



Drug induced psychiatric disorder-A mini review

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ABSTRACT

This article reviews the agents that are responsible for producing psychiatric symptoms in an individual as a result of drug abuse, which may lead to delusions and hallucinations. There are several categories of drug that are responsible for producing psychiatric syndromes such as benzodiazepines, cannabis, amphetamines, alcohol, inhalants and hallucinogens. Long term use of these drugs may lead to drug dependence, intoxication and may even worsen the condition. The general management of drug-induced psychiatric disorder is to minimize the use of the drug, gradual withdrawal of the drug and patient counseling.



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INTRODUCTION

Psychosis is a condition in which a group of psychological symptoms occur over a period of time. In these cases, a person loses his relation with reality and unable to find the difference between reality and imaginary. Psychosis condition may reduce the person's link with the family, work and social functioning. (Kiran and Chaudhury, 2009) They lack in good health and may feel very depressed. Common symptoms may include delusions, hallucinations, psychomotor changes, impaired cognition, disorganized speech and mania.

Psychiatric disorders are broadly classified into 2 classes: schizophrenia and bipolar disorder. Schizophrenia is a chronic condition with increased bad situations with some background (Morrison and Gillig, 2009). Symptoms of schizophrenia may include hallucination, delusion, social withdrawal and lack of energy and motivation and depression. Psychiatric patients have a high risk of physical illness when compared to non-psychiatric patients. The reason for the psychiatric and physical illness is a complex phenomenon, but the major factor for the production of psychiatric disorders is due to drug abuse or overdose (Morrison and Gillig, 2009).

According to a survey conducted by the World Health Organization (WHO), both pharmacological and psychological treatments are necessary for better patient care. A wide range of drugs are capable of producing psychiatric disorders such as benzodiazepines, cannabis, amphetamines, inhalants, alcohol, hallucinogens and even caffeine. The causative agent for the drug-induced psychiatric disease may vary according to the culture and lifestyle of a particular region. Based on these criteria several international studies are more likely to produce schizophrenia. The condition when two or more diagnosable diseases are happening together either at the same

time or having a close relationship in the same individual is known as co-morbidity (Johnson, 1981).

Causes of drug-induced psychiatric disorders

1. Psychiatric symptoms/syndromes due to substance use or withdrawal of drug substance.
2. Symptoms due to intoxication and drug dependence.
3. A substance that produce irritation or change in the course of already existing psychiatric condition.
4. Or a psychiatric disorder may lead to severe psychiatric syndromes due to drug abuse

Krausz (Krausz, 1996) suggested four categories of a dual diagnosis of drug-induced psychiatric disorders,

1. Initial diagnosis of mental disorder with concurrent diagnosis of drug abuse that affects the mental health of a person.
2. Initial diagnosis of drug dependency with psychiatric complications leading to mental disorder.
3. Subsequent diagnosis of drug misuse and psychiatric disorders.
4. Consequent diagnosis of drug abuse and mood disorders can be performed for severe traumatic experience

Features of drug-induced psychiatric disorders

The major challenge in the diagnosis of drug-induced psychiatric disorder is due to a difference in diagnostic methods of mental health and drug addiction. These differences may confuse the physician in diagnosis (Baldacchino et al., 2014). (Abdulrahim, 2001) suggested there is a relationship between nature and co morbidity of the drug-induced psychiatric disorder based on the following reasons

1. Psychiatric symptoms due to drug use and withdrawal of drug.
2. Intoxication and dependence may lead to psychiatric disorders.
3. Long term use of the drug may aggravate the condition or alter pre-existing mental disorders.
4. An already existing mental/psychiatric disorder may precipitate drug-induced disorder leading to psychiatric symptoms

Cannabis Induced Mental Disorders

There exists a continuous debate on cannabis use and psychiatric disorders. Intake of cannabis may alter the onset, course and clinical symptoms of psychiatric disorders (Baldacchino et al., 2014). Various theories have been proposed related to cannabis use, in case of the initial and final stage of psychosis episode cannabis use may occur as a means of self-medication which may stimulate the nervous system (Khantzian, 1985). In the case of the final stage of schizophrenia, a synergistic effect of cannabis is produced, leading to exposure of psychiatric symptoms. According to this theory, the withdrawal of cannabis will not reduce or cease the psychiatric symptoms and will not show distinguishing psychophysiology (Henquet et al., 2005; Miller et al., 2001). In the absence of cannabis use, there is a chance of onset of psychiatric symptoms. The cause of psychiatric symptoms due to cannabis use can be detected from the nature of psychiatric symptoms (Ghodse, 1986).

Management of cannabis-induced psychiatric disorders

Patients should be advised to withdraw the use of cannabis and counsel against its use (Turner et al., 2014). Patient with first episodes of psychiatric disorders should be subjected to psychiatric education and cognitive behavioral therapy (CBT) in reducing cannabis use (McHugh et al., 2010). Drugs like clozapine and resperidone can be used in the management of cannabis abuse (Brunette et al., 2011).

Methylenedioxymethylamphetamine (MDMA) Induced Psychiatric Disorders

MDMA substance use can cause psychiatric disorders or may increase the problems associated with neurological and psychological disorders (Baldacchino et al., 2014). The action of MDMA is mediated through the serotonin receptor (Battaglia and Souza, 1989; Kankaanpaa et al., 1998) and chronic use of MDMA may increase the neurotoxic effect on the serotonin system (Mccann et al., 1994). MDMA is also known as psychostimulants. They may precipitate the psychotic states (Bramness et al., 2012). MDMA induced psychotic states to develop during the chronic stages of drug use and may eliminate within a week of its cessation (Patel et al., 2011). MDMA induced psychiatric disorders to develop during the chronic stage of drug use and may eliminate within a week of the ceasing of drug use. Symptoms may include paranoid hallucinatory states (both auditory and visual), confusional ideas, disturbances in making a choice, and may create mild to severe schizophrenia (Wearne and Cornish, 2018). MDMA should be withdrawn completely in

case of reuse of drug may increase the risk of reappearance of paranoid states (Henning *et al.*, 2019).

Management of MDMA induced psychiatric disorders

The first-line treatment in acute psychiatric episodes is the withdrawal of psychiatric stimulants. Benzodiazepines can be given in acute psychiatric disorders, on the other hand, it is not suggested for the patients who already use benzodiazepines as it may increase the risk of psychiatric conditions (Bramness *et al.*, 2012; Glasner-Edwards and Mooney, 2014). Chronic psychiatric episodes have no treatment so far. When a person has recovered, he/she should be monitored regularly to reduce psychiatric drug use (Stoops and Rush, 2014). But recent researches have proved that clozapine and olanzapine is likely to reduce the psychiatric symptoms (Moran *et al.*, 2015).

Alcohol Induced Psychiatric Diseases

Alcohol abuse is one of the main reasons for psychiatric disorders; it may worsen psychiatric syndromes. It produces a negative effect on psychosis, and it interferes with the drug used in the treatment of psychosis (Winklbaur *et al.*, 2006). Alcohol intake increase risk of neurological damage and may result in impairment in attention, working, memory and recalling when compared to a normal person (Correll *et al.*, 2010). Alcohol abuse may present a sudden onset of auditory hallucinations and delusions (Jordaan *et al.*, 2009).

Alcohol use may increase the sedative effect on antipsychotic drugs. Disulfuram is used in the treatment of chronic alcoholism which on high doses may trigger psychotic symptoms. Combination of alcohol and benzodiazepines may increase the sedative effect by the inhibition of CYPs by sedative antidepressant (Green *et al.*, 2008).

Management of alcohol induced psychiatric disorders

Patients should be counseled regarding the withdrawal of alcohol (Winklbaur *et al.*, 2006). Naltrexone is used as an adjacent therapy for alcohol withdrawal and reduces the intake of alcohol. Patients with psychosis are at high risk of death. Therefore, naltrexone should be administered only in the presence of health care professionals and should be monitored carefully (Sawicka and Tracy, 2017). Disulfuram can also be used in the treatment of alcoholism. Both naltrexone and disulfuram are equally effective in reducing alcohol consumption (Green *et al.*, 2008; Sawicka and Tracy, 2017).

Opioid Induced Psychiatric Disorders

There is an increased risk of mortality rate between psychosis and opioid use. Opioids such as methadone and buprenorphine increase the sedative effect of antipsychotics. The drug used to treat depression like tricyclic antidepressants and benzodiazepines may trigger the psychiatric symptoms upon continuous use of an opioid (Mccance-Katz *et al.*, 2010).

Management of Opioid-induced psychiatric disorders

Several studies have been performed for the management of psychosis and opioid use. Drugs such as buprenorphines and olanzapines are generally used in the management of opioid-induced psychosis (Maremmanni *et al.*, 2018). For acute opioid withdrawal, benzodiazepines are generally used, but it is recommended only for short term use only (Gaur *et al.*, 2019).

Benzodiazepines Induced Psychiatric Disorders

Positive psychiatric symptoms can be self-managed by patients who use benzodiazepines. However, it should be used for short term only, because drug abuse may lead to greater risk. Benzodiazepines also increases the sedative effect of tricyclines and antidepressants that are used to treat depression and schizophrenia (Creado and Plante, 2016).

Management of benzodiazepines induced psychiatric disorders

Benzodiazepines on combination with major tranquilizers such as lorazepam, clonazepam and diazepam is used in the management of psychiatric episodes (Griffin *et al.*, 2013). In the case of drug dependency, benzodiazepines should be withdrawn gradually to minimize the risk or long-acting benzodiazepines can be prescribed (Loscertales *et al.*, 2017).

Inhalants Induced Psychiatric Disorders

Inhalants are most commonly abused in adolescence age, but still, it is not recognized. Upon long term use of inhalants may lead to optic atrophy, psychosis similar to that of schizophrenia (Basu *et al.*, 2004). In susceptible individuals, chronic use of inhalants may trigger psychotic symptoms and even if the person is not with the psychotic background (Howard *et al.*, 2011). Inhalants induced psychotic disorders may last for few hours to few weeks (Wilkinson *et al.*, 2014).

Management of inhalants induced psychiatric disorder

For the management of inhalants induced psychiatric disorders standard Cognitive Behavioral Therapy should be given to the patients for the with-

drawal of the inhalants (Hofmann *et al.*, 2012; Mchugh *et al.*, 2010). Recreational activities can be encouraged as an alternative therapy to inhalants abuse. Interactions with family can be counseled (Hofmann *et al.*, 2012).

Hallucinogens Induced Psychiatric Disorders

The agents that induce hallucination in a person are known as hallucinogens. These drugs are pharmacologically classified under the drugs that affect neurotransmitter system. They can be natural or synthetic in origin. Natural drugs such as mescaline which is derived from peyote cactus and synthetic drugs such as lysergic acid diethylenediamine are also potential triggers of psychotic disorders (Fantegrossi *et al.*, 2008; Nichols, 2016). Cannabinoids derived from the cannabis plant are also classified under hallucinogens (Baldacchino *et al.*, 2012). Pathophysiology of cannabis psychosis may include confusion, disorientation, amnesia, depersonalization, delusions, hallucinations and paranoia (Budney *et al.*, 2008).

Management of hallucinogens induced psychiatric disorders

Chronic exposure to hallucinogens such as cannabis lead to a cannabis withdrawal syndrome that are reported by symptoms of depression, anxiety, nausea, abdominal discomfort, loss of appetite, weight loss (Budney *et al.*, 2008). Therefore, it can be managed by giving patient counseling and explain to them about the risk factors in hallucinogens abuse. Along with patient counseling, drugs like clozapine and resperidone can be prescribed.

CONCLUSION

Drug induced psychiatric disorders are one of the major condition that should be taken into consideration for further investigation. For all drug-induced psychiatric disorders, personal background of the patient should be analyzed thoroughly, and treatment should be taken regularly. It is an important part of the health care professionals to monitor the patient regularly and counsel them to minimize the risk.

REFERENCES

Abdulrahim, D. 2001. Substance Misuse and Mental Health CoMorbidity (Dual Diagnosis). pages 6–13.
 Baldacchino, A., Arpalli, V., Oshun, A., Tolomeo, S. 2014. Substance-Induced Mental Disorders. pages 1925–1936.
 Baldacchino, A., Hughes, Z., Kehoe, M., Blair, H., Teh, Y., Windeatt, S., Crome, I. B. 2012. Cannabis

Psychosis: Examining the Evidence for a Distinctive Psychopathology in a Systematic and Narrative Review. *The American Journal on Addictions*, 21:88–98.

Basu, D., Jhirwal, O. P., Singh, J., Kumar, S., Mattoo, S. K. 2004. Inhalant abuse by adolescents: a new challenge for Indian physicians. *Indian J. Med. Sci*, 58:245–249.

Battaglia, G., Souza, E. B. D. 1989. Pharmacologic profile of amphetamine derivatives at various brain recognition sites: selective effects on serotonergic systems. *NIDA Res. Monogr*, 94:240–258.

Bramness, J. G., Gundersen, Ø. H., Guterstam, J., Rognli, E. B., Konstenius, M., Løberg, E. M., Franck, J. 2012. Amphetamine-induced psychosis - a separate diagnostic entity or primary psychosis triggered in the vulnerable? *BMC Psychiatry*, 12(1):221.

Brunette, M. F., Dawson, R., O'keefe, C. D., Narasimhan, M., Noordsy, D. L., Wojcik, J., Green, A. I. 2011. A Randomized Trial of Clozapine Versus Other Antipsychotics for Cannabis Use Disorder in Patients With Schizophrenia. *Journal of Dual Diagnosis*, 7(1-2):50–63.

Budney, A. J., Vandrey, R. G., Hughes, J. R., Thostenson, J. D., Bursac, Z. 2008. Comparison of cannabis and tobacco withdrawal: Severity and contribution to relapse. *Journal of Substance Abuse Treatment*, 35(4):362–368.

Correll, C. U., Hauser, M., Auther, A. M., Cornblatt, B. A. 2010. Research in people with psychosis risk syndrome: a review of the current evidence and future directions. *Journal of Child Psychology and Psychiatry*, 51(4):390–431.

Creado, S., Plante, D. T. 2016. An Update on the Use of Sedative-Hypnotic Medications in Psychiatric Disorders. *Curr. Psychiatry Rep*, 18:78–78.

Fantegrossi, W. E., Murnane, K. S., Reissig, C. J. 2008. The behavioral pharmacology of hallucinogens. *Biochem. Pharmacol*, 75:17–33.

Gaur, N., Gautam, M., Singh, S., Raju, V. V., Sarkar, S. 2019. Clinical Practice Guidelines on Assessment and Management of Substance Abuse Disorder in Children and Adolescents. *Indian J. Psychiatry*, 61:333–349.

Ghodse, A. H. 1986. Cannabis Psychosis. *Br. J. Addict*, 81:473–478.

Glasner-Edwards, S., Mooney, L. J. 2014. Methamphetamine psychosis: epidemiology and management. *CNS Drugs*, 28:1115–1126.

Green, A. I., Noordsy, D. L., Brunette, M. F., O'keefe, C. 2008. Substance abuse and schizophrenia:

- pharmacotherapeutic intervention. *J. Subst. Abuse Treat*, 34:61–71.
- Griffin, C. E., Kaye, A. M., Bueno, F. R., Kaye, A. D. 2013. Benzodiazepine pharmacology and central nervous system-mediated effects. *Ochsner J*, 13:214–223.
- Henning, A., Kurtom, M., Espiridion, E. D. 2019. A Case Study of Acute Stimulant-induced Psychosis. *Cureus*, 11:4126–4126.
- Henquet, C., Krabbendam, L., Spauwen, J., Kaplan, C., Lieb, R., Wittchen, H. U., Os, J. V. 2005. Prospective cohort study of cannabis use, predisposition for psychosis, and psychotic symptoms in young people. *BMJ*, 330:11–11.
- Hofmann, S. G., Asnaani, A., Vonk, I. J. J., Sawyer, A. T., Fang, A. 2012. The Efficacy of Cognitive Behavioral Therapy: A Review of Meta-analyses. *Cognit. Ther. Res*, 36:427–440.
- Howard, M. O., Bowen, S. E., Garland, E. L., Perron, B. E., Vaughn, M. G. 2011. Inhalant use and inhalant use disorders in the United States. *Addict. Sci. Clin. Pract*, 6:18–31.
- Johnson, D. W. 1981. Drug-induced Psychiatric Disorders. *Drugs*, 22:57–69.
- Jordaan, G. P., Nel, D. G., Hewlett, R. H., Emsley, R. 2009. Alcohol-induced psychotic disorder: a comparative study on the clinical characteristics of patients with alcohol dependence and schizophrenia. *J. Stud. Alcohol Drugs*, 70:870–876.
- Kankaanpaa, A., Meririnne, E., Lillsunde, P., Seppala, T. 1998. The acute effects of amphetamine derivatives on extracellular serotonin and dopamine levels in rat nucleus accumbens. *Pharmacol. Biochem. Behav*, 59:1003–1009.
- Khantzian, E. J. 1985. The self-medication hypothesis of addictive disorders: focus on heroin and cocaine dependence. *Am. J. Psychiatry*, 142:1259–1264.
- Kiran, C., Chaudhury, S. 2009. Understanding delusions. *Ind Psychiatry J*, 18:3–18.
- Krausz, M. 1996. Old Problems-New Perspectives. *Eur. Addict. Res*, 2:1–2.
- Loscertales, H. R., Wentzky, V., Dürsteler, K., Strasser, J., Hersberger, K. E., Arnet, I. 2017. Successful withdrawal from high-dose benzodiazepine in a young patient through electronic monitoring of polypharmacy: a case report in an ambulatory setting. *Ther. Adv. Psychopharmacol*, 7:181–187.
- Maremmani, A. G. I., Pallucchini, A., Rovai, L., Bacciardi, S., Spera, V., Maiello, M., Perugi, G., Maremmani, I. 2018. The long-term outcome of patients with heroin use disorder/dual disorder (chronic psychosis) after admission to enhanced methadone maintenance. *Ann. Gen. Psychiatry*, 17:14–14.
- Mccance-Katz, E. F., Sullivan, L. E., Nallani, S. 2010. Drug interactions of clinical importance among the opioids, methadone and buprenorphine, and other frequently prescribed medications: a review. *Am. J. Addict*, 19:4–16.
- Mccann, U. D., Ridenour, A., Shaham, Y., Ricaurte, G. A. 1994. Serotonin neurotoxicity after (+/-)3,4-methylenedioxymethamphetamine (MDMA; "Ecstasy"): a controlled study in humans. *Neuropsychopharmacology*, 10:129–138.
- Mchugh, R. K., Hearon, B. A., Otto, M. W. 2010. Cognitive behavioral therapy for substance use disorders. *Psychiatr. Clin. North Am*, 33:511–525.
- Miller, P., Lawrie, S., Hodges, A., Clafferty, R., Cosway, R., Johnstone, E., Miller, P., Lawrie, S. M., Hodges, A., Clafferty, R., Cosway, R., Johnstone, E. C. 2001. Genetic liability, illicit drug use, life stress and psychotic symptoms: preliminary findings from the Edinburgh study of people at high risk for schizophrenia. *Soc. Psychiatry Psychiatr. Epidemiol*, 36:338–342.
- Moran, L. V., Masters, G. A., Pingali, S., Cohen, B. M., Liebson, E., Rajarethinam, R. P., Ongur, D. 2015. Prescription stimulant use is associated with earlier onset of psychosis. *J. Psychiatr. Res*, 71:41–47.
- Morrison, A. K., Gillig, P. M. 2009. Cognitive Behavior Therapy for People with Schizophrenia. *Psychiatry (Edgmont)*, 6:32–39.
- Nichols, D. E. 2016. Psychedelics. *Pharmacol. Rev*, 68:264–355.
- Patel, A., Moreland, T., Haq, F., Siddiqui, F., Mikul, M., Qadir, H., Raza, S. 2011. Persistent Psychosis After a Single Ingestion of "Ecstasy" (MDMA). *Prim. care companion CNS Disord*, 13(6). PCC.11101200.
- Sawicka, M., Tracy, D. K. 2017. Naltrexone efficacy in treating alcohol-use disorder in individuals with comorbid psychosis: a systematic review. *Ther. Adv. Psychopharmacol*, 7:211–224.
- Stoops, W. W., Rush, C. R. 2014. Combination pharmacotherapies for stimulant use disorder: a review of clinical findings and recommendations for future research. *Expert Rev. Clin. Pharmacol*, 7:363–374.
- Turner, S. D., Spithoff, S., Kahan, M. 2014. Approach to cannabis use disorder in primary care-Focus on youth and other high-risk users. *Can Fam Physician*, 60:801–808.
- Wearne, T. A., Cornish, J. L. 2018. A Compari-

son of Methamphetamine-Induced Psychosis and Schizophrenia: A Review of Positive, Negative, and Cognitive Symptomatology. *Front psychiatry*, 9:491-491.

Wilkinson, S. T., Radhakrishnan, R., Souza, D. C. 2014. Impact of Cannabis Use on the Development of Psychotic Disorders. *Curr. Addict. reports*, 1:115-128.

Winklbaur, B., Ebner, N., Sachs, G., Thau, K., Fischer, G. 2006. Substance abuse in patients with schizophrenia. *Dialogues Clin. Neurosci*, 8:37-43.