Drug Addiction: A Global Challenge

Drug addiction is characterised by compulsive, uncontrollable drug use irrespective of its negative consequences.1 It has been recognised as a chronic disease with high possibility of relapse inflicting far-reaching psychological and physical damage on sufferers.2 Over the past decade, the prevalence of illicit drug use has been stable at around 0.5% of the population globally but it varies by country / region and types of drugs.2 East and South-East Asia are a hub for manufacturing and shipping of illicit drugs.7 Methamphetamine use, for example, shows an increasing trend in East Asia though it is stable elsewhere. Regular monitoring of illicit drug use is essential to inform and guide local anti-drug campaigns. In this issue, Ren et al3 have provided an excellent overview of the status of drug abuse in East Asia.

Dysfunction of dopaminergic neurotransmission is a critical biological marker for drug addiction. In the early 1990s, a unique gene variant, the A1 allele in dopamine D2 receptor gene, was found in patients with alcoholism.4 Later, further gene variants of dopamine receptors, transporter or other regulator genes were discovered related to low dopaminergic receptor function7 and low dopamine release.6 Deficient dopaminergic functions could result in a blunted response to reward stimuli7 and increased “pleasure” feeling to stimulants,8 indicating vulnerability to drug addiction. Low striatal dopamine functions have been consistently identified in patients addicted to almost all types of substances that mainly affect the striatal dopamine level.7,9 Striatal dopaminergic functions, therefore, have been considered a treatment target for drug addiction. Nonetheless, earlier attempts with agents that act directly on striatal dopamine receptors were either ineffective or had high potential for abuse themselves. Along with a deeper understanding of the Daedalean interactions between dopamine and other neurotransmitters, such as glutamate and gamma-aminobutyric acid,10 many new compounds that bind to non-dopamine or atypical dopaminergic sites have recently been developed. These emerging agents together with other non-pharmacological treatments are reviewed by Davidson11 in this issue.

Drug addiction is a very complex biologically and psychosocially determined condition. Environmental factors (e.g. childhood maltreatment or other stressful life events) can modify the genetic risk of drug addiction. For example, adverse childhood experiences may predispose the genetically susceptible individual to drug addiction while a harmonious childhood and development is protective.12-14 Environmental risk factors can further drive drug misuse through early life to adulthood.14 Psychosocial therapies that cultivate skills and an ability to cope with negative environmental factors are useful adjuncts in the treatment of drug addiction.15 In a longitudinal study, Cheung et al16 identified a series of psychosocial factors that encourage or ameliorate continuous drug use; the study also provides valuable information for psychosocial interventions in drug addiction.

Exploring the effectiveness of traditional medicine or folk remedies for drug addiction is gaining momentum. To date, the effectiveness of traditional herbal medicines has nonetheless not been confirmed.17 Acupuncture has been thoroughly studied in the relief of withdrawal symptoms in the detoxification stage of heroin and nicotine addiction and may be effective when integrated with other treatment modalities.18 Wu et al19 in this issue discussed electrical acupuncture in the treatment of opioid addiction and its mechanism of action. Despite the advances made in the treatment of drug addiction that are summarised in this issue, more work needs to be done to gain a better understanding of its pathophysiology to aid in the development of new forms of treatment.

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