

New Advances in Neurodegenerative Disease-

Quantitative Neuroimaging in the Clinical Setting: Toward an Earlier and More Accurate Diagnosis of Neurodegenerative Disease

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Highlights

- Newly revised diagnostic criteria for Alzheimer's disease highlight the importance of biomarker support.
- Neuroimaging biomarkers are becoming central to the evaluation of the elderly patient with cognitive impairment.
- Volumetric MRI with normative ranges may provide objective evidence in support of a neurodegenerative etiology, which assists in predictive prognosis and guides the approach to patient management.

Title: *Quantitative Neuroimaging in the Clinical Setting: Toward an Earlier and More Accurate Diagnosis of Neurodegenerative Disease*

TARGET AUDIENCE: – Neuroradiologists, neurologists, geriatricians, and primary medical practitioners who clinically evaluate elderly individuals with cognitive complaint.

OUTCOME/OBJECTIVES: – Attendees will come away with greater awareness of the proposed changes in diagnostic criteria for Alzheimer's disease and how these criteria might impact how imaging is used in the clinical evaluation of elderly patients with cognitive impairment.

PURPOSE: – Until recently, the diagnostic criteria for “probable Alzheimer's disease” were based on clinical criteria requiring that a patient showed dementia. Researchers and clinicians have long sought improved predictive prognosis for patients presenting at an earlier stage, including at the earliest signs of cognitive impairment that may be years before dementia. However, the early prodromal stages of Alzheimer's disease and other neurodegenerative illnesses are difficult to disentangle from other non-neurodegenerative etiologies for cognitive complaint in the elderly. Biofluid and neuroimaging biomarkers hold promise for improving physicians' ability to detect the disease in its earliest stages, and, importantly, to heighten their suspicion of-- and thus the detection and treatment of-- curable etiologies when biomarker evidence is incongruent with the prodromal state of a dementing illness.

METHODS/RESULTS: – A wealth of data will be reviewed, including evidence from the Alzheimer's Disease Neuroimaging Initiative, that suggests complementarity of clinically available biomarker tests for neurodegeneration and amyloid.

DISCUSSION: - Quantitative structural MRI provides improved predictive prognosis of near-term clinical outcome in elderly patients with cognitive complaint, particularly when coupled with objective evidence of cognitive impairment. Amyloid testing can provide further characterization of the cause of cognitive complaint, but is most helpful after evidence of neurodegeneration is obtained.

CONCLUSION: – A proposed clinical decision tree will be presented and discussed with relevance to the use of clinically available imaging and biofluid tests in the assessment of elderly patients with cognitive complaint.

REFERENCES: –

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