

SUCCESSFUL EXOGENOUS EXPRESSION OF ATP8, A MITOCHONDRIAL ENCODED PROTEIN, FROM THE NUCLEUS IN VIVO.

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Replicative errors, inefficient repair, and proximity to reactive oxygen species production sites make the mitochondrial DNA (mtDNA) susceptible to damage with time. mtDNA mutations accumulate with age and accompany a progressive decline in organelle function. We lack molecular biology tools to manipulate mtDNA, thus we explore the possibility in vivo of utilizing allotopic expression, or the re-engineering mitochondrial genes and expressing them from the nucleus, as an approach to rescue defects arising from mtDNA mutations. This study uses a mouse model with a mutation in the mitochondrial ATP8 gene that encodes a protein subunit of the ATP synthase. We generated a transgenic mouse with an epitope-tagged recoded and mitochondrial-targeted ATP8 gene expressed from the nucleus. Our results show that the allotopically expressed ATP8 protein in the transgenic mice is robustly expressed across all tested tissues, successfully transported into the mitochondria, and incorporated into ATP synthase. We are currently evaluating if allotopic expression of ATP8 will functionally rescue the behavioral and bioenergetic defects in ATP8 mutant mice. Translating allotopic expression technology into a mammal and demonstrating systemic functional rescue will lend credence to utilizing allotopic expression as a gene therapy in humans to repair physiological consequences of mtDNA defects that may accumulate with age.

Session 9115 (Poster)

Cancer and Aging

EXPLORING SPIRITUALITY, LONELINESS AND HRQOL IN HISPANIC CANCER CAREGIVERS

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Providing care to an aging society in the new normal requires increased attention to the informal caregivers who support the health and well-being of older adults with chronic conditions. Hispanic caregivers carry a high caregiver-associated burden. Health disparities experienced by Hispanics, coupled with the emotional, social and physical demands of caregiving, may set an unprecedented risk for lower health-related quality of life (HRQoL). In a quantitative analysis, we investigated the relationship between spirituality, loneliness and HRQoL in Hispanic cancer caregivers using baseline data from the Support for Latinas with Breast Cancer study (N= 234 Hispanic caregivers). Findings

suggested an indirect effect of spirituality on HRQoL through reduced loneliness among more spiritual caregivers, effects that were independent of age. The second study was conducted using qualitative semi-structured interviews (N= 10) with Hispanic caregivers. Interviews evaluated spirituality and HRQoL in Hispanic cancer caregivers who reported variable levels of loneliness. Five themes emerged: caregiver experience, coping strategies, loneliness, religion to gain strength or support, and spirituality to gain strength or support. Results supported the role of spirituality in promoting higher HRQoL in Hispanic cancer caregivers and elucidated pathways to intervene on HRQoL through spirituality. With Hispanics often underutilizing formal services, having an improved understanding of caregiving experiences, particularly related to spirituality, will support the development of culturally-relevant strategies and programming to promote HRQoL for Hispanic caregivers.

GERIATRIC ONCOLOGY: COGNITION AND COMMUNICATION

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With the dramatic increase in the older adult population, assessment and care of chronic diseases of aging, notably cancer, cognitive impairment and functional decline, have increasing clinical importance. Most healthcare practitioners (HCPs) receive minimal education in geriatrics and/or communication skills and are not optimally prepared to treat older cancer patients. Geriatric Oncology: Cognition and Communication (Geri-Onc CC) trains HCPs to identify cognitive impairment and/or functional decline and improve communication with patients and caregivers. Geri-Onc CC is a 2-day virtual training. Day 1 covers depression, dementia, delirium, pharmacology, cognitive rehabilitation, language barriers, and decision-making capacity. Day 2 focuses on communication skills experiential practice in geriatric syndromes, cognitive syndromes and shared decision making. In addition, HCPs engage in 6 bimonthly web-based collaborative learning activities post-training. Thus far, three cohorts have participated (n=56). Participants were primarily female (88%), 68% non-Hispanic White, and represented multiple disciplines [psychologists (29%) social workers (25%), physicians (21%), others(25%)] and they work in various settings: comprehensive cancer centers (43%),community hospitals (18%), and others (33%). Most (48%) have been caring for older cancer patients for 1-5 years. All reported the training had value to them as a clinician, increased their knowledge of geriatrics, and helped them meet their training goals and 84% were extremely satisfied with the program. Recruitment has been successful. Participants have been diverse in terms of race/ethnicity, profession, practice characteristics and the populations they serve. Overall, participants