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

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Objective: As the US population ages, the prevalence of Alzheimer's disease and related dementias (AD/RD) is on the rise. This is especially true in rural America, where mortality rates due to AD/RD are rising faster than in metropolitan areas. To date, however, people living in rural communities are severely underrepresented in aging research. The Nevada Exploratory Alzheimer's Disease Research Center (NVeADRC) seeks to address this gap. Here, we present preliminary cognitive data from our rural-dwelling cohort, as well as relevant demographic and clinical characteristics.
Participants and Methods: Individuals with normal cognition (NC), mild cognitive impairment (MCI), and dementia due to Alzheimer's disease (AD) living in rural communities, defined as a rural-urban commuting area (RUCA) code of 4 or higher, were enrolled through either clinic or community outreach. Eligibility for the observational cohort required: age >55 years, primarily English-speaking, primary residence in a rural community, and availability of a study partner. Measures included the Uniform Data Set (v3), blood-based biomarkers, structural brain MRI, and portions of the PhenX Social Determinants of Health toolkit. Participants are seen at baseline and followed annually, with interim remote visits every 6 months. A multidisciplinary consensus diagnosis is rendered after each visit. Where feasible, a harmonized urban cohort followed by the Nevada Center for Neurodegeneration and Translational Neuroscience (CNTN) was used for comparison.
Results: Fifty-six rural-dwelling (age=70.4±7.1 years; edu=15.2±2.6 years; 61% female) and 148 urban-dwelling (age=72.9±6.8 years; edu=15.8±2.7 years; 46% female) older adults were included; age significantly differed between cohorts but education did not. The rural cohort was 46% NC (MoCA=26.8±2.3; CDRsob=0.3±0.6), 32% MCI (MoCA=22.8±3.1; CDRsob=1.2±1.0), and 22% AD (MoCA=16.9±5.5; CDRsob=5.2±3.0). The urban cohort was 39% NC (MoCA=26.4±2.6; CDRsob=0.3±0.8), 44% MCI (MoCA=22.3±3.1; CDRsob=2.0±1.5) and 17% AD (MoCA=18.6±3.9; CDRsob=4.7±2.3). Rural communities were significantly more disadvantaged, as measured by the Area Deprivation Index (ADI), than urban communities (rural ADI=6.3±2.6; urban ADI=3.4±2.3; p<.001). Fifty-percent of the rural cohort lives in a moderate to severely disadvantaged neighborhood (ADI Decile>7) compared to 12% of the urban cohort, and 11% of individuals in the rural cohort reported living more than 30 miles from the nearest medical facility. Across the combined cohort, education was significantly correlated with ADI deciles (r=-.30, p<.001), with people in the areas of highest disadvantage having the lowest education. Verbal memory was also inversely associated with ADI. There were no differences in clinical diagnosis as a function of ADI rank.
Conclusions: Living in a rural community conveys a multifaceted array of risks and benefits, some of which differ from urban settings. The literature to date suggests that older adults living in rural communities are at significantly increased risk for morbidity and mortality due to AD/RD, though it is unclear why. Preliminary data from the NVeADRC show that increasing levels of neighborhood disadvantage were associated with lower levels of education and worse verbal memory in this convenience sample. The combined effect of low education and increased disadvantage account for some of the urban-rural differences in mortality that have been reported, though additional research on representative samples in this underrepresented population is critical.

Categories: Dementia (Alzheimer's Disease)
Keyword 1: dementia - Alzheimer's disease
Keyword 2: minority issues
Keyword 3: diversity
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Coffee Break

3:45 - 4:00pm Thursday, 2nd February, 2023

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Exhibit Hall - Town & Country Ballroom A

Invited Symposium 1: Traumatic Brain Injury: Highlighting the Contributions of Dr. Harvey S. Levin Ph.D., ABPP-CN, FACSM 1946 - 2022

Chair: Maya Troyanskaya
Presenters: Randall Scott Scheibel, Felicia C. Goldstein, Linda Ewing-Cobbs, Erin D. Bigler, Elisabeth A. Wilde

4:00 - 5:25pm
Thursday, 2nd February, 2023
Pacific Ballroom A

Credit Hours: No CE credit will be assigned for this session

Abstract:
Harvey S. Levin obtained his Bachelor's degree from City College of New York, in New York city, Ph.D. in Clinical Psychology from the University of Iowa, in Iowa City, completed his internships in Clinical Neuropsychology and Pediatric Psychology at the University of Iowa Hospitals in Iowa City and Clinical Psychology, Psychiatry and Pediatrics at the Illinois Masonic Medical Center in Chicago, and his fellowship in Neuropsychology at University of Iowa Hospitals in Iowa City.
Dr. Levin started his career in 1972 as Instructor with the Department of Psychology at the University of Iowa and transitioned to The University of Texas Medical Branch (UTMB) in Galveston, Texas, in 1974, where he began an internationally renowned career in clinical work, teaching, and, most of all, pioneering research on traumatic brain injury (TBI). He ultimately became the Chela and Jimmy Storm Distinguished Professor in Surgical Research, Division of Neurosurgery, Department of Surgery in 1987. After leaving Texas for two years to take a position with the University of Maryland Medical System and Shock Trauma Institute in Baltimore, he moved back to Houston Texas in 1995 and established the Cognitive Neuroscience Laboratory (CNL) within the Department of Physical Medicine & Rehabilitation at Baylor College of Medicine, which was supported by federal grants, including funding from the National Institutes of Health, Department of Defense, Department of Veterans Affairs, and Centers for Disease Control and Prevention, and numerous private foundations. The CNL integrated rehabilitation and neuroplasticity research with multimodality brain imaging, clinical and neuropsychological assessment, and fluid biomarkers. Dr. Levin was Professor with the Departments of Physical Medicine and Rehabilitation where he served as Director of Research (1995-2014), Pediatrics, and Neurosurgery at Baylor College of Medicine. He was also a Research Scientist and the Director of the Center of Excellence for Traumatic Brain Injury at the Michael E. DeBakey Veterans Affairs Medical Center (2008-2013), and Adjunct Professor with the Department of Psychology at Rice University in Houston, Texas.
Dr. Levin's research focused on investigating both acute and long-term outcomes of mild to severe TBI in civilian and military populations, including cognitive and behavioral sequelae in relation to neuropathology using advanced brain imaging modalities. He began prospective, longitudinal studies of adults and children who had sustained TBI associated with closed head trauma upon joining UTMB and developed, in collaboration with Drs O'Donnell and Grossman, the Galveston Orientation and Amnesia Test (GOAT). The GOAT was the first measure to assess post-traumatic amnesia and orientation following moderate to severe TBI, is still most widely used by the clinicians and researchers, and it has been translated to 16 languages. The original publication, "Levin HS, O'Donnell VM, Grossman RG. The Galveston Orientation and Amnesia Test. A practical scale to assess cognition after head injury. J Nerv Ment Dis. 1979 Nov;167(11):675-84. doi: 10.1097/00005053-197911000-00004. PMID: 501342", has over 1200 citations. This work continued with participation in the NINDS Traumatic Coma Data Bank and the organization of outcome assessments for NINDS-funded clinical trials of hypothermia to treat severe TBI. To monitor the quality of outcome data across performing sites, Dr. Levin and colleagues developed a code for the reliability of data collected and implemented the role of an outcome monitor who evaluated adherence to protocol across sites. Following establishment of the CNL, he pursued investigation of TBI outcomes across the lifespan using multimodality brain imaging and

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