The Basics of Alzheimer’s Disease

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Recommendations to Update Diagnostic Criteria, 2010
http://www.alz.org/research/diagnostic_criteria/

The trajectory of Alzheimer's disease

Thinking ability
LEARNING OBJECTIVES

• Attendees will be able to:
  • 1. Describe dementia and how it is evaluated.
  • 2. Identify how dementia is treated.
  • 3. List complications of dementia.

LEARNING OBJECTIVES

• 1. Describe dementia and how it is evaluated.
  • The most common causes of dementia in older persons will be described.
  • How a clinician can distinguish Alzheimer’s disease from other conditions that may mimic Alzheimer’s disease, yet be reversible, will be discussed.
  • Latest research criteria will be covered by Dean Hartley.

LEARNING OBJECTIVES

• 2. Identify how dementia is treated.
  • Available treatments for the most common causes of dementia will be described.
LEARNING OBJECTIVES

• 3. List complications of dementia.
  • Living alone with dementia will be covered by Cindy Womack.
  • Dementia-related behaviors will be covered by Elizabeth Hagemann.
  • Evidence-based interventions will be covered by Melanie Chavin.

CAUSES OF DEMENTIA

• Alzheimer’s disease
• Strokes
• Head injury
• Episode of severe loss of oxygen
• Brain tumor(s)
• Metabolic deficiency
• Many others

PROGRESSIVE CAUSES OF DEMENTIA

• Alzheimer’s disease (AD)
• Parkinson disease
• Lewy body disease
• Frontotemporal dementia
  • Pick’s disease
• Huntington disease
• Others
**Neurofibrillary tangles**

**Senile plaques**

**Pick bodies**
Lewy body disease inclusions

Strokes in vascular dementia

ALA’S MODEL OF THE NORMAL BRAIN
DEMENTIA IS BRAIN DAMAGE

WHAT IS DEMENTIA?
• Dementia is brain damage.
• Dementia is irreversible.
• There are many different causes of dementia.
• Some of the causes are progressive.

WHAT IS ALZHEIMER’S DISEASE?
• Dementia AD is brain damage.
• Dementia AD is irreversible.
• AD is one cause of dementia.
• AD is progressive.
HOW DOES DEMENTIA AFFECT THE PATIENT?

• The patient loses the ability to think!

The trajectory of Alzheimer’s disease

Thinking ability

TYPES OF COGNITIVE FUNCTION

• Memory
• Language
• Attention
• Visuospatial organization
• Executive function
• Personality
**TYPES OF NON-COGNITIVE FUNCTION**
- Vision
- Hearing
- Walking
- Coordination
- Eating
- Sleeping
- Etc.

**EXAMPLES OF COGNITIVE TASKS**
- Getting dressed in the morning
- Cooking a meal
- Going to the store
- Writing a letter
- Driving a car
- Talking on the telephone
- Etc.

**The trajectory of Alzheimer’s disease**

Thinking ability
Cognitive function
TYPES OF COGNITIVE FUNCTION

• Memory
• Language
• Attention
• Visuospatial organization
• Executive function
• Personality

WHAT HAPPENS TO MEMORY?

• 4,726 names
• Forgets where car is
• Forgets important events
• Forgets where he lives
• Doesn’t recognize family
• Forgets how to dress

WHAT HAPPENS TO LANGUAGE?

• Appreciate Shakespeare
• Trouble finding words
• Impaired comprehension
• Mixed up speech
• One word responses
• Groans
WHAT HAPPENS TO ATTENTION?

• Follows many conversations
• Trouble reading a book
• Trouble following TV
• Trouble with conversation
• Cannot stay on task
• Unable to interact

WHAT HAPPENS TO VISUOSPATIAL FUNCTION?

• Able to interpret a map
• Trouble with directions
• Difficulty driving around town
• Gets lost in familiar places
• Gets mixed up in own home
• Doesn’t know where he is

WHAT HAPPENS TO EXECUTIVE FUNCTION?

• Able to cook a meal
• Makes mistakes cooking
• Meals have become simple
• Only microwave cooking
• Uses fingers to eat
• Cannot feed self
WHAT HAPPENS TO EXECUTIVE FUNCTION?

• Able to balance checkbook
• Mistakes in checkbook
• Cannot keep checkbook
• Cannot write checks
• Cannot shop by self
• Cannot go shopping

WHAT HAPPENS TO PERSONALITY?

• Maintains hobbies
• Becomes apathetic
• Commits social faux pas
• Appearance worsens
• Agitated, anxious, paranoid
• Nothing remains of the original personality

LATE DEMENTIA

• Unable to care for self
• Behavioral problems
• Disordered sleep
• Incontinence
• Delusions
• Agitation
• Hallucinations
• Etc.
PROGRESSIVE CAUSES OF DEMENTIA

- Alzheimer’s disease (AD)
- Parkinson disease
- Lewy body disease
- Frontotemporal dementia
  - Pick's disease
- Huntington disease
- Others

PROGRESSIVE CAUSES OF DEMENTIA

- Alzheimer’s disease (AD)
- Lewy body disease
  - Includes Parkinson disease
- Frontotemporal dementia
  - Pick’s disease
- (Vascular dementia)
- Huntington disease
- Others

CAUSES OF DEMENTIA IN THE ELDERLY

- Alzheimer’s disease 60-75%
- Lewy body disease 10-25%
- Frontotemporal dementia ~10%
- Vascular dementia ~10%
- Others ~5%
ALZHEIMER’S DISEASE

- Loss of short term memory
- Loss of ability to do something that he/she was able to do before
- Age >65
- Normal exam in early stages

DEMENTIA WITH LEWY BODIES

- Dementia
- Signs of parkinsonism in early stages
- Visual hallucinations
- Prominent fluctuation
- REM sleep behavior disorder

FRONTOTEMPORAL DEMENTIA

• Significant change in personality or behavior,  
  OR
• Prominent difficulty with language
• Relative sparing of memory
• Age usually <65

VASCULAR DEMENTIA

• Dementia associated with a clinical stroke
• Strokes on CT or MRI
• Abnormal neurological exam
• (Presence of vascular disease risk factors)

HOW DOES ONE EVALUATE AN OLDER PATIENT WHO IS CONFUSED?

• Is the confusion sudden onset?
• Does the patient’s physical appearance look normal?
  • New changes in appearance, like facial droop,  
    inappropriately sleepy, unable to walk, weak on one side, etc.
  • Are the patient’s vital signs normal?

If there are sudden or recent changes, call the doctor!
QUESTIONS TO BE ADDRESSED IN THE EVALUATION OF AN OLDER PATIENT WHO IS CONFUSED

• Is the confusion just normal aging?
• Does the patient have a medical condition?
• Does the patient have a psychological condition?
  • (like anxiety or depression)
• Does the patient have dementia (or “pre-dementia”)?

DEMENTIA IS BRAIN DAMAGE

• Dementia is like frayed wires or burned out transistors.
• Dementia is NOT like low voltage or low temperature.

CONFUSION MAY BE DUE TO DELIRIUM

• The poor radio performance may be due to low voltage or low temperature.
• The radio itself might be fine.
• If we correct the voltage or temperature, the radio will be fine.
THE PATIENT’S CONFUSION MAY BE DUE TO DELIRIUM

- Common causes of delirium
  - Medical condition
  - Drugs
- If we correct the cause of the delirium, the confusion may resolve.

CAUSES OF CONFUSION IN AN OLDER PATIENT

- Dementia
  - Irreversible
  - Destructive
  - Usually progressive
  - Many causes
    - Alzheimer’s
    - Strokes
    - Head injury
    - Etc.
- Delirium
  - Reversible
  - Usually due to a medical condition
  - Functional

EVALUATING THE PATIENT

- Short version
  - Rule out medical causes
  - Recommend treatment
EVALUATING THE PATIENT
• Long version
  • Confirm there is a problem
  • Rule out medical causes
  • Rule out psychological causes
  • Suggest the diagnosis
  • Education
  • Recommend treatment
  • Establish a baseline

EVALUATING THE PATIENT
• History from the patient
• History from the family (informants)
• Physical and neurological exams
• Cognitive screening test
• Work-up
  • Head imaging study (CT or MRI)
  • Labs: CBC, CMP, TSH, B12, RBC folate, RPR, UA/UC, etc.
  • Other
• ? Referral
  • Geriatrician
  • Neurologist
  • Psychiatrist
  • Occupational therapist
  • Neuropsychological testing
  • Specialty clinic (SIU Memory & Aging Network)
  • Others

CAUSES OF DELIRIUM
• Delirium is usually caused by a medical condition.
  • Metabolic derangement
  • Drugs
  • Other
CAUSES OF DELIRIUM

• Metabolic derangement
  • Decompensation of chronic disease
  • Inadequate treatment of chronic disease
  • New problem

• Drugs
  • Drugs by prescription
    • Maintenance
    • PRN
  • “Recreational” drugs, including alcohol
  • Drug withdrawal
  • OTC drugs

DRUGS AND THEIR POTENTIAL SIDE EFFECTS

• Beers criteria

American Geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults
The American Geriatrics Society 2012 Beers Criteria Update Expert Panel

JAGS 60:616-631, 2012
WHAT ABOUT TREATMENT?

- Alzheimer’s
  - Non-pharmacological
  - Four FDA-approved drugs
- Lewy body
- Frontotemporal
- Vascular

WHAT ABOUT TREATMENT?

- Alzheimer’s
- Lewy body
- Frontotemporal
- Vascular
  - Prevent additional strokes

WHAT ABOUT TREATMENT?

- Alzheimer’s
- Lewy body
- Frontotemporal
- Vascular
WHAT ABOUT TREATMENT?

- Alzheimer’s
- Lewy body
- Frontotemporal
- Vascular

Same four drugs and prevent stroke

The trajectory of Alzheimer’s disease

Thinking ability

Without treatment

The trajectory of Alzheimer’s disease

Thinking ability

We wish!
Thinking ability

We wish!

Thinking ability

We have.

FDA-APPROVED DRUGS FOR ALZHEIMER’S DISEASE
TREATMENT OF ALZHEIMER’S

• There have been no new FDA-approved drugs to treat AD in the past 12 years.
• The drugs that have been approved offer modest symptomatic benefit.
• Is there a disease-modifying treatment for Alzheimer’s?

FDA-APPROVED DRUGS FOR AD

• Alter the balance of chemicals in the brain
  • donepezil (Aricept®)
  • galantamine (Razadyne®)
  • rivastigmine (Exelon®)
  • memantine (Namenda®)

AChEIs

BEHAVIORAL DISORDERS COMMON IN AD

<table>
<thead>
<tr>
<th>Apathy</th>
<th>72%</th>
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<tbody>
<tr>
<td>Agitation</td>
<td>60%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>48%</td>
</tr>
<tr>
<td>Irritability</td>
<td>42%</td>
</tr>
<tr>
<td>Aberrant motor</td>
<td>38%</td>
</tr>
<tr>
<td>Dysphoria</td>
<td>38%</td>
</tr>
<tr>
<td>Disinhibition</td>
<td>36%</td>
</tr>
<tr>
<td>Delusions</td>
<td>22%</td>
</tr>
</tbody>
</table>

Mega. Neurology 1996; 46:130
THE BENEFIT OF THESE DRUGS

- The average patient functions a little better.
- A few patients do significantly better.
- They delay the conversion to Alzheimer's disease.
- They help keep the patient out of the nursing home.

THE BENEFIT OF THESE DRUGS

Donepezil, galantamine, rivastigmine, memantine treat the ABCs of AD:

- **Activities of daily living**
- **Behavior**
- **Cognition**
THE BENEFIT OF THESE DRUGS

The available treatments are helpful, but they have not been proven to slow Alzheimer’s disease.

Like using a crutch if we have severe leg pain...

THE BENEFIT OF THESE DRUGS

The available treatments are helpful, but they have not been proven to slow Alzheimer’s disease.

Like boosting the voltage of the electricity in Ala’s brain model...

OVER-THE-COUNTER MEDICINE

- Ginkgo biloba
- Vitamin E
- Coenzyme Q10
- Resveratrol
- Fish oil (DHA, omega-3 fatty acids)
- Huperzine A
- Curcumin (curry spice turmeric)
- Prevagen
- Many others
NON-PHARMACOLOGICAL TREATMENT

• Education about dementia
• Nutrition
• Exercise
• Take care of yourself.
• What's good for the heart is good for the brain.
• If you don’t use it, you lose it.
  • (Applies to the body and the brain)

COMPLICATIONS OF DEMENTIA

• Agitation
• Depression
• Anxiety
• Disordered sleep
• Psychosis
• Combativeness
• Many others

AGITATION & AGGRESSION IN ALZHEIMER’S

• There are no FDA-approved drugs for this complication of Alzheimer’s.
TREATMENTS FOR THE COMPLICATIONS OF DEMENTIA

• Non-pharmacological treatment first!

NON-PHARMACOLOGICAL TREATMENT

• Education about dementia
  • Nutrition
  • Exercise
  • Take care of yourself.
  • What’s good for the heart is good for the brain.
  • If you don’t use it, you lose it.
    • (Applies to the body and the brain)

TREATMENTS FOR THE COMPLICATIONS OF DEMENTIA

• Non-pharmacological treatment first!
  • Pharmacological
DRUGS TO TREAT THE COMPLICATIONS

- Anti-agitation
- Anti-depressants
- Anti-anxiety (anxiolytics)
- Anti-no sleep (hypnotics)
- Anti-psychotics
- Anti-caregiver burn-out
- Others

State budget woes...

Without specific inclusion in the State budget, the SIU Alzheimer’s program is in jeopardy.

We encourage you to contact your State legislators to express your concern.