Dementia

Assessing Brain Damage
- Mental status examination
  - Information about current behavior and thought including orientation to reality, memory, and ability to follow instructions
- Neuropsychological testing
  - Assess impairment in awareness of and responsiveness to sensory stimulation, ability to understand verbal communication, and ability in verbal and emotional expression
- Brain imaging
  - Computerized tomography (CT scan)
  - Positron emission tomography (PET scan)
  - Magnetic resonance imaging (MRI)

Mental Status Examination
- Time – “What year is this? What day?”
- Place – “What city and province are we in?”
- Immediate memory – “Repeat these words…” Spell “world” backwards.
- Attention – “Subtract 7 from 100 and continue to do so.”
- Recall – “Repeat the words I mentioned earlier.”
- Naming – “What is this?” (Show object)
- Repetition – “Repeat: East, west, home’s best.”
- Following command – “Put this watch on the table.”
- Visual construction – “Copy this figure.”
Neuropsychological Test Performance

![Figure 16.1: These drawings represent part of the neuropsychological test performance of a 69-year-old woman with a diagnosis of Alzheimer's disease. The figures on the left were drawn by the patient herself, who then handed the sheet of paper to the examiner. After the patient had completed her responses (2), the sheet of paper was turned over and the patient was asked to redraw the figures again, side by side. The figures that she drew on the second occasion are noted in parentheses. (Figure continued on the right.)](image)

DSM-IV-TR Criteria for Cognitive Disorders

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementias</td>
<td>Delirium due to a general medical condition; Substance-related delirium; Delirium due to multiple etiologies</td>
</tr>
<tr>
<td>Dementias</td>
<td>Delirium due to Alzheimer's disease; Delirium due to other general medical conditions; HIV/AIDS; Post-traumatic Stress Disorder; Prolactin-secreting Tumors; Creutzfeld-Jakob Disease; Substance-related and other substance-induced delirium; Delirium due to multiple etiologies</td>
</tr>
<tr>
<td>Amnestic disorders</td>
<td>Delirium due to a general medical condition; Substance-related and other substance-induced delirium</td>
</tr>
</tbody>
</table>

Types of Delirium

- Due to a medical condition
- Substance induced
- Multiple etiologies
- Not otherwise specified
Essential Features of Delirium

- Disturbance of Consciousness
  - Reduced awareness of environment
  - Reduced ability to focus, sustain, or shift attention
- Change in Cognition
  - Memory impairment (recent)
  - Disorientation
  - Language disturbance
  - Perceptual disturbance

DSM-IV-TR Criteria for Delirium

<table>
<thead>
<tr>
<th>TABLE 14-1 DSM-IV-TR Criteria for Delirium</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Disturbance of consciousness (i.e., reduced clarity of awareness of the environment) with reduced ability to focus, sustain, or shift attention.</td>
</tr>
<tr>
<td>B. A change in cognition (such as memory deficit, disorientation, language disfluency or the development of a perceptual disturbance that is not better accounted for by a preexisting, established, or evolving dementia.</td>
</tr>
<tr>
<td>C. The disturbance develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day.</td>
</tr>
</tbody>
</table>

Associated Features of Delirium

- “Sundowning”
- Impaired psychomotor activity
- Emotional disturbance
- Fear in reaction to perceived threats
- Labile mood
- Can be incontinence
Other Information about Delirium

• Prevalence
  • higher in older adults, hospitalized medically ill, and nursing home residents
• Difficulties with detection
• Onset and course
• Differential diagnosis

Medication Conditions and Delirium

• Hypoxia from cardiopulmonary condition
• Infection
• Cerebrovascular disorders
• Alcohol withdrawal
• Neurologic
• Metabolic
• Pain
• Visual/Auditory deficits can exacerbate

Environmental factors in Delirium

• Changes in location/caregiver
• Overcrowding
• Understimulation
• Overstimulation
• Barriers to movement
Essential Features of Dementia

- Cognitive impairment (memory)
  - Inability to learn new information and to recall previously learned information
- One or more cognitive disturbances
  - Deterioration of language function (aphasia)
  - Impaired ability to execute motor activities despite intact motor function (apraxia)
  - Failure to recognize or identify objects despite intact sensory function (agnosia)
  - Disturbance in executive functions such as planning, organizing, sequencing, and abstracting

Additional Criteria

- A decline from previous levels of functioning
- Impairment in occupational and social functioning

Types of Dementias

- Alzheimer’s (50%)
- Vascular Dementia (20%)
- Parkinson’s Disease
- Huntington’s Disease
- Pick’s Disease
- Creutzfeldt-Jacob Disease
- AIDS Dementia
- Alcoholic Dementia (Korsakoff’s)
- Dementia due to head trauma
- Mixed Dementia
Prevalence of Dementia

- Slightly more common in women than men
- Significant cost to the health care system
- Often require nursing home care

DSM-IV-TR Criteria for Dementia of the Alzheimer’s Type

<table>
<thead>
<tr>
<th>Stages of Alzheimer’s Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
</tr>
<tr>
<td>Memory</td>
</tr>
<tr>
<td>Language</td>
</tr>
<tr>
<td>Orientation</td>
</tr>
<tr>
<td>Motor</td>
</tr>
<tr>
<td>Mood and Behavior</td>
</tr>
<tr>
<td>ADLs</td>
</tr>
</tbody>
</table>

ADLs: Activities of Daily Living
### Stages of Alzheimer’s Disease

<table>
<thead>
<tr>
<th>Function</th>
<th>Middle Stage</th>
<th>Late Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>Routine loss</td>
<td>Mixes past and present</td>
</tr>
<tr>
<td>Language</td>
<td>Moderate aphasia</td>
<td>Expressive aphasia</td>
</tr>
<tr>
<td>Orientation</td>
<td>May get lost</td>
<td>Misidentification</td>
</tr>
<tr>
<td>Motor</td>
<td>Repetitive actions</td>
<td>Falls</td>
</tr>
<tr>
<td>Mood and Behavior</td>
<td>mood disturbances</td>
<td>Mood disturbances</td>
</tr>
<tr>
<td>ADL’s</td>
<td>Needs help with most ADL’s</td>
<td>Needs help</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>Terminal Stage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>No link to past/present</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>Few incoherent words</td>
<td></td>
</tr>
<tr>
<td>Orientation</td>
<td>Oblivious to location</td>
<td></td>
</tr>
<tr>
<td>Motor</td>
<td>Little movement</td>
<td></td>
</tr>
<tr>
<td>Mood and Behavior</td>
<td>Generally passive</td>
<td></td>
</tr>
<tr>
<td>ADL’s</td>
<td>Needs total care</td>
<td></td>
</tr>
</tbody>
</table>
Characteristics of Alzheimer’s Disease
- Early versus late onset, irreversible
- “4th leading cause of death?”
- Insidious onset
- Individual pattern of deficits (almost all have memory impairment – often first sign)
- Rate of decline varies, onset to death is, on average, 8-10 years
- Diagnosis on autopsy only
- Plaques and neurofibrillary tangles
- Comorbidity with depression (diagnostically challenging)
Other factors in Alzheimer’s Disease

- Loss of cholinergic cells, loss of acetylcholine
- Genetics markers (e.g., chromosomes 14, 19, and 21, increase in beta amyloid which destroys nerve cells)
- Chances of getting AD is increased by 4x if a parent or sibling has the disease
- Twin studies support genetic risk
- Environmental factors – head injury; exposure to glue, pesticides, and fertilizers; less education

---

Signs and Symptoms Distinguishing Depression for Dementia

<table>
<thead>
<tr>
<th>Depression</th>
<th>Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easier progression over months or years</td>
<td>Easier progression over months or years</td>
</tr>
<tr>
<td>Early morning, better as day goes on</td>
<td>Alarm clock in early morning</td>
</tr>
<tr>
<td>Anorexia, weight loss</td>
<td>Loss of appetite and weight</td>
</tr>
<tr>
<td>Sleep disturbances</td>
<td>Sleep disturbances</td>
</tr>
<tr>
<td>Anxiety, irritability</td>
<td></td>
</tr>
<tr>
<td>May take alcohol or other drugs</td>
<td>May take alcohol or other drugs</td>
</tr>
<tr>
<td>Rhythmic decline</td>
<td></td>
</tr>
</tbody>
</table>

Vascular Dementia

- Related to cerebrovascular disease
- Focal neurological signs (e.g., gait disturbance, weakness in extremities)
- Abrupt onset
- Sometimes stepwise and fluctuating course
- “Patchy” deficits
- Co-morbid with AD, delirium, depression
- More common in males
- MRI and PET/CAT scans can be useful diagnostically

Treatment

- ADRDA (Alzheimer’s Disease and Related Disorders)
- Alzheimer’s Associations
- Focus on three areas:
  - Differential diagnosis
  - Biomedical research (e.g., promising medications but no cure)
  - Caregiving

Other Dementias

- Multi-infarct Dementia
  - Caused by a series of ministrokes in the cerebral arteries
- Mixed Dementia
  - Two forms of coexisting dementia
- Creutzfeldt-Jakob Disease
  - Caused by a slow-acting virus transmitted by animals
Other Dementias

- AIDS Dementia Complex (ADC)
  - Brain is infected by HIV → progressive cognitive, motor and behavioral loss
- Focal Brain Damage
  - Causes: head trauma, stroke, tumor

Other Dementias

- Parkinson’s Disease
  - Cause: Degeneration of dopamine-producing neurons
  - Symptoms: Tremors of the voluntary small muscle groups
- Dementia caused by Psychiatric Disorders
  - Cured by anti-depressants
  - Apathy, psychomotor retardation, impaired concentration, delusions, confusion, etc

Disorder that Mimic Alzheimer's Disease

- Psychiatric Disorders
- Drug Interactions
- Substance Abuse
- Metabolic Disorders
- Circulatory Disorders
- Neurological Disorders
- Side Effects of Medications
- Tumors
- Toxic Factors
- Trauma
- Infections
<table>
<thead>
<tr>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>A complete medical history</td>
</tr>
<tr>
<td>Basic Medical Tests</td>
</tr>
<tr>
<td>Neuropsychological Tests</td>
</tr>
<tr>
<td>Brain Scans</td>
</tr>
</tbody>
</table>