OXFORD
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Archives
of
CLINICAL
NEUROPSYCHOLOGY

Poster Session A

A-77

SPECT Imaging Differences in Adult Males versus Adult Females with Dementia

Roberts C, Blose M, Amen D, Willeumier K, Taylor D, Golden C

Objective: The purpose of this study was to examine whether differences in cerebral blood flow (CBF) exist in adult males versus adult females diagnosed with dementia at-rest and while concentrating. Method: A clinical sample of individuals aged 65–94 was selected. Participants included 182 males and 145 females who received a diagnosis of dementia (i.e., dementia, delirium, and amnestic disorders) based on DSM-IV criteria. The average age was 74.35 years ($SD = 6.56$). CBF was measured at rest and during administration of the Connors' Continuous Performance Test II via a SPECT scan. Regions of interest (ROIs) were based on the Automated Anatomical Labeling (AAL) brain atlas. Results: Using a .001 significant level, *t*-tests indicated that adult females demonstrated greater CBF in 73 ROIs at rest and while concentrating. Only minor differences in these ROIs existed between rest and concentration. In adult females, the majority of the ROIs that demonstrated greater CBF were located in the telencephalon, specifically the cerebral cortex, the limbic system, and the basal ganglia. In adult males, the ROIs in the cerebellum were the main areas that demonstrated greater CBF. Conclusion(s): SPECT imaging evidenced that differences in CBF between adult males and adult females exist within those diagnosed with dementia, specifically, adult females' telencephalons are more active at rest and during concentration than adult males. This indicates that, within a dementia population, adult females and adult males will manifest behavioral and cognitive symptoms of dementia differently since both groups exhibit significantly different amounts of CBF and cerebral activity.

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doi:10.1093/arclin/acu038