HIV and Early Life Stress on Neuroimaging and Risky Behavior

Date: November 28, 2022
Time: 11:00 a.m. to 1:00 p.m.
Place: Benton Hall 104

Abstract
Brain abnormalities associated with HIV varies among individuals receiving antiretroviral treatment potentially reflecting contributions from pre-infection risk factors, such as early life stress (ELS). ELS, prevalent in people with HIV (PWH), is known to initiate inflammatory mechanisms in people without HIV (PWoH). Inflammatory mechanisms are associated with chronic neurobehavioral complications of HIV. In PWH, ELS potentiates brain atrophy particularly in regions implicated in behavioral regulation and decision-making; however, findings are not universal. Clustering algorithms can help determine whether there are subgroups of ELS in PWH and shed clarity on conflicting results. This study examined the interactive effects of ELS and HIV on brain morphometry, diffusion-basis-spectrum-imaging (DBSI; a neuro-inflammatory proxy), risky decision-making, and sex-risk behavior. Participants (122 PWH and 113 PWoH), free of major psychiatric illness and neurological confounds, were stratified into high (≥ 3 events) vs. low (< 3 events) ELS [PWoH/low ELS (n = 57), PWoH/high ELS (n = 56), PWH/low ELS (n = 43), PWH/high ELS (n = 79)] and underwent structural magnetic resonance imaging, DBSI, neuropsychological, and risky-behavior assessment; all PWH were virologically controlled. PWH exhibited significantly smaller orbitofrontal cortex (OFC) and PWoH/high ELS show significantly larger OFC and higher DBSI cellularity (neuroinflammation proxy) of the inferior-occipital-fasciculus compared to the other groups. Individuals within the sample who performed above average on a measure of executive function and had a larger OFC reported fewer sex partners in past six months than individuals with smaller volumes. No interaction was found between HIV serostatus and ELS on risky behavior measures. Clustering analyses defined ELS subgroups in PWH that were determined by demographic characteristics such as duration of infection, recent CD4 T-cell count, nadir CD4 T-cell count) and high/low ELS. Results indicate a synergistic impact of ELS and HIV on the OFC even in PWH that are virologically controlled. Higher volumes in the OFC were detrimental when associated with lower executive function or advantageous when associated with higher EF. Findings suggest that ELS has a differential impact in brain on PWoH and virally suppressed PWH, however, is not directly associated to risky behaviors and demographic variables characterize subgroups in PWH.