

Methylenedioxymethamphetamine Induced Neuro-Psychiatric Disorders: A Case Report from Southern India

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ABSTRACT

The recreational drug MDMA (3,4-methylenedioxymethamphetamine), which is a stimulant and hallucinogen, has become increasingly popular among the young population of both developed and developing world. We describe a case report of persistent neuropsychiatric disorders in a previously healthy, 21-year-old college student after a single ingestion of MDMA. We detail the psychiatric symptoms with syndromic diagnosis and treatment outcome. Furthermore, the paper describe changes in the demographics of the use of MDMA and discuss the public health challenges posed by the increasing popularity of recreational drugs in the Indian context.

Keywords: Delirium, Depression, Psychosis

CASE REPORT

A 21-year-old male engineering student was brought to the psychiatry OPD for consultation by parents. According to the patient, he snorted a large quantity of MDMA with friends during a college party two weeks prior. Within an hour of snorting the drug, he started having strange experiences like hearing music continuously and he felt that everyone around is accusing him of theft of the remaining drug, which he had kept aside for a friend at his request. Within a few hours he felt very weak and he slept till morning. When attending classes the next day he heard that his teachers were making critical comments against him. He also heard comments made by friends from behind, but when he looked back he couldn't find anyone addressing him. He started feeling depressed and tried to end his life on the third day, by cutting his veins using broken pieces of glass bottles, but didn't succeed. The patient also revealed that he occasionally used alcohol, cannabis and nicotine for past one year. He used alcohol and cannabis only during parties and smoked cigarettes more frequently (2-3 cigarettes/week). There was no significant medical history. No family history of mental illness. He was pre morbidly well adjusted. Physical examination showed no abnormalities. Mental status examination revealed anxious affect, persecutory and referential delusions, with auditory hallucinations. We haven't done urine drug screen due to unavailability at our setting. MRI and EEG not done as there were no atypical symptoms or neurological signs.

A provisional diagnosis of substance induced psychotic disorder was made according to ICD-10 criteria and low dose oral olanzapine (2.5 mg/day) was started. Patient came for review after 10 days. Persecutory and referential delusions were resolving, but he had prominent guilt regarding his past mistakes with occasional death wishes and a depressed affect. Tab. olanzapine was hiked to 5 mg/day. Considering low mood, guilt, depressed affect and depressive cognition a comorbid diagnosis of depressive disorder severe was made after 5 days and oral sertraline was started (50 mg/day), which was hiked to 75 mg/day after 2 weeks. Patient gradually improved on these medications and all the symptoms resolved over a period of next two months.

DISCUSSION

In the current case, patient developed a prolonged psychotic (delusional-hallucinatory syndrome) and depressive reaction to recreational use of MDMA that was treated successfully with

olanzapine and sertraline. The patient used higher than usual dose of MDMA, which precipitated intoxication delirium as per ICD-10 criteria, with disturbances of consciousness, fleeting hallucinatory experiences and a change in cognition. MDMA induced delirium has been reported previously [1]. The next day, after the resolution of delirium, patient started having psychotic symptoms characterised by referential and persecutory delusions and auditory hallucinations. Secondary to derogatory hallucinations he had depressive symptoms and cognitions, followed by suicidal ideations on the third day. He came to the hospital after two weeks of beginning of all the symptoms. The diagnosis of MDMA-induced psychotic disorder was made in view of abrupt onset, the absence of prodromal symptoms, sustained mood alteration and family history. In the current case report, we tried to highlight a spectrum of neuropsychiatric disorders induced by a single exposure to MDMA, including delirium, psychosis and depression.

Apart from MDMA, patient had also used cannabis, nicotine and alcohol occasionally in the past, but never had any lasting sequelae beyond intoxication period. Furthermore, on that eventful night he used only MDMA and there is a strong temporal association with the psychotic episode and its use.

MDMA-induced psychosis has usually been reported in patients with heavy and chronic MDMA abuse and in those with a genetic vulnerability to psychotic disorders [2]. However, there are reports of psychotic disorder precipitated by a single use of MDMA from the western world [3,4]. Most of the cases required higher doses of neuroleptics, some showed only partial benefit. In contrast our case needed only modest doses of olanzapine and sertraline, and recovered fully over a period of three months. A six month follow up study of MDMA-induced psychotic disorder also showed that in most of the cases from the first month the psychotic symptoms were considerably reduced with treatment, with the most severe positive symptoms remitting in the first three months and a statistically significant clinical reduction over the six months of the assessment period. Olanzapine has been shown to be very effective in these situations and no serious side effects were noted [5].

Though the phenomenology of MDMA induced psychosis and schizophrenia are similar, the neurotransmitters involved, the mechanism of neurotoxicity are different between these two entities. The psychopathological consequences of MDMA in man are relatively poorly understood. On the basis of a series of cases reported in the literature, delirium, acute psychosis, chronic psychosis, flash-back

phenomena, anxiety/panic states and depressive mood disorders can occur. Soar K et al., tried to summarise 38 case reports from 1991 to 2001 and found that 29% of the cases had psychotic features [6].

How MDMA induces psychosis is not fully known, but studies suggest the role of both dopaminergic and serotonergic pathways. Both animal and human studies showed that MDMA reduces levels of brain serotonergic activity and depletes serotonin stores [3]. Furthermore, it was shown that MDMA interferes with serotonin and catecholamine transporters in the central nervous system to increase monoamine synaptic levels and thereby mediate the majority of its central nervous effects [7].

MDMA is a recreational drug that is claimed to enhance camaraderie and energy levels. In the early years, it was not considered as a drug of abuse. But, later longitudinal studies indicated that some MDMA users eventually became heavy users and that some of these users met criteria for dependence and/or abuse [8]. Indian data on designer drugs is very limited. But a recent assessment by The United Nations Office on Drugs and Crime has found that the use of synthetic drugs (amphetamines and MDMA) has shifted to Asia in recent years [9]. The first nationwide survey in India found MDMA use in regions like Goa and Gujarat [9]. Most reports regarding these drugs are from newspaper articles and no research data is available. According to news reports, the major reason for its popularity in India is that it is significantly cheaper than cocaine. After the crackdown on cocaine nexus curbed the supply of the potent drug in party circles, the cheaper alternatives MDMA and Lysergic acid diethylamide have become popular. Our case highlights the increasing popularity of MDMA among college students in relatively affluent South Indian state of Kerala. Furthermore, we need new legal enforcement strategies that should ban all manufactures from selling MDMA and related drugs via dark and deep web, so that its availability and use can be restricted and controlled [10].

CONCLUSION

Given the increasing popularity of MDMA in India and other countries in the world, it would be prudent for clinicians to routinely ask young people about its use and to include it in toxicology screens. Public education initiatives are also very much needed as many users perceive MDMA to be safer compared to heroin and cocaine. However, in reality MDMA has substantial toxic effects, especially when mixed with other compounds, and can be potentially lethal.

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