Published in final edited form as:

J Neuroimmune Pharmacol. 2016 September ; 11(3): 379–382. doi:10.1007/s11481-016-9695-4.

Promoting global health — Prevention and treatment of substance abuse and HIV in Asia

Ming D. Li¹, Yih-Ing Hser², Zhiwei Chen³, and Linda Chang⁴

¹State Key Laboratory for Diagnosis and Treatment of Infectious Diseases, Collaborative Innovation Center for Diagnosis and Treatment of Infectious Diseases, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China; Department of Psychiatry and Neurobehavioral Sciences, University of Virginia, Charlottesville, VA, USA

²Integrated Substance Abuse Programs, Department of Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine, University of California, Los Angeles, CA, USA

³AIDS Institute and Department of Microbiology, Research Center for Infection and Immunity, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong 10 SAR, P.R. China

⁴Department of Medicine (Neurology), John A. Burns School of Medicine, University of Hawaii and the Queen's Medical Center, Honolulu, HI USA

Abstract

This special issue contains 20 papers including 3 Perspectives, 1 Brief Report, 6 Invited Reviews, and 10 Original Articles, which highlight the work by presenters at the second meeting of the biennial Conference Series to Promote Global Health held on April 22-24, 2015 in Hangzhou, Zhejiang, China. These papers focused on the prevalent substance misuse of amphetamine-type-stimulants and opioids, and the increasing prevalence of HIV-infection in Asian countries. The Conference Series is sponsored by the National Institute on Drug Abuse, of the U.S. National Institutes of Health, with the goal of exchanging knowledge and ideas related to, and promoting international collaborative work on, the prevention and treatment of substance use disorders and HIV-infection, in order to promote health in Asian and Pacific Islanders and other populations.

This special issue highlights the work presented at the second meeting of the biennial Conference Series to Promote Global Health, which was held on April 22-24, 2015, in Hangzhou, Zhejiang, China. The conference series is sponsored by the National Institute on Drug Abuse, of the U.S. National Institutes of Health, and this particular conference was co-organized by the UCLA Center for Advancing Longitudinal Drug Abuse Research, the State Key Laboratory for Diagnosis and Treatment of Infectious Diseases at Zhejiang University, and the First Affiliated Hospital at Zhejiang University School of Medicine, China. The conference theme focused on “Prevention and Treatment of Substance Abuse and HIV”, with an emphasis on Asian and the Pacific Islander (API) populations. The conference sessions covered the current status of drug abuse and HIV in Asian countries as reported by their representatives, featured strategies for meeting challenges posed by these problems, and promoted international collaborative work on the prevention and treatment of substance use disorders and HIV-infection in order to promote health in API and other populations.

The primary aim of this Conference Series is to provide an arena in which the most up-to-date research and research methodologies regarding substance use disorders and HIV-infection among API populations can be shared among researchers, clinicians, policymakers, and other collaborators, with the intent of developing future research plans that can best impact policy. We focused on the highly prevalent misuse of amphetamine-type stimulants and opioids, and the increasing prevalence of HIV-infection in Asian countries. The conceptual, methodological, and analytic issues involved in substance use disorders and HIV research are complex and evolving, particularly in countries or regions where the infrastructure remains insufficient. This venture represents a continued and expanded effort of the funding agencies and the organizing committee of the series to improve knowledge regarding substance use disorders and HIV-infection in API countries, identify effective models of care and/or management, and apply/design innovative research methodologies for conducting high quality evidence-based research. This Conference Series is intended to be an international collaborative effort that will improve practices in the US and other countries. These conferences are greatly needed to keep the scientific and service communities abreast of the latest research findings and methods in addiction, HIV, and related areas, and to lead future directions in research. The abstracts from the presenters of this conference can be found in the supplemental issue published last year (Hser et al., 2015).

Following the successful conference, a group of eminent presenters were invited to contribute to this special issue based on their presentations in the conference or on relevant topics of their choice. The 20 articles in this special issue are organized into perspectives, brief reports, invited reviews and original articles according to the general style specified by the journal.

The perspective section has three papers that provided expert overviews on strategies in substance abuse treatments. First, Hser et al. not only reviewed current status of drug abuse, HIV and HCV in Asian countries, but also offered strategies for effective control of drug abuse and co-infections (Hser et al., 2016). In addition, Ling provided a historical overview of pharmacotherapy research on opioid addiction over the last four decades (Ling, 2016). Furthermore, Woody and his colleagues reviewed findings from various studies on the naltrexone treatment of opioid dependence and commented on the potential role of extended release naltrexone as a meaningful addition to current pharmacotherapies for treating opioid dependence and reducing risk for HIV infection (Woody et al., 2016).

These perspectives are followed by one brief report, which reviewed the neuroimaging studies on pharmacological and behavioral treatment of substance use disorders (Cabrera et al., 2016).

The third section contains 6 invited reviews. First, Wang et al. demonstrated that the Val158Met polymorphism (rs4680) in catechol-O-methyltransferase gene represents a vulnerability factor for major depressive disorder in an ethnic-dependent manner, based on meta-analyses of more than 5,300 participants from different ethnic origins (Wang et al., 2016). Second, Culbert et al. reviewed the findings from Malaysia's largest prison. The authors described the contributions and synergistic effects of HIV, tuberculosis, addiction,

and incarceration, and how these factors culminated to a “perfect storm” of events that challenge both public and personal health, and they offered insights into innovative strategies to control these converging epidemics (Culbert et al., 2016). Third, Wingo et al. reviewed the literature on novelty seeking from both human and animal studies at behavioral and molecular levels, which led to the conclusion that the novelty-seeking trait can be valuable for predicting individual vulnerability to drug addiction and for generating successful treatment for patients with drug abuse disorders (Wingo et al., 2015). Fourth, Allenby et al. summarized the findings from smoking cessation studies on the nicotine metabolite ratio (NMR) and concluded that NMR can be used as a reliable phenotypic biomarker that can guide smoking cessation treatment among smokers who want to quit (Allenby et al., 2016). Fifth, Li et al. reviewed possible approaches to modulate altered microenvironment under various pathological conditions, and provided specific examples that may restore homeostasis and function of the central nervous system, as potential therapeutic innovations in achieving pathological and functional recovery simultaneously in patients with HIV-associated neurocognitive disorders (Li et al., 2016). Lastly, Soontornniyomkij et al. reviewed the current knowledge regarding the combined effects of HIV and methamphetamine on brain and neurobehavior from findings in humans and animal and in-vitro models, emphasizing the importance of cross-species studies in generating new knowledge with clinical translational value (Soontornniyomkij et al., 2016).

The last section of this special issue comprises 10 original articles, with five clinical studies and five preclinical studies using animal models. The five clinical studies involve patients with substance use disorders (for heroin and methamphetamine) or with HIV-infection. Schulte et al. examined the development and acceptance of using smartphone to assist heroin-dependent patients maintain recovery in China, Taiwan and USA (Schulte et al., 2016). Zhuang et al. demonstrated chronic methamphetamines users had persistently lower than normal white matter integrity on diffusion tensor imaging (DTI) after 6-months and even 1-year of abstinence (Zhuang et al., 2016). Similarly, Andres et al. found abnormal brain microstructure on DTI and greater impulsivity in methamphetamine users, but these abnormalities differed between current and past users (Andres et al., 2016). Zhao et al. further demonstrated decreased expression of plasma miRNAs in methamphetamine users compared to healthy controls, which may serve as peripheral biomarkers in this patient population (Zhao et al., 2016). Douet et al. evaluated polymorphisms of genes that produce two key enzymes, kynurenine-3-monooxygenase and kynurenine-aminotransferase II, which regulate the neuroinflammatory pathways, on psychopathological symptoms, and the antioxidant kynurenine acid levels in cerebrospinal fluid of subjects with and without HIV-infection (Douet et al., 2016).

The five original articles involving experimental animals (rodents and macaques) all focused on HIV-1 disease models, or how drugs of abuse might impact the disease. Yang et al. investigated how viral proteins and nicotine modulated the expression of immune-related genes in the brains of the HIV-1 transgenic rats (Yang et al., 2016). Wu et al. determined how a transmitted/founder HIV-1 led to neurological disorders during the acute phase of infections in humanized mice (Wu et al., 2016). Wei et al. examined how chronic administration of delta9-tetrahydrocannabinol D led to reduction of IgE+B cells without enhancing pathogenicity in SIVmac251-infected male Chinese-derived rhesus macaques

(Wei et al., 2016). Liu et al evaluated neuropathology of SIVmac239-infected Chinese rhesus macaques and found that those with rapid disease progression had more severe pathology compared to those with conventional disease progression, and concluded that these macaques can provide a suitable model for neuroAIDs research (Liu et al., 2016a). Lastly, Liu et al. investigated how HIV-1 Gp41-derived glycosyl phosphatidylinositol (GPI)-anchored C34 peptide affected HIV-1 budding and entry, and showed that GPI-34 is a potent entry inhibitor of HIV-1 (Liu et al., 2016b).

We thank all the contributors of these articles and the numerous anonymous reviewers for spending their valuable time to improve the scientific rigor and quality of the papers included in this special issue. More importantly, we thank Dr. Howard Gendelman, Editor-in-Chief of the “Journal of NeuroImmune Pharmacology” for his approval of the publication of this special issue, and Ms. Robin Taylor, Managing Editor of the journal, for providing tireless and continuous administrative support and guidance at every step involved in the process of publishing this special issue.

Acknowledgments

Grant support from the National Institute on Drug Abuse (R13DA024494 and P30DA016383 to Yih-Ing Hser; K24DA16170 to Linda Chang) and Hong Kong Research Grant Council (HKU5/CRF/13G to Zhiwei Chen).

References

- Allenby CE, Boylan KA, Lerman C, Falcone M. Precision Medicine for Tobacco Dependence: Development and Validation of the Nicotine Metabolite Ratio. *J Neuroimmune Pharmacol.* 2016
- Andres T, Ernst T, Oishi K, Greenstein D, Nakama H, Chang L. Brain Microstructure and Impulsivity Differ between Current and Past Methamphetamine Users. *J Neuroimmune Pharmacol.* 2016
- Cabrera EA, Wiers CE, Lindgren E, Miller G, Volkow ND, Wang GJ. Neuroimaging the Effectiveness of Substance Use Disorder Treatments. *J Neuroimmune Pharmacol.* 2016
- Culbert GJ, Pillai V, Bick J, Al-Darraj HA, Wickersham JA, Wegman MP, Bazazi AR, Ferro E, Copenhaver M, Kamarulzaman A, Altice FL. Confronting the HIV, Tuberculosis, Addiction, and Incarceration Syndemic in Southeast Asia: Lessons Learned from Malaysia. *J Neuroimmune Pharmacol.* 2016
- Douet V, Tanizaki N, Franke A, Li X, Chang L. Polymorphism of Kynurenine Pathway-Related Genes, Kynurenic Acid, and Psychopathological Symptoms in HIV. *J Neuroimmune Pharmacol.* 2016
- Hser YI, Li MD, Normand J, Tai B, Chen Z, Chang L. Promoting global health-treatment and prevention of substance abuse and HIV in Asia. *J Neuroimmune Pharmacol.* 2015; 10(Suppl 1):S1–S55.
- Hser YI, Liang D, Lan YC, Vicknasingam BK, Chakrabarti A. Drug Abuse, HIV, and HCV in Asian Countries. *J Neuroimmune Pharmacol.* 2016
- Li W, Tong H, Gorantla L, Poluektova S, Gendelman H, Lu Y. Neuropharmacologic Approaches to Restore the Brain’s Microenvironment. *J Neuroimmune Pharmacol.* 2016
- Ling W. A Perspective on Opioid Pharmacotherapy: Where We Are and How We Got Here. *J Neuroimmune Pharmacol.* 2016
- Liu H, Xiao QH, Liu JB, Li JL, Zhou L, Xian QY, Wang Y, Zhang J, Wang X, Ho WZ, Zhuang K. SIV Infection Impairs the Central Nervous System in Chinese Rhesus Macaques. *J Neuroimmune Pharmacol.* 2016a
- Liu L, Wen M, Zhu Q, Kimata JT, Zhou P. Glycosyl Phosphatidylinositol-Anchored C34 Peptide Derived From Human Immunodeficiency Virus Type 1 Gp41 Is a Potent Entry Inhibitor. *J Neuroimmune Pharmacol.* 2016b

- Schulte M, Liang D, Wu F, Lan YC, Tsay W, Du J, Zhao M, Li X, Hser Y. A Smartphone Application Supporting Recovery from Heroin Addiction: Perspectives of Patients and Providers in China, Taiwan, and the USA. *J Neuroimmune Pharmacol*. 2016
- Soontornniyomkij, Kesby JP, Grant I. Translational Methamphetamine AIDS Research Center (TMARC) Group. Combined Effects of HIV and Methamphetamine on Brain and Behavior. *J Neuroimmune Pharmacol*. 2016
- Wang M, Ma Y, Yuan W, Su K, Li MD. Meta-Analysis of the COMT Val158Met Polymorphism in Major Depressive Disorder: Effect of Ethnicity. *J Neuroimmune Pharmacol*. 2016
- Wang M, Ma Y, Yuan W, Su K, Li MD. Meta-Analysis of the COMT Val158Met Polymorphism in Major Depressive Disorder: Effect of Ethnicity. *J Neuroimmune Pharmacol*. 2016
- Wei Q, Liu L, Cong Z, Wu X, Wang H, Qin C, Molina P, Chen Z. Chronic Delta-Tetrahydrocannabinol Administration Reduces IgEB Cells but Unlikely Enhances Pathogenic SIV Infection in Male Rhesus Macaques of Chinese Origin. *J Neuroimmune Pharmacol*. 2016
- Wingo T, Nesil T, Choi JS, Li MD. Novelty Seeking and Drug Addiction in Humans and Animals: From Behavior to Molecules. *J Neuroimmune Pharmacol*. 2015
- Woody GE, Krupitsky E, Zvartau E. Antagonist Models for Relapse Prevention and Reducing HIV Risk. *J Neuroimmune Pharmacol*. 2016
- Wu X, Liu L, Cheung KW, Wang H, Lu X, Cheung AK, Liu W, Huang X, Li Y, Chen ZW, Chen SM, Zhang T, Wu H, Chen Z. Brain Invasion by CD4 T Cells Infected with a Transmitted/Founder HIV-1 During Acute Stage in Humanized Mice. *J Neuroimmune Pharmacol*. 2016
- Yang Z, Nesil T, Connaghan KP, Li MD, Chang SL. Modulation Effect of HIV-1 Viral Proteins and Nicotine on Expression of the Immune-Related Genes in Brain of the HIV-1 Transgenic Rats. *J Neuroimmune Pharmacol*. 2016
- Zhao Y, Zhang K, Jiang H, Du J, Na Z, Hao W, Yu S, Zhao M. Decreased Expression of Plasma MicroRNA in Patients with Methamphetamine (MA) Use Disorder. *J Neuroimmune Pharmacol*. 2016
- Zhuang W, Tang Y, Zhong N, Jiang H, Du J, Wang J, Zhao M. Persistent Microstructural Deficits of Internal Capsule in One-Year Abstinent Male Methamphetamine Users: a Longitudinal Diffusion Tensor Imaging Study. *J Neuroimmune Pharmacol*. 2016

Biographies

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript