

419 - Brain atrophy asymmetry in dementia is worsened by social isolation: A translational neuroscience approach in times of coronavirus pandemic (COVID-19).

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The coronavirus pandemic (COVID-19) that has ravaged the entire world presents the most dramatic scenarios in the most vulnerable populations, with exacerbated focus on the elderly people, especially the most frail needing home-care or living in nursing homes. The urgency and severity of the outbreaks forces the use of segregation in restricted areas and confinement in individual rooms as desperate strategies to avoid the spreading of disease and the worse scenario of becoming a deadly trap. Residents are becoming socially isolated, lacking the social and environmental enrichment that are key rehabilitation factors against their progressive physical and/or mental deterioration. Recently, a study on gender perspective in COVID-19 found that men have more severe disease and are over twice as likely to die. It is well known that dementia is associated with increased mortality and males show worse survival than females. On the other hand, the asymmetric neurodegeneration of subcortical structures in Alzheimer's disease (AD) has been recently demonstrated and proposed as a powerful imaging biomarker. In the present work, we studied the impact of long-term isolation in old male 3xTg-AD mice modeling advanced-stages of AD and as compared to age-matched counterparts with normal aging. A battery of behavioral tests resembling several areas in nursery homes was used. Atrophy of left and right hippocampus, cortex and cerebellum was measured. Our results are the first evidences of brain atrophy asymmetry being demonstrated in an animal model of AD, thus modeling that found in human patients. The main findings aware of a consistent impact of isolation increasing the hippocampal and cortical atrophy asymmetries. Isolated animals showed a prominent hyperactive pattern in both gross and fine-motor functions, re-structured negative valence system with the emergence of bizarre behaviors and flight copying-with-stress strategies. Overall, these results from translational neuroscience aware of the impact of isolation enhancing the neurodegenerative asymmetry and BPSD-like behaviors. They also highlight the relevance of personalized-based interventions tailored to the heterogeneous and complex clinical profile of the individuals with dementia, and to pay special attention to BPSD behaviors that may worsen their caregivers' burden in these times of coronavirus and post-COVID-19 pandemic scenario.