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Anti-inflammation and neuroprotective drugs benefit the treatment of heroin dependent patients

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Overactivation of inflammatory cytokine and dysfunction of neurotrophic system have been associated with the progression of heroin dependence. Both memantine and dextromethorphan (DM) belong to non-competitive NMDA receptor antagonist, but low dose memantine/DM might possess anti-inflammatory and neurotrophic effects that are mechanistically remote from an NMDA receptor. A randomized, double-blind, placebo-controlled 12-week study was conducted. Heroin dependence patients undergoing regular methadone maintenance therapy were randomly assigned to a group: Memantine (5 mg/day), DM (60~120 mg/day) or Placebo. Inflammatory markers and neurotrophic factors including plasma TNF-α, CRP, IL-6, IL-8, TGF-β1, and BDNF levels were examined during weeks 0, 1, 4, 8, and 12. After treatment, significantly inhibition of tolerance to methadone was found in both in patients received memantine/DM compared to the placebo group; decreased methadone required dose was found in patients received memantine compared to the placebo group. In addition, significantly reduced plasma tumor necrosis factor-α (TNF-α) was found in both in patients received memantine/DM compared to the placebo group while increased TGF-β1 was found only in the memantine group. Significantly increased BDNF level was only detected in patients received DM compared to the placebo group. We suggest that low-dose memantine/DM might be a feasible adjuvant therapy for attenuating inflammation, providing neuroprotection, and inhibiting methadone tolerance in heroin dependent.

Biography

Distinguished Professor Ru-Band Lu graduated from National Defense Medical center Taipei, Taiwan, in 1972. He became a professor of Psychiatry at National Defense Medical Center in 1989. 1992 to 1993, he was a visiting scientist in Human Genetics at Yale University, New Haven, CT; he studied genetics, psycho-neuroimmune pharmacology. 2003 to 2009, he was the director of the Institute of Behavioral Medicine, National Cheng Kung University, Tainan, Taiwan. In this decade, he works in the developmental navel treatment model. He has published more than two hundred research articles in the recent fifteen years.

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