Agreement and Comparative Performance of Cognitive Testing, Visual MRI Rating, and Automated Brain Morphometry in Older Adults with Suspected Dementia in Uganda

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Visual MRI ratings and automated morphometry were not interchangeable. Combining MMSE with visual MTA improved specificity and overall comparative classification.

INTRODUCTION

- Dementia is rising in sub-Saharan Africa, yet diagnosis remains challenging.
- MRI adds value in neurodegeneration assessment.
- Visual MRI ratings and automated morphometry are used, but their interchangeability is unclear.
- We compared MMSE, visual MTA, and automated morphometry in Ugandan adults with suspected dementia.

METHODS

- Cross-sectional study in Uganda (Jan–Jun 2025).
- Recruited adults ≥50 years with suspected dementia.
- Structural MRI rated visually (MTA) and analyzed with automated morphometry.
- Classification performance vs. reference MRI biomarker (HOC ≤5th percentile).
- Metrics: Sensitivity, Specificity, AUC.

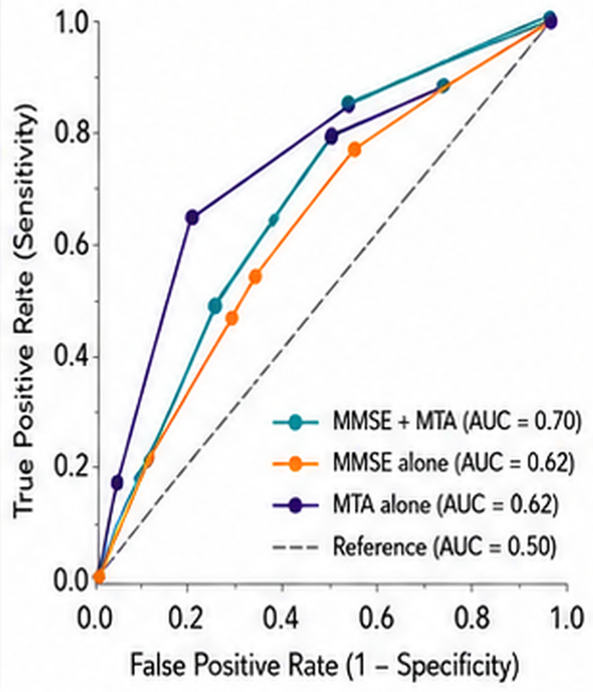
RESULTS

Comparative Classification Performance

Model	Sensitivity %	Specificity %	AUC
MMSE alone	83.3	41.0	0.62
MTA alone	70.8	53.8	0.62
MMSE + MTA (series)	62.5	76.9	0.70

Combining MMSE with visual MTA improved specificity and overall performance.

ROC Curves for Comparative Classification



Participant Summary (N = 63)

N	Mean Age	Female	Mean MMSE
63	75.6 ± 8.7 years	77.8%	13.9 ± 6.1

CONCLUSIONS

- Visual MRI ratings and automated morphometry are not interchangeable.
- Combining MMSE with visual MTA improved specificity and overall comparative classification.
- Structured MRI ratings may support dementia assessment in resource-limited settings.

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