Overview of Alzheimer’s Disease and Related Dementias

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AD Related Dementias

- Frontotemporal lobar degeneration
- Dementia with Lewy bodies
- Vascular cognitive impairment-dementia

ALZHEIMER’S DISEASE

- Degenerative etiology
- Gradual progression
- Basic neurological exam normal early
- Clinical-pathology correlation 80-90%
Criteria for AD

National Institute on Aging
Alzheimer’s Association
Alzheimers and Dementia, May, 2011

Introduction to the Recommendations from the National Institute on Aging-Alzheimer’s Association Workgroups on Diagnostic Guidelines for Alzheimer’s Disease

Clifford R. Jack, Jr, Marilyn S. Albert, David S. Knopman, Guy M. McKhann, Reisa A. Sperling, Maria C. Carrillo, Bill Thies, Creighton H. Phelps

Alz and Dementia, 2011
Biomarkers for AD

- Early biomarkers
  - Amyloid deposition
    - PET imaging
    - CSF amyloid
- Later biomarkers
  - Neurodegeneration
    - Structural MRI
    - FDG PET
    - Tau PET
    - CSF tau

Neuroimaging in AD
Neuroimaging in AD

- Structural MRI
- Functional imaging
  FDG PET
- Molecular imaging
  Amyloid PET imaging

Structural Imaging in AD
Structural MRI: Atrophy and AD Stage

Control, 70, F  MCI, 72, F  AD, 74, F

Functional Imaging in AD
Molecular Neuroimaging
Tau PET Imaging
Alzheimer’s Disease Spectrum

Preclinical AD

MCI Due to AD

Dementia Due to AD

Alzheimer’s Disease Treatments 2015
SYMPTOM MODIFYING AGENTS

AD TREATMENTS

- CHOLINESTERASE DRUGS
  - DONEPEZIL (ARICEPT)
  - RIVASTIGMINE (EXELON)
  - GALANTAMINE (RAZADYNE)

- NMDA ANTAGONIST
  - MEMANTINE (NAMENDA)
Immunotherapy

- Passive immunization
  Polyclonal antibodies
  IVIG
  Monoclonal antibodies
  bapineuzumab
  solanezumab
  crenezumab
  gantenerumab
  aducanumab

Secretase Inhibition

- Beta secretase inhibitors
  Promising

- Gamma secretase inhibitors
  Challenges
Conclusions

• Moderate exercise (150 minutes/wk) resulted in improved cognitive function at 6 months

• Some benefits maintained at 18 mos
So, where are we?

Clinical Spectrum
CN – MCI – Dementia

- Aβ
- TDP-43
- TAU
- Alpha Synuclein
- Vascular Disease
- Other
Overall Conclusions

- We can diagnose cognitive impairment fairly well
  - Clinical criteria
  - Biomarkers

- Screening tools evolving
  - Useful in practice

Therapies being actively pursued
Thank You