

Neuropathological Correlates of Visual Hallucinations in Parkinsonism

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INTRODUCTION

Formed visual hallucinations are characteristic of certain neurodegenerative diseases, and it is as yet unknown whether they are the hallmark of a particular lesion type (such as Lewy-related pathology) [1,2] or lesion location (such as temporal lobe structures) [3,4]. The aim of this study is to investigate whether formed visual hallucinations are more predictive of lesion type (Lewy-related both in subjects with Alzheimer's Disease and Parkinson's Disease).

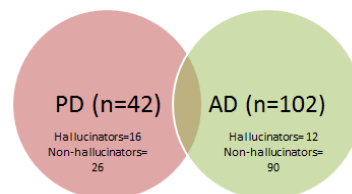
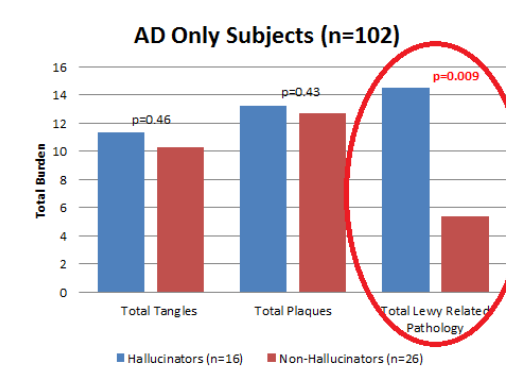
SUBJECTS & METHODS

252 subjects with clinical/pathological diagnosis of AD and/or PD were identified from the AZ Study of Aging and Neurodegenerative Disorders database. Of these 79 were excluded due to confounding comorbidities. The study group comprised 173 subjects with clinical/pathological diagnosis of PD and/or AD. Of these, 50 were categorized as hallucinators and 123 as non-hallucinators. VH were defined as formed images reported at one or more evaluations [5]. Neuropathological variables examined included total and regional Lewy related pathology density scores, plaque and tangle density scores, white matter rarefaction scores, and location and volume of infarcts. Neuropathological methods have been discussed in detail elsewhere [6].

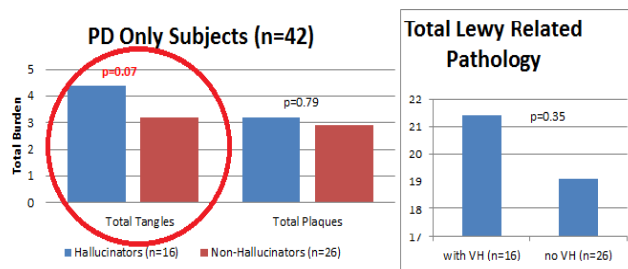
RESULTS All Subjects

	Hallucinators (n=50)	Non-Hallucinators (n=123)	p-value
Expired age	80.8	85	0.01
Parkinson's Disease (%)	0.76	0.27	0.001
Sex (%)	0.72	0.53	0.02
Total LRP	24	9	0.001
Total Tangles	6.8	8.5	0.03

AD Subgroup Analysis



PD Subgroup Analysis



DISCUSSION

In 173 subjects with PD, AD, or both, we found that in the PD group, AD pathology (cortical tangles) distinguished hallucinators from non-hallucinators in frontal, parietal, and entorhinal cortex. In the AD group, in contrast, it was PD pathology (LRP) that distinguished the groups, and this was across all brain areas. These findings suggest that both Lewy-related pathology and AD pathology (tangles) contribute significantly to the phenomena of formed visual hallucinations.

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