Dementia and Alzheimer's Disease

Lynne Tomasa, PhD, MSW
Carol Howe, MD, MLS

February 25, 2010
Support Coordinator Training
Co-sponsored by Sonoran UCEDD and AZ DES DDD, District II
What is Dementia?

- Loss of short term memory
- Confusion
- Not remembering how to do certain tasks: operate appliances
- Loss of long term memory
- Failure of thrive
Dementia is...

“A set of symptoms” and not the disease itself.

- It is characterized by loss of or decline in memory and other cognitive abilities.

- It is caused by various diseases and conditions that result in damaged brain cells.
To be classified as dementia, the following criteria must be met:

- It must include decline in memory and in at least one of the following cognitive abilities:
  - Ability to generate coherent speech or understand spoken or written language
  - Ability to recognize or identify objects
  - Ability to execute motor activities, sensory function and comprehension of the required task
  - Ability to think abstractly, make sound judgments and plan and carry out tasks

- The decline in cognitive abilities must be severe enough to interfere with daily life

Alzheimer’s Association, 2009 Alzheimer’s Disease Facts and Figures
Mild Cognitive Impairment

- Problems with memory, language or cognitive function
- Severe enough that others notice the problems and it show up on tests
- BUT, not severed enough to interfere with daily life
- Some people with MCI go on to develop dementia
Alzheimer Disease OR Dementia of the Alzheimer’s Type

My memory's not as sharp as it used to be. Also, my memory's not as sharp as it used to be.
A Scary Thought

- Estimated 5.3 million Americans of all ages have Alzheimer’s disease
- This includes 5.1 people aged 65+
- Every 70 seconds, someone in America develops Alzheimer’s disease
- Due to longer life spans and the aging of the baby boomers, this number is expected to reach 13 million by the year 2050
Epidemiology of Alzheimer’s

- Less than 10% of all Alzheimer’s patients have the rare genetic variant which strikes individuals in their 40’s and 50’s.
- At age 65, 1-10% of individuals have Alzheimer’s.
- Numbers double every five years so that by age 85 as many as 50% of individuals have it.
Prevalence of Dementia by Age and Sex

Figure 2:
Framingham Estimated Risks for Dementia (All Types) by Age and Sex

10 Year Risks (Percentage)

Men | Women
---|---

Figure 3:
Framingham Estimated Risks for Alzheimer’s by Age and Sex

10 Year Risks (Percentage)

Men | Women

Alzheimer’s Association: 2009 Facts and figures
Psychological comorbidities result in an exponential increase in the cost of Alzheimer disease, both to individual families and to the country as a whole.

Average lifetime cost of caring for an individual with AD is about $174,000.

Average accumulated annual cost of caring for patients with AD, according to Alzheimer’s Association, is estimated to be $100 BILLION dollars.
Not all Dementia is Alzheimer

MOST COMMON TYPES OF DEMENTIA

- Alzheimer disease (60-80%)  
- Vascular dementia  
- Dementia with Lewy bodies  
- Parkinson disease with dementia  
- Frontotemporal dementia  
- Reversible dementias
(Potentially) Reversible Dementias

- Dementia secondary to alcohol
- Dementia secondary to infectious diseases
  - Syphilis
  - AIDS
- Normal Pressure Hydrocephalus
- Dementia due to severe B12 deficiency
- Dementia due to severe hypothyroidism
LESS COMMON CAUSES OF DEMENTIA

- Vitamin deficiencies
  - Thiamine (B1): Wernicke's encephalopathy
  - B12 (pernicious anemia)
  - Nicotinic acid (pellagra)
- Endocrine and other organ failure
  - Hypothyroidism
  - Adrenal insufficiency and Cushing's syndrome
  - Hypo- and hyperparathyroidism
- Renal failure
- Liver failure
- Pulmonary failure
- Chronic infections
  - HIV
  - Neurosyphilis
  - Papovavirus (progressive multifocal leukoencephalopathy)
  - Prion (Creutzfeldt-Jakob and Gerstmann-Straussler-Scheinker diseases)
- Tuberculosis, fungal, and protozoal
- Sarcoidosis
- Whipple's disease
- Head trauma and diffuse brain damage
  - Dementia pugilistica
  - Chronic subdural hematoma
  - Postanoxia
  - Post encephalitis
  - Normal-pressure hydrocephalus
- Neoplastic
  - Primary brain tumor
  - Metastatic brain tumor
  - Paraneoplastic limbic encephalitis
- Toxic disorders
  - Drug, medication, and narcotic poisoning
  - Heavy metal intoxication
  - Dialysis dementia (aluminum)

- Organic toxins
- Psychiatric
  - Depression (pseudodementia)
  - Schizophrenia
  - Conversion reaction
- Degenerative disorders
  - Huntington's disease
  - Pick's disease
  - Dementia with Lewy bodies
  - Progressive supranuclear palsy (Steel-Richardson syndrome)
  - Multisystem degeneration (Shy-Drager syndrome)
  - Hereditary ataxias (some forms)
  - Motor neuron disease [amyotrophic lateral sclerosis (ALS); some forms]
- Fronto-temporal dementia
- Cortical basal degeneration
- Multiple sclerosis
- Adult Down's syndrome with Alzheimer's
- ALS-Parkinson's-Dementia complex of Guam
- Miscellaneous
  - Vasculitis
  - CADASIL
  - Acute intermittent porphyria
  - Recurrent nonconvulsive seizure
- Additional conditions in children or adolescents
  - Hallervorden-Spatz disease
  - Subacute sclerosing panencephalitis
  - Metabolic disorders (e.g., Wilson's and Leigh's diseases, leukodystrophies, lipid storage diseases, mitochondrial mutations)

1. Memory loss that disrupts daily life
2. Challenges in planning or solving problems
3. Difficulty completing familiar tasks at home, work, leisure
4. Confusion with time or place
5. Trouble understanding visual images and spatial relationships
6. New problems with words in speaking or writing
7. Misplacing things and losing the ability to retrace steps
8. Decreased or poor judgment
9. Withdrawal from work or social activities
10. Changes in mood or personality
Stages of Alzheimer Disease

A. Early Stage(s)
   1. Some forgetfulness
   2. Difficulty with check book
   3. Trouble with shopping or cooking

B. Middle Stage(s)
   1. Suspiciousness/Paranoia
   2. Wandering
   3. Sundowning (especially restless in the evenings)
   4. Hypersexuality

C. Late Stage(s)
   1. Failure to recognize loved ones
   2. Incontinence
   3. Difficulty eating
   4. Sleep all the time
Criteria for diagnosis:

Memory impairment (decreased ability to learn new information or to recall previously learned information. In Alzheimer Disease, usually the first thing to go is short term memory) AND one or more of the following:

1. Aphasia (language disturbance)
2. Apraxia (difficulties with motor activities—such as getting dressed)
3. Agnosia (difficulty recognizing familiar objects)
4. Difficulties with executive function such as organizing or planning.

DSM-IV, 2000)
Diagnostic Tools

1. Screening exams such as the Folstein Mini-Mental Status Exam, SLUMS, or Clock-Drawing Test
2. Imaging test such as an MRI or a PET scan
Frequently used tools: Folstein Mini-mental Status Exam

CLOSE YOUR EYES

1. Write a complete sentence.

Copy design:

[Design image]

Total Score: __________________ Examinee Signature: __________________ Updated: 8/05
Mini Cog

CLOCK DRAW TEST

Patient name ____________________________
Patient ID # ____________________________
Date __/__/____

1) Inside the circle, please draw the hours of a clock as they normally appear

2) Place the hands of the clock to represent the time: “ten minutes after eleven o’clock”

The Mini-Cog Assessment Instrument for Dementia

The Mini-Cog assessment instrument combines an unstructured recall task with a clock-drawing test (CDT). The Mini-Cog can be administered in about 3 minutes, requires no special equipment, and is relatively unaffected by level of education or language variations.

Administration

The test is administered as follows:

1. Instruct the patient to listen carefully to and remember 3 unrelated words and then to repeat the words.

2. Instruct the patient to draw the face of a clock, either on a blank sheet of paper, or on a sheet with the clock already drawn on the page. After the patient puts the numbers on the clock face, ask him or her to draw the hands of the clock to read a specific time, such as 11:20. These instructions can be repeated, but no additional instructions should be given. Give the patient as much time as needed to complete the task. The CDT serves as the recall distractor.

3. Ask the patient to repeat the 3 previously presented words.

Scoring

Give 1 point for each recalled word after the CDT distractor. Score 1-3.

A score of 0 indicates positive screen for dementia.

A score of 1 or 2 with an abnormal CDT indicates positive screen for dementia.

A score of 1 or 2 with a normal CDT indicates negative screen for dementia.

A score of 3 indicates negative screen for dementia.

The CDT is considered normal if all numbers are present in the correct sequence and position, and the hands are pointing to the requested time. Source: Duncan B, Scalfari A, Bruni N, Villemure J, Donovan A. The mini-cog: a cognitive “vital sign” measure for dementia screening in multi-lingual elderly. Int J Geriatr Psychiatry 2001; 16(11): 1021-1027.
Diagnostic tools cont’d.

3. Lab-work—primarily to rule out reversible causes of dementia. Check:
- blood count
- electrolytes,
- kidney and liver function,
- thyroid function,
- B12 and Folate levels
- markers for inflammation (sed rate, C-reactive protein)
- ? tests for syphilis

4. More extensive neuropsychiatric testing
Diagnosis can really only be made....

with a brain biopsy (most patients opt out)

www.ahaf.org/alzdis/about/AmyloidPlaques.htm
Risk Factors for Alzheimer Disease

1. Age
2. Age
3. Age
4. Low “brain reserve”
   a. “low educational and occupational attainment; low mental ability in early life”.
   b. decreased activity -both mental and physical in later life
5. Head injury
Although most other risk factors are the same for AD and CV Disease, women are actually at greater risk for AD while men are at greater risk for CV disease.
How does family history work?

- On Chromosome 19, there is a gene called ApolipoproteinE (APOE) which can express itself as APOEe2, APOEe3 and APOEe4. We receive one allele from each of our parents.

- APOEe2- protective (least common, of course)
- APOEe3- neutral risk ;most common
- APOEe4- strongly associated with AD
  - 1 allele (heterozygous) — 3X risk.
  - 2 alleles (homozygous) - 15X risk.
Percent of Subjects with apoE Alleles with and without AD

Equal Opportunity Genes

- Although there is a genetic component, (APOE) why or whether it gets expressed as actual disease is not understood.

- Alzheimer’s is an equal opportunity disease. It does not seem to affect any particular ethnic group more than another.
Current Clinical Treatment/Drug Therapy

- No Cure for Alzheimer Disease (yet)

- Most drug treatment aimed at correcting underlying neurotransmitter imbalances.
  - First neurotransmitter targeted: acetylcholine
    - Cholinesterase Inhibitors-approved for mild to moderate AD
      - Donepezil (Aricept)
      - Galantamine (was Reminyl, now Razadyne)
      - Rivastigmine (Excelon)
Second neurotransmitter target: NMDA (\textit{N}-methyl-D-aspartic acid)

- Memantine (Namenda)- NMDA antagonist (Approved for moderate to severe AD.) Tends be a little more effective when used in combination with the cholinesterase inhibitors.

There is a lot of research on other neuroactive transmitters and chemicals but that’s all that is officially approved for now.
Grasping at straws:

- Other agents which have been tried but which have little, questionable or no evidence for use:
  - Non-steroidal, anti-inflammatory medications (NSAIDS)
  - Hormones
    - Estrogen
    - Progesterone
    - Testosterone
  - Nicotine Patches
  - Gingko Biloba
  - Turmeric
  - Melatonin
  - Vitamin E
  - Statins (used to treat ↑ cholesterol)
Treating the Symptoms

Medications aimed at treating accompanying depression, psychosis, agitation, extreme apathy, sleep disorders.
Non-pharmacological Treatment

- Cognitive Therapy
- Light Therapy
- Yoga
- Meditation
- Music Therapy
- Art Therapy
- Horticultural Therapy
- Pet Therapy
- Physical and Occupational Therapies
- Supportive psychotherapy
  - For the patient
  - For the caregivers
  - For the doctors!
Nutritional Therapies

- Emphasis no longer on “tube feeding” formulas to combat the inevitable weight loss of end stage Alzheimer’s.

- Some research into micronutrients and “nutraceuticals.” Nothing definitive yet but “our understanding of dietary influences on Alzheimer's disease is in its infancy” (Morris, 2004)
Psychological symptoms of Alzheimer’s disease (and other dementias) are so prevalent that, in coding, physicians actually distinguish between:

- Dementia of the Alzheimer’s Type with behavioral disturbance and
- Dementia of the Alzheimer’s Type without behavioral disturbance.

The most prevalent of these comorbidities are:

- Depression—present in 50% of patients with AD (and 99% of their caregivers).
  - Severe depression in elderly used to be called “pseudo-dementia” because it presented so similarly to AD. Now thought to truly be a precursor of dementia.
- Delusions and Paranoia—can be present in 40-50% of patients
  - Most common delusion is that spouse is an impostor or
  - That there are intruders in the home—often “little people”
- Aggression—Can be present in 10-65% of patients
Working with Individuals and Families
Situations Affecting Behavior

- Admission to a hospital
- Misperceived threats
- Changes in the environment: moving furniture, things, etc.
- Changes in caregivers
- Changes in one’s daily routine
- Moving to a new residence, room, nursing home
- Fear and fatigue resulting from trying to make sense of it all
What Families and Caregivers Can Do

- Create a calm environment
  - Avoid noise, glare, minimize background distraction
- Simplify the environment, minimize clutter
- Redirect behaviors or the person’s attention
- Remain flexible, patient and supportive
- Avoid being confrontational
- Don’t argue about facts – go along with their story
What Families and Caregivers Can Do (continued)

- Maintain a comfortable room temperature
- Keep the person with AD comfortable: monitor pain, hunger, thirst, constipation, infections, skin irritations
- Allow enough rest between major or stimulating events
- Safe proof the environment: lock gates, remove guns
A person with AD will eventually have to stop driving. Monitor the following behaviors that may signal when to stop driving.

- Cannot locate familiar places
- Fails to observe traffic signals
- Makes slow or poor decisions
- Drives at inappropriate speeds
More Signs of Unsafe Driving

Alzheimer’s Association Safety Center

- Becomes angry and confused while driving
- Hits curbs
- Uses poor lane control
- Makes errors at intersections
- Confuses the brake and gas pedals
- Returns from a routine drive later than usual;
Associations/Advocacy Groups:

- **Alzheimer’s Association**
  - Probably does live up to its claim of being “the world leader in Alzheimer research and support.” (Out of 53 of the resources listed in MedlinePlus, 19 of them are actually authored by the Alzheimer’s Association).
  - They have a vast connection of local networks (see Alzheimer’s Association: Desert Southwest Chapter) which provide support for caregivers, (including a 24/7 help line), sponsor conferences, and offer educational programs.

- **Alzheimer’s Disease International**

- **National Hospice and Palliative Care Organization**

- **Alzheimer’s Foundation of America**
Consumer/Patient Health Information Sites

- MedlinePlus: Alzheimer's Disease
- The Alzheimer’s Disease Education and Referral Center (ADEAR)
- MayoClinic.com: Alzheimer’s Disease
- NOAH: Brain and Nervous System: Alzheimer's Disease
- The Alzheimer’s Store (An Ageless Design Company)


References 2


References 3


References 4


References 7


References 8


