Dementia
An Overview

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Normal Aging
Cognitive Changes

• Significant memory loss is not a part of normal aging

• Slower processing speed (takes longer to learn and recall information)

• Able to function independently

Normal Aging
Cognitive Changes

• Language
  – Vocabulary stable and may improve
  – Occasional word-finding problems (esp. names)

• Attention
  – Difficulty multi-tasking
  – Problems with selective attention

Wide variability in rate and amount of decline
New York Times
May 20, 2008

- **Older Brain Really May Be a Wiser Brain**
  - By SARAH REISTAD-LONG
  - When older people can no longer remember names at a cocktail party, they tend to think that their brainpower is declining. But a growing number of studies suggest that this assumption is often wrong.
  - Instead, the research finds, the aging brain is simply taking in more data and trying to sift through a clutter of information, often to its long-term benefit.

Dementia

- Not a disease but a syndrome
- Symptoms include
  - Progressive cognitive impairment severe enough to interfere with everyday functioning
  - Changes in personality and behavior are frequently seen
- Not explained by delirium or major psychiatric disorder
The Case of Auguste D.

- A 51-year-old female
  - Memory impairment
  - Aphasia
  - Paranoid ideations with feelings of jealousy regarding her husband
  - Difficulty cooking meals and neglecting housework
Historical Notes


Overview of Alzheimer's Disease

Alzheimer's disease is the most common type of dementia.

2015 Alzheimer's Disease Facts and Figures
Only 45% of people with Alzheimer's disease or their caregivers report BEING TOLD OF THEIR DIAGNOSIS.

More than 90% of people with the four most common types of cancer have been TOLD OF THEIR DIAGNOSIS.

Caregivers
The Unsung Heroes

Alzheimer’s Disease
Memory Loss

- Amnesia with difficulty learning new information is often the earliest symptom in Alzheimer’s disease.

- Ability to learn new information is dependent on the integrity of the hippocampus and surrounding structures.
Medial Temporal Lobe

HM: Henry Gustav Molaison
1926-2008
Alzheimer's Disease (AD)
Early Stage

| Cognition         | Mild Disease                                                                 | Example                                                                 
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Memory</td>
<td>Difficulty learning new information and rapid rate of forgetting</td>
<td>Short-term memory loss, forgets names of questions or answers</td>
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<tr>
<td>Language</td>
<td>Anomaia</td>
<td>Word finding problems</td>
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<tr>
<td>Executive function</td>
<td>Impaired reasoning</td>
<td>Difficulty making decisions, lack of initiative</td>
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<tr>
<td>Vocational skills</td>
<td>Visuospatial disorientation</td>
<td>May get lost while driving</td>
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Onset and progression of symptoms are gradual
Functional decline (e.g., managing finances)
AD Middle Stage

**Memory**
- Memory loss for overlearned and more recent information
- Memory loss for events from many years ago, difficulty retaining specific facts

**Language**
- Vague and meaningless
- May get lost in a conversation
- echolalia (repetition of words or phrases) hard in later stage disease

**Executive Function**
- Judgment and problem solving
- Planning and organization
- Abstraction
- Mental flexibility
- No decline in social graces

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AD Middle Stage

**Apraxia**
- Greek meaning "not acting"
- Inability to carry out purposeful movements, despite intact motor and sensory skills

**Agnosia**
- Greek meaning "without knowledge"
- Not recognizing something despite relatively normal vision

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Alzheimer’s Disease: Late Stage
Final Common Pathway

- Memory severely compromised
- Speech limited
- Severe functional impairment
- Motor system spared before but now involved with evidence of bradykinesia and rigidity
- Behavioral disturbances including aggression may be seen
William Utermohlen

1986

1995

1986
Treatment Alzheimer's Disease

- Cholinesterase inhibitors (all stages mild-severe)
- Memantine (moderate-severe stages)
- General principles
  - Exercise
  - Cognitively challenging activities
  - Avoid social isolation. Stay Connected!
  - Take care of yourself. Eat well and get enough sleep.

Cognitive Continuum

Preclinical Alzheimer's Disease Research
Differential Diagnosis of Dementia

- Alzheimer's disease
- Vascular dementia
- Lewy body dementia
- Parkinson's disease
- Other types of dementia

Dementia with Lewy Bodies

Lewy Body Dementia

- Fluctuating cognition, variation in attention or alertness
- Abnormal visual hallucinations that are typically well formed and detailed
- Parkinsonism

Parkinson's Disease Dementia
REM Sleep Behavior Disorder
DLB: Supportive Feature

Current Thinking
Lewy Body Dementia
- Affects up to 1.4 million Americans
- Umbrella term
  - Dementia with Lewy Bodies (DLB)
  - Parkinson's Disease Dementia
- DLB frequently missed
  - One survey found it took 18 months and several physicians before a diagnosis was made

What is Lewy body dementia?

Brain autopsy finding: 'diffuse Lewy body dementia', more commonly called 'diffuse Lewy body disease'.
Treatment
Dementia with Lewy Bodies

- Cholinesterase inhibitors (cognitive and behavioral symptoms)
- Neuroleptic sensitivity
- Clonazepam or melatonin for REM sleep behavior disorder
Finding Hope in the Midst of Despair
Thomas B. Grabois, MD

FIVE LOSSES

• Control of body.
• A diminished physical world in which to roam.
• Professional and social isolation combined with a compromised
  role in family.
• Intellectual impairment.

Represent a nearly complete dismantling of the self I once knew.


Finding Hope in the Midst of Despair
Thomas B. Grabois, MD

• However, there is one aspect of the self that even my disease cannot touch and
  that is the soul. Though not religious in a traditional sense, I remain spiritually
  whole, comforted in the knowledge that my life still matters both to the
  patients I treated, the family I have raised, and the family I have, by second
  marriage, adopted.

• And this is where hope lies, not a naive hope that I will, by some miracle,
  have my former self restored, but hope that tomorrow, and the day after, can
  still be days from which a measure of joy and meaning can be derived. And
  from hope springs optimism that, even with great limitations, there is life to
  live.

FIGURE 5: Vascular anatomy.
**Vascular Dementia Subtype**

**Cortical Strokes**

- **POST STROKE** (Multi-infarct dementia after multiple strokes)
  - Abrupt onset of focal neurological signs and symptoms
  - Cortical cognitive impairment (e.g., amnesia, aphasia, apraxia, agnosia)
  - Long plateau between events and day to day fluctuations

Stroke 2002;51:1306-1317

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**Vascular Dementia**

**Subcortical Stroke or Ischemia**

- Memory deficits less severe
- Onset slow and subtle
- Behavioral changes early on (depression, personality changes, labile emotionality)
- Executive dysfunction
- May see early gait disorder
Even small infarcts, when combined with Alzheimer disease (AD), can lower the dementia threshold.

In the "sun" autopsy study, for those with subcortical infarcts, less AD pathology was needed to have symptoms of dementia.

Vascular Dementia: Prevention and Treatment

- Manage underlying risk factors (e.g., hypertension, hyperlipidemia, diabetes, atrial fibrillation)

- Cholinesterase inhibitors mainly based on co-association of AD and VaD
Frontotemporal Dementia

Executive Dysfunction
- Loss of interest in activities
- Difficulty in planning and initiation (getting started)
- Problems with impulse control or disinhibition
- Decline in social graces
- Unawareness or denial that their behavior is a problem
Frontotemporal Dementia
Cognitive Features

• **Language problems** including economy of output, concreteness of thought, echolalia, perseveration and eventual mutism.

• **Memory and visuospatial skills** relatively preserved.

Alternating patterns
Cummings 2003

Multiple Loop Test
Cummings 2003
Treatment Frontotemporal Dementia

- SSRIs (antidepressants) for neuropsychiatric symptoms
- Cholinesterase inhibitors unclear benefit and could exacerbate disinhibition, impulsivity and repetitive behavior
- **Non-pharmacological management**
  - Education for family
  - Behavior management strategies
  - Family and caregiver support

FDG PET Imaging

![FDG PET Imaging](image)

**Emergence of artistic talent in frontotemporal dementia**

This church was painted by the artist in his 70s. He remembered the building from his childhood. R135/05/2007 1984/I 918-92

Picture with dominant brown and yellow colours painted by a 64-year-old, artistically naive patient with FTD. At time that her speech was repetitive and rambling, 3 years later she had ceased painting.

Picture painted by a patient without previous artistic training, 8 years into his FTD. Reprinted from Miller et al., Lancet 1991; 338: 1744-5, with permission from Elsevier.
Aggravators of Dementia

- D - drugs
- E - emotional illness
- M - metabolic/ endocrine disorders
- E - eye/ ear problems
- N - nutrition
- T - tumors/ trauma
- I - infections
- A - alcohol/ anemia
Changes in Behavior and Personality

- Delusions or mistaken belief in things that are not true.
- Hallucinations
  - Seeing things that are not there.
  - Hearing things that are not there.
- Wandering.
- Aggression.
- Depression.

Managing Changes in Behavior and Personality

- Connect with the emotional content of the behavior.
- Use distraction techniques (e.g., music, pictures, humor).
- Don’t take things personally.
- Don’t panic. Enlist the help/support of others when necessary.

KISSSSS

- K.P.P.I
  - Kind (positive)
  - Patience
  - Understanding
  - Involvement
  - Support
  - Insight
  - Sympathetic
  - Kindness

Alzheimer's Association
Medication: Tip of the Iceberg

Treatment

- Safety issues (e.g., driving, medication administration, fall risk, stove use)
- Caregiver stress
- Education
- Short and long term planning
- Behavioral problems
- Creative approaches

"Shall I Compare Thee to a Dose of Donepezil?": Cultural Arts Interventions in Dementia Care Research

Kate de Medeiros, PhD, ; and Anne Basting, PhD
Music and Dementia

- Memory for familiar music can be relatively spared in AD
- Ability to respond to or produce music is often remarkably well preserved even in the advanced stages of AD
- Music involves multiple brain regions including movement, planning, memory, attention and emotion.

Music and Dementia

- Songs that carry strong emotional memories are better retained.
- Some literature suggests improvement in agitated behavior with music.
- "Music evokes emotion, and emotion can bring with it memory". Oliver Sacks

ALIVE INSIDE

The power of Music in Alzheimer’s

"Music is perhaps one of the most direct ways to get through to people with Alzheimer’s. It can be a tool to engage and connect them to their memories and experiences, even after they may not recognize their surroundings. Music can evoke emotions and memories that are often lost in Alzheimer’s."

ALIVE INSIDE
Alive Inside

The Lost Mariner
by Oliver Sacks

"Perhaps there is a philosophical as well as clinical lesson: that in Korsakov’s or dementia or other such catastrophes...there remains the undiminished possibility of reintegration by art, by communion, by touching the human spirit: and this can be preserved in what seems at first a hopeless state of neurological devastation".