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Drugs Dilation Occurring in Response to Stimulus Causing Sharp Pain

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Abstract

Drug addiction is a chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences. Drug addiction is associated with impairment in various aspects of physical, psychological and socio-occupational functioning. Drug addiction is a growing problem in India and the world. The global problem of addiction and drug abuse is responsible for millions of deaths and HIV cases. The use of the term Addiction has now been dropped from the scientific literature because of its derogatory connotation and instead the use of Substance use disorder is preferred. Drugs are any chemical substances that affect physical, mental, emotional or behavioural states of an individual. Drug abuse, a form of substance use disorder is a patterned use of a drug in which the user consumes the substance in amount or with method which are harmful. The pattern of substance use and substance use related syndrome can be described as, Substance intoxication is a reversible, substance-specific syndrome due to the recent ingestion of a substance of abuse. Signs of intoxication often include confusion, impaired judgment, inattention, and impaired motor and spatial skills.

Keywords: Cognitive symptoms**;** Psychoactive substance; Stimulants; Dopamine receptors; Amphetamine; Muscle strength

Introduction

Tolerance is a state of physical habituation to a drug, resulting from frequent use, such that higher doses are needed to achieve the same effect. The person can increase the amount of drug use to the point that can be lethal for non-drug users. Dependence is a set of physiological, behavioural, and cognitive symptoms [1]. For an individual when drug use takes much priority over other behaviours that previously had greater value, the person can be called dependent on the drug [2]. Dependence syndrome is characterized by a strong desire or sense of compulsion to take drug, difficulty in controlling drug use behaviour, withdrawal, tolerance, and neglect of alternative pleasures and persistent use of drug despite clear evidence of harmful consequences of drug. Withdrawal syndrome is a cluster of symptoms that occur when a dependent person abruptly stops using a particular substance following heavy, prolonged use. Some common withdrawal symptoms include anxiety, restlessness and body aches while some withdrawal symptoms are drug specific. Thus, withdrawal symptom varies from one drug to another [3]. Classification ICD-10 classifies substance use disorders under Mental and behavioural disorders due to psychoactive substance use and describe four patterns of substance use acute intoxication, harmful use, dependence syndrome, and withdrawal state. The codes in this range represent an individual diagnostic code for different psychoactive substances including alcohol, opioids, cannabinoids, sedative hypnotics, cocaine, stimulants, hallucinogens, tobacco, volatile solvents and multiple drug use [4].

Methodology

Diagnostic guidelines for the different substance induced clinical conditions are also specified. Also, an additional code exists for abuse of non-dependence producing substances such as aspirin. The DSM-5 Substance-Related Disorders has eliminated two categories in DSM-IV; Substance Dependence and Substance Abuse now under one category called Substance-Use Disorders [5]. In the substance use disorder chapter the biggest change from the dependence and abuse diagnosis is the move to Mild, Moderate, and Severe. To determine the severity of the disorder, a criterion has been established. The presence of symptoms is defined as Mild. The presence of symptoms is defined as Moderate [6]. The presence of 6 or more symptoms is defined as Severe. Drugs can broadly be classified into Depressants, Narcotics, Stimulants and Hallucinogens. Depressants, also known as sedatives and tranquilizers, are substances that can slow brain activity [7]. These include alcohol, hypnotics to induce sleep, anxiolytic to reduce anxiety, sedatives for relaxation and anticonvulsants such as barbiturates. Alcohol is the most commonly used depressant. Barbiturates such as amobarbital, pentobarbital, phenobarbital, and secobarbital are depressants, or sedatives as shown in (Figure 1). These drugs have several medical uses, including easing anxiety and tension, dulling pain, and treating epilepsy and high blood pressure. At the highest risk for prescription drug abuse are anaesthesiologists, emergency medicine physicians,

Figure 1: Barbiturates.

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family practitioners, psychiatrists and nurses. The ease of access and frequency of exposure to prescription drugs is one factor that increases the probability of these professionals to abuse these drugs. Other factors that contribute to the abuse of prescription drugs include stress, anxiety and depression, often associated with the long working hours and high stress levels of healthcare jobs [8]. Narcotics or opioids are drugs that are used medically for pain relief but that have strong addictive potential. Opioids produce a rush, or intense feelings of pleasure, which is the primary reason for their popularity as street drugs. They also dull awareness of one's personal problems, which is attractive to people seeking a mental escape from stress. Their pleasurable effects derive from their ability to directly stimulate the brain's pleasure circuits, the same brain networks responsible for feelings of sexual pleasure or pleasure from eating a satisfying meal [9]. Stimulants act on the central nervous system to increase energy and alertness while suppressing appetite and fatigue. They include cocaine, amphetamines, methamphetamine, MDMA, nicotine, caffeine and amphetamine like products. Some of these are discussed below. Continued use of some stimulants can result in changes in how the brain operates and an inability to experience pleasure naturally [10]. For example, chronic use of amphetamines may result in the temporary loss of approximately dopamine receptors in the nucleus accumbens, at least for 4 months since the last exposure.

Discussion

Amphetamine is a central nervous system stimulant. Amphetamines are used in high doses for their euphoric rush. They are often taken in pill form or smoked in a relatively pure form called ice or crystal meth [11]. Amphetamines are also used for therapeutic purposes e.g., for the treatment of attention deficit and hyperactivity disorder, narcolepsy, and obesity. At therapeutic doses, it induces physical effects such as decreased reaction time, fatigue resistance, and increased muscle strength as shown in (Figure 2). Larger doses of amphetamine may impair cognitive function and induce rapid muscle breakdown. The drug ecstasy or MDMA is a designer drug, similar in chemical structure to amphetamine [12]. It produces mild euphoria and hallucinations and has become especially popular on college campuses and in clubs and raves in many cities. Cocaine is a natural stimulant extracted from the leaves of the coca plant. Cocaine is usually snorted in powder form or smoked in the form of crack. In 2008, 5.3 million Indians age 12 and older had abused cocaine in any form and 1.1 million had abused crack at least once in the year prior to being surveyed. Marijuana is derived from the Cannabis sativa plant [13]. It is generally classified as a hallucinogen because it can produce perceptual distortions or mild hallucinations. It is also known by various street names such as bhaang, gaanja, charas, hashish, pot, weed. Cannabis can produce anxiety, paranoia, and a sense of derealisation. It is the most prevalent illegal drug used around the world. About 40% of the U.S. population age 12 or older has tried cannabis at least once, and about 10% has tried it in the last year [14]. The psychological perspective includes the role of reinforcement, psychodynamic and cognitive explanations. Socio cultural perspective highlights the role of environment in drug addiction. Some risk and protective factors have also been identified which either make the individual more vulnerable or more resilient towards substance use [15].

Figure 2: Amphetamines.

Conclusion

Drug addiction however can be treated with treatment medications and psychological treatment, prevention is a major goal in adolescents with programs such as providing normative education and competence enhancement.

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Conflict of Interest

None

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