Sheila M Thompson[1,2], Eliza Morgan[1,2], J Kaci Fairchild[3,2,4]
[1]Palo Alto University, Palo Alto, CA, USA. [2]Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, USA. [3]Sierra Pacific Mental Illness Research Education and Clinical Center (MIRECC), Palo Alto, CA, USA. [4]Department of Psychiatry & Behavioral Sciences, Stanford University School of Medicine, Palo Alto, CA, USA

Objective: Fear of falling is an anxiety-related phenomenon that is associated with increased risk of morbidity and mortality in older adults. Furthermore, a growing body of research has established the relationship between fear of falling and decreased cognitive functioning within various populations (i.e., older adult, multiple sclerosis, stroke survivors). Yet there is little information on the relationship between fear of falling and cognition outside of a geriatric context, with no publications investigating this relationship within informal caregivers. It is important to understand this relationship within caregiver populations because fear of falling may negatively impact caregivers' ability to take care of themselves and their care recipients. The present study examines the relationship between fear of falling and cognitive function in informal caregivers.
Participants and Methods: Fifty informal caregivers (86% female; 58% White; 10% Hispanic or Latino; 82% married; 53% with at least a bachelor's degree; mean age = 57.76 ± 16.60 years) were assessed at the VA Palo Alto Health Care System in Palo Alto, CA. Fear of falling was measured via the Short Falls Efficacy Scale. Areas of cognitive functioning included verbal attention (Rey Auditory Verbal Learning Task [RAVLT] Trial 1), learning and memory (RAVLT Trials 1-5), delayed memory (RAVLT Delayed Recall), visual attention (Stroop Color, Stroop Word), and executive function (Stroop Color Word). Analyses included linear regressions with age as a covariate in all models.
Results: Analyses revealed that fear of falling was significantly associated with decreased verbal attention (RAVLT Trial 1: ß=-0.34, $p = 0.02$, $t = -2.35$, CI = [-0.659, -0.051]) and with decreased executive functioning (Stroop Color Word: ß = -0.35, $p < 0.001$, $t = -3.10$, CI = [-4.097, -0.874]). Fear of falling was not significantly associated with learning and memory or visual attention.
Conclusions: Fear of falling negatively impacts verbal attention and executive functioning, regardless of age. To our knowledge, this is the first study to examine the relationship between fear of falling and cognition outside of a geriatric population and within a caregiver sample. Findings suggest a need for additional assessment, research, and treatment of fear of falling within informal caregivers. Caregivers may need to be assessed for anxiety-related symptoms such as fear of falling on a more regular basis. A caregiver experiencing fear of falling, as well as difficulties with attention and executive functioning, can result in increased risk of functional and cognitive decline for both the caregiver and their care recipient. It is integral that future research investigates this relationship longitudinally to identify if the negative impact of fear of falling on cognition is reversible.

Categories: Other
Keyword 1: attention
Keyword 2: executive functions
Keyword 3: anxiety
Correspondence: Sheila Mae Thompson; Palo Alto University, Palo Alto, CA, USA; Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, USA; spark1@paloaltou.edu

96 The Proportion of Patients with Cerebrospinal Fluid Biomarkers Consistent with Alzheimer's Disease in a Cohort with Suspected Normal Pressure Hydrocephalus

Hudaisa Fatima, Trung P Nguyen, Anne Carlew, Munro Cullum, Jonathan White, Robert Ruchinskas
University of Texas Southwestern Medical Center, Dallas, TX, USA

Objective: Normal pressure hydrocephalus (NPH) is characterized by pathologically enlarged ventricles without elevated cerebrospinal fluid (CSF) pressure along with a triad of clinical symptoms including gait disturbances, urinary incontinence, and cognitive impairment. NPH is evaluated with lumbar drain trials (LDTs) where CSF is removed over several days to determine if patients would benefit from ventricular shunting.

https://doi.org/10.1017/S1355617723005313 Published online by Cambridge University Press

Candidate selection and success for these surgeries remains challenging because other diseases such as Alzheimer's disease (AD) share common features with NPH in cognitive impairment and enlarged ventricles. Prior research has found that 20%-40% of presumed NPH cases have AD pathology as determined by brain biopsy or autopsy. CSF biomarkers of AD can be altered in NPH and are not always conclusive, complicating the interpretation of results when formulating diagnoses and prognoses. Studies to refine the analyses of AD CSF biomarkers in NPH are needed. We aimed to examine the frequency of CSF biomarker results among patients presenting for NPH evaluations with LDTs.
Participants and Methods: 62 patients presented for LDTs upon physician recommendations. CSF specimens were sent to Mayo Clinic Laboratories for Alzheimer Disease Evaluation (ADEVL) that utilizes Elecsys (Lenexa, KS) CSF electrochemiluminescence immunoassays (Roche Diagnostics, Basel, Switzerland) to measure levels of amyloid-beta 42 (Aβ42), total tau (t-tau), and phosphorylated-tau (p-tau), and p-tau:Aβ42 ratio. Results were classified based on interpretation through the Amyloid/Tau/Neurodegeneration (ATN) framework[1]: 1) AD - biomarker profile consistent with AD pathologic change, 2) non-AD profile - biomarker levels normal or inconsistent with AD pathologic change, or 3) indeterminate - biomarkers were incongruous with only one or two abnormal levels of Aβ42, t-tau, p-tau, or p-tau: Aβ42. Indeterminate cases may represent altered protein levels due to CSF dynamics or AD-related pathologic change. In reviewing recent research on CSF dynamics and AD biomarkers in NPH[2] a p-tau threshold of 15 pg/mL was derived and implemented such that cases with Aß42 <=1026 pg/mL and p-tau <15 pg/mL were designated as suspected non-AD, and those with Aß42 <=1026 pg/mL and p-tau >15 pg/mL were designated suspected AD.
Results: Of the 62 LDT cases, 12 (19.35%) were classified as AD, 31 (50%) were indeterminate and 22 (35.48%) were non-AD. Of the 31 indeterminate cases, 21 (33.87% of the overall sample) were suspected non-AD and 7 (11.29% of the full sample) were categorized as suspected AD.
Conclusions: Our findings show that 20%-30% of patients presenting for LDT showed evidence for AD-type pathologic change, consistent with prior reports of AD pathology in cases of possible NPH. Half of all LDT cases had indeterminate AD CSF biomarker results, the interpretations of which were confounded by the potential alterations of CSF biomarkers levels due to NPH independent of AD. Our findings emphasize the need to establish better approaches to interpreting CSF AD biomarkers in evaluating NPH. Future research should examine the discriminative utility of CSF AD biomarkers and the selected p-tau threshold in indeterminate cases for predicting response to LDT and shunting.

References

[1]Mayo Clinic Laboratories. (2022, August 12). *Alzheimer's Disease Evaluation, Spinal Fluid.* https://www.mayocliniclabs.com/api/sitecore/TestCatalog/DownloadTestCatalog?testId=607273

[2]Graff-Radford, J., Jones, D. T., Wiste, H. J., Cogswell, P. M., Weigand, S. D., Lowe, V., Elder, B. D., Vemuri, P., Van Harten, A., Mielke, M. M., Knopman, D. S., Graff-Radford, N. R., Petersen, R. C., Jack, C. R., Jr, & Gunter, J. L. (2022). Cerebrospinal fluid dynamics and discordant amyloid biomarkers. *Neurobiology of aging, 110*, 27–36. https://doi-org.foyer.swmed.edu/10.1016/j.neurobiolaging.2021.10.017

Categories: Medical/Neurological Disorders/Other (Adult)
Keyword 1: dementia - Alzheimer's disease
Keyword 2: hydrocephalus
Keyword 3: assessment
Correspondence: Hudaisa Fatima, M.S., Department of Psychiatry, University of Texas Southwestern Medical Center, Hudaisa.Fatima@UTSouthwestern.edu

97 Exploring Urban-Rural Disparities in Alzheimer's disease: Clinical characterization of a southern Nevada cohort

https://doi.org/10.1017/S1355617723005313 Published online by Cambridge University Press