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FDG-PET + clinical diagnosis vs. clinical diagnosis for distinguishing FTD from AD

Study	Methodology/ Design	Study Population	Results	Validity /Conclusions
Foster et al 2007 Study type: Retrospective cohort Objective: To determine whether the addition of FDG-PET to clinical history and examination improves accuracy in distinguishing frontotemporal dementia (FTD) and Alzheimer's disease (AD). Primary outcomes: Accuracy, sensitivity, and specificity.	Diagnosis of FTD or AD using clinical scenarios which included information on symptoms, results of mental status tests, and neurologic examinations. *Versus* Diagnosis of FTD or AD using clinical scenarios which included information on symptoms, results of mental status tests, and neurologic examinations and FDG-PET. Gold Standard: Postmortem pathologic diagnosis Blinding: Raters knew that all subjects had a diagnosis of FTD or AD; however, they did not know the proportion of subjects with each diagnosis.	Inclusion: Patients with dementia who had a FDG-PET scan between 1984 and 1998 at the University of Michigan and received a post-mortem histopathological diagnosis of FTD or AD. Sample size: N=45 Baseline characteristics: 69% of subjects had AD; 60% were men; mean age 65.6 years; mean time from symptom onset ~4 years; mean time from scan to death ~4.7 years.	**Diagnostic accuracy, sensitivity, and specificity using clinical scenarios and clinical scenarios + FDG-PET** **Clinical scenario** / **Clinical scenario + FDG-PET** — Mean (95% CI) Accuracy: 78.8% (73-87) / 89.2% (87-91) **AD** Sensitivity: 86% (74-100) / 97.6% (94-100) Specificity: 63% (36-79) / 73.2% (57-82) **FTD** Sensitivity: 63% (36-79) / 73.2% (57-82) Specificity: 86% (74-100) / 97.6% (94-100) **Inter-rater reliability** There was moderate agreement between the 6 raters using only the clinical scenarios (kappa 0.42, 95% CI 0.25 to 0.54) and substantial agreement using the clinical scenarios + FDG-PET (kappa 0.78, 95% CI 0.65 to 0.94).	Validity: -Structural imaging studies were not included in the analysis. -Raters knew that patients had either FTD or AD. -The six raters were dementia specialists who had received FDG-PET training. -Neuropsychological testing was inconsistently used. -PET scan instrumentation and methods evolved over the study period. -Population included in this study may not represent general clinical practice as patients included in this study were being seen at a dementia research center. Conclusion: The addition of FDG-PET to clinical scenarios appeared to improve diagnostic accuracy, sensitivity, and specificity in distinguishing FTD from AD. However, because the characteristics of this analysis (expert raters were used and raters were aware that the entire population had dementia) the result of this study may not be replicated in clinical practice. Additionally, the effect on disease management and health outcomes cannot be determined from this study.

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