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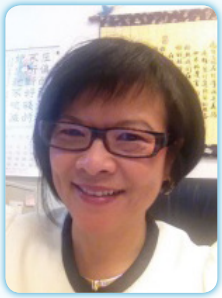

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HIV infection, Neuro-HIV and use of addicitve substances

Abuse of addictive substances, including morphine, methamphetamine, and alcohol, is a key co-morbidity in human immunodeficiency virus-1 (HIV-1) infection. Use of various addictive substances hastens the progression of HIV-1 infection and HIV-associated neurocognitive disorders. Even with combination active anti-retroviral therapy (cART), HIV-1 viral proteins are still expressed in the body and eradication of the virus, particularly in the brain, the key reservoir organ, does not occur. Thus, the clinical challenge in the treatment of HIV infection is inflammation of the CNS and the subsequent neurological disorders. HIV-1-infected individuals reportedly use addictive substances more than the general public. There has recently been a shift from studying the detrimental impact of additive substances on HIV infection to investigation of whether HIV infection can lead to substance abuse. The HIV-1 transgenic (HIV-1Tg) rat mimiks HIV patients given cART. Even in the absence of infection, the presence of viral proteins in the HIV-1Tg rat causes immune deficiencies, neuroinflammation, and neurocognitive deficits similar to those seen in HIV-1-infected humans, such as a decline in cognitive abilities and decreased behavioral flexibility. We have demonstrated that HIV-1Tg rats are more prone to both behavioral sensitization and acute physiological effects (hyperthermia) of methamphetamine; they exhibit an increased sensitivity to morphine's anti-nociceptive properties; and they have an increased sensitivity to the effects of binge consumption of ethanol. These studies suggest that HIV-1-induced neurological deficits and alterations in behavior associated with substance abuse and addiction may be a result of viral protein-induced neuroinflammation (partially supported by DA036175 and AA023172).

Biography

Sulie L. Chang is the Director of the Institute of Neuroimmune Pharmacology and a Professor of Biological Sciences and Neuroscience at Seton Hall University in New Jersey. Chang's research is to sudy the interactions between various addictive substances including alcohol, morphine, as neuro-HIV, and behavioral disorders caused by substance abuse, with the central hypothesis that neuroinflammation promotes substance abuse. Dr. Chang has been continuously funded by NIH since 1989. She has published over 100 articles in refereed journals with significant impact. Chang's services to the scientific community include participation as a reviewer on more than 110 NIH Study Sections including as a member [2010-2014] and the Chairperson [2012-2014 of the Innate Immunity and Inflammation (III) Study Section. Sulie L Chang has served on several editorial boards including the Journal of Neurovirology and Journal of Neuroimmune Pharmacology.

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