimer's disease.

The stages below provide an overall idea of how abilities change once symptoms appear and should only be used as a general guide. They are separated into three different categories: mild Alzheimer's disease, moderate Alzheimer's disease and severe Alzheimer's disease. Be aware that it may be difficult to place a person with Alzheimer's in a specific stage as stages may overlap.

Mild Alzheimer's disease (early stage)

In the early stage of Alzheimer's, a person may function independently. He or she may still drive, work and be part of social activities. Despite this, the person may feel as if he or she is having memory lapses, such as forgetting familiar words or the location of everyday objects.

Friends, family or others close to the individual begin to notice difficulties. During a detailed medical interview, doctors may be able to detect problems in memory or concentration. Common difficulties include:
Problems coming up with the right word or name
Trouble remembering names when introduced to new people
Challenges performing tasks in social or work settings.
Forgetting material that one has just read
Losing or misplacing a valuable object
Increasing trouble with planning or organizing

Moderate Alzheimer's disease (middle stage)

Moderate Alzheimer's is typically the longest stage and can last for many years. As the disease progresses, the person with Alzheimer's will require a greater level of care.

During the moderate stage of Alzheimer's, individuals may have greater difficulty performing tasks such as paying bills, but they may still remember significant details about their life.
You may notice the person with Alzheimer's confusing words, getting frustrated or angry, or acting in unexpected ways, such as refusing to bathe. Damage to nerve cells in the brain can make it difficult to express thoughts and perform routine tasks.
At this point, symptoms will be noticeable to others and may include:
1. Forgetfulness of events or about one's own personal history
2. Feeling moody or withdrawn, especially in socially or mentally challenging situations
3. Being unable to recall their own address or telephone number or the high school or college from which they graduated
4. Confusion about where they are or what day it is
5. The need for help choosing proper clothing for the season or the occasion

Trouble controlling bladder and bowels in some individuals
Changes in sleep patterns, such as sleeping during the day and becoming restless at night
An increased risk of wandering and becoming lost
Personality and behavioral changes, including suspiciousness and delusions or compulsive, repetitive behavior like hand-wringing or tissue shredding

Severe Alzheimer's disease (late stage)

In the final stage of this disease, individuals lose the ability to respond to their environment, to carry on a conversation and, eventually, to control movement. They may still say words or phrases, but communicating pain becomes difficult. As memory and cognitive skills continue to worsen, significant personality changes may take place and individuals need extensive help with daily activities.

At this stage, individuals may:
1. Need round-the-clock assistance with daily activities and personal care
2. Lose awareness of recent experiences as well as of their surroundings
3. Experience changes in physical abilities, including the ability to walk, sit and, eventually, swallow
4. Have increasing difficulty communicating
5. Become vulnerable to infections, especially pneumonia

LATE STAGE CARE- GIVING

What to expect:

As the disease advances, the needs of the person living with Alzheimer's will change and deepen. A person with late-stage Alzheimer's usually:
1. Has difficulty eating and swallowing
2. Needs assistance walking and eventually is unable to walk
3. Needs full-time help with personal care
4. Is vulnerable to infections, especially pneumonia

Your role as caregiver

During the late stages, your role as a caregiver focuses on preserving quality of life and dignity. Although a person in the late stage of Alzheimer's typically loses the ability to talk and express needs, research tells us that some core of the person's self may remain. This means you may be able to continue to connect throughout the late stage of the disease.
At this point in the disease, the world is primarily experienced through the senses. You can express your caring through touch, sound, sight, taste and smell. For example, try:
1. Playing his or her favorite music
2. Reading portions of books that have meaning for the person
3. Looking at old photos together
4. Preparing a favorite food
5. Rubbing lotion with a favorite scent into the skin
6. Brushing the person's hair
7. Sitting outside together on a nice day

Late-stage care options

Since care needs are extensive during the late stage, they may exceed what you can provide at home, even with additional assistance. This may mean moving the person into a facility in order to get the care needed.

Deciding on late-stage care can be one of the most difficult decisions families face. Families that have been through the process tell us that it is best to gather information and move forward, rather than second guessing decisions after the fact. There are many good ways to provide quality care. Remember, regardless of where the care takes place, the decision is about making sure the person receives the care needed.

At the end of life, another option is hospice. The underlying philosophy of hospice focuses on quality and dignity by providing comfort, care and support services for people with terminal illnesses and their families. To qualify for hospice benefits under Medicare, a physician must diagnosis the person with Alzheimer's disease as having less than six months to live.

Ideally, discussions about end-of-life care wishes should take place while the person with the dementia still has the capacity to make decisions and share wishes about life-sustaining treatment.

Food and fluids

One of the most important daily caregiving tasks during late-stage Alzheimer's is monitoring eating. As a person becomes less active, he or she will require less food. But, a person in this stage of the disease also may forget to eat or lose his or her appetite. Adding sugar to food and serving favorite foods may encourage eating; the doctor may even suggest supplements between meals to add calories if weight loss is a problem.

To help the person in late-stage Alzheimer's stay nourished, allow plenty of time for eating and try these tips:

1. Make sure the person is in a comfortable, upright position. To aid digestion, keep the person upright for 30 minutes after eating.
2. Adapt foods if swallowing is a problem. Choose soft foods that can be chewed and swallowed easily. Thicken liquids such as
3. Water, juice, milk and soup by adding cornstarch or unflavoredgelatin. You can also buy food thickeners at a pharmacy or health care supply store, try adding pudding or ice cream, or substitute milk with plain yogurt.
4. Encourage self-feeding. Sometimes a person needs cues to get started. Begin by putting food on a spoon, gently putting his or her hand on the spoon, and guiding it to the person's mouth. Serve finger foods if the person has difficulty using utensils.
5. Assist the person with feeding, if needed. Alternate small bites with fluids. You may need to remind the person to chew or swallow. Make sure all food and fluid is swallowed before continuing on with the next bite.
6. Encourage fluids. The person may not always realize that he or she is thirsty and may forget to drink, which could lead to dehydration. If the person has trouble swallowing water, try fruit juice, gelatin, sherbet or soup. Always check the temperature of warm or hot liquids before serving them.
7. Monitor weight. While weight loss during the end of life is to be expected, it also may be a sign of inadequate nutrition, another illness or medication side effects. See the doctor to have weight loss evaluated.

Bowel and bladder function

Difficulty with toileting is very common at this stage in the disease. The person may need to be walked to the restroom and guided through the process. Incontinence is also common during late-stage Alzheimer's.

To maintain bowel and bladder function:

1. Set a toileting schedule. Keep a written record of when the person goes to the bathroom, and when and how much the person eats and drinks. This will help you track the person's natural routine, and then you can plan a schedule. If the person is not able to get to the toilet, use a bedside commode.
2. Limit liquids before bedtime. Limit — but do not eliminate — liquids at least two hours before bedtime. Be sure to provide adequate fluids for the person throughout the day to avoid dehydration.
3. Use absorbent and protective products. Adult disposable briefs and bed pads can serve as a backup at night.
4. Monitor bowel movements. It is not necessary for the person to have a bowel movement every day, but if there are three consecutive days without a bowel movement, he or she may be constipated. In such instances, it may help to add natural laxatives to the diet, such as prunes or fiber-rich foods (bran or whole-grain bread). Consult with the doctor if the constipation continues.

Skin and body health

A person with late-stage Alzheimer’s disease can become bedridden or chair-bound. This

inability to move around can cause skin breakdown, pressure sores and "freezing" of joints.

To keep skin and body healthy:

1. Relieve body pressure and improve circulation. Change the person's position at least every two hours to relieve pressure and improve blood circulation. Make sure the person is comfortable and properly aligned. Use pillows to support arms and legs.
2. Learn how to lift the person. A care provider, such as a nurse or physical therapist, can provide instructions on how to properly lift and turn the person without causing injury. Make sure not to ever lift by pulling on the person's arms or shoulders.
3. Keep skin clean and dry. Since skin can tear or bruise easily, use gentle motions and avoid friction when cleaning. Wash with mild soap and blot dry. Check daily for rashes, sores or breakdowns.
4. Protect bony areas. Use pillows or pads to protect elbows, heels, hips and other bony areas. If you use skin moisturizer on these areas, apply it gently and do not massage it in.
5. Prevent "freezing" of joints. Joint "freezing" (limb contractures) can occur when a person is confined to a chair or bed. It's sometimes helpful to do range-of-motion exercises, such as carefully moving the arms and legs two to three times a day while the skin and muscles are warm, like right after bathing. Consult with the doctor before starting these exercises.

Infections and pneumonia
The inability to move around during late-stage Alzheimer's disease can make a person more vulnerable to infections.

To help prevent infections:

1. Keep the teeth and mouth clean. Good oral hygiene reduces the risk of bacteria in the mouth that can lead to pneumonia. Brush the person's teeth after each meal. If the person wears dentures, remove them and clean them every night. Also, use a soft toothbrush or moistened gauze pad to clean the gums, tongue and other soft mouth tissues.
2. Treat cuts and scrapes immediately. Clean cuts with warm soapy water and apply an antibiotic ointment. If the cut is deep, seek professional medical help.
3. Protect against flu and pneumonia. The flu (influenza) can lead to pneumonia (infection in the lungs). It's vital for the person with Alzheimer's as well as his or her caregivers to get flu vaccines every year to help reduce the risk. A person can also receive a vaccine every five years to guard against pneumococcal pneumonia (a severe lung infection caused by bacteria).

Pain and illness

Communicating pain becomes difficult in the late stages. If you suspect pain or illness, see a doctor as soon as possible to find the cause. In some cases, pain medication may be prescribed.

To recognize pain and illness:

1. Look for physical signs. Signs of pain and illness include pale skin tone; flushed skin tone; dry, pale gums; mouth sores; vomiting; feverish skin; or swelling of any part of the body.
2. Pay attention to nonverbal signs. Gestures, spoken sounds and facial expressions (wincing, for example) may signal pain or discomfort.
3. Be alert to changes in behaviour. Anxiety, agitation, trembling, shouting and sleeping problems can all be signs of pain.