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MEPHENTERMINE INDUCED PSYCHOTIC DISORDER: A CASE SERIES

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KEYWORDS :

INTRODUCTION:
Mephentermine is an alpha-adrenergic agonist which is structurally similar to methamphetamine. It acts at monoaminergic synapses releasing monoamines like noradrenaline, dopamine, and serotonin (1). It has a sympathomimetic central nervous system (CNS) stimulant effect along with causing relaxation and a sense of euphoria (2).

It is available in oral, injectable and inhalant formulations. Athletes can often use the molecule to enhance performance, thus the World Anti-Doping Agency prohibits its use (3). Despite a relatively well-established dependence potential and other psychiatric sequelae, reports of mephentermine misuse or dependence are few. Thus, evidence regarding management is preliminary.

Case 1:
A 33 years old, Hindu male working as a chemist, presented to emergency with H/o mepehentermine use from 2.5 years and with complaints of fearfulness, suspiciousness towards family members with physical aggression, auditory hallucinations, visual hallucinations and sleep disturbances from past 7 days.

The use was initiated initially for performance enhancement in body building but subsequently he developed tolerance, craving, use despite harm and withdrawal symptoms characterised by lethargy,restlessness and cold extremities with an average daily use of around 2-3 ml/day in injectable form.

Family reported sudden onset of symptoms characterised by fearfulness, suspiciousness, decreased sleep with delusion of persecution, auditory hallucinations, increased PMA on MSE, which was preceded by increase in the usage of mephentermine upto 3-4ml/day from past 2 months. Patient was admitted in inpatient ward and his BPRS score on day 1 was 68. He was started on Tab. Olanzapine 5 mg OD and Tab chlordiazepoxide total 30mg in three divided doses was started.

Improvement in sleep and PMA was noted by day 3 and reduction of psychotic symptoms was seen by day 10(BPRS score 35). Patient did not report any craving for Mephenteramine injections or any withdrawal symptoms. Tab. Chlordiazepoxide was tapered and stopped after 10 days while Tab. Olanzapine 5 mg HS continued for next 6 months.

Case 2:
A 19-year-old male pursuing a bachelor's degree in computer applications presented to the psychiatry department of a tertiary care hospital with a history of alterations in behaviour, suspiciousness towards family members and friends, marked fearfulness, verbal and physical aggression along with decreased sleep, increased activity levels, irritable mood, inflated self-esteem and overspending since the preceding two months.

The patient was a known case of Gilbert syndrome with the last exacerbation of illness being two years prior. There was history of tobacco dependence in smoking form along with alcohol harmful use.

A physical examination revealed a thin-built male with high blood pressure and tachycardia; multiple puncture wounds in bilateral forearms. Mental status examination showed psychomotor agitation, blunt and nonreactive affect, persecutory and grandiose delusions, ideas of reference along with second-person auditory hallucinations, impaired judgment and absent insight.

Based on the presentation, differentials of first episode psychosis and manic episode were kept and Tablet Olanzapine was started. On serial interviews, a history of administration of mephentermine sulphate injections was elicited which, the patient alleged was prescribed by a physician an accident for analgesia. A temporal relationship was established between the beginning of mephentermine administration and the onset of presenting symptoms. However, the patient refused to give details about the exact pattern of use and continued to be uncooperative for several interviews.

After three-four days of hospitalisation, the patient reported drowsiness, lethargy, and excessive sleepiness and the blood pressure and tachycardia started to decrease. The patient eventually admitted using 2-3 ml of mephentermine sulphate injection (30mg/ml) daily for two months and expressed that while the immediate effects were excitement, increased motivation, and explosive energy levels; craving would start within six-seven hours of last use.

Within a week of treatment with Tablet Olanzapine 15 mg, there was a near complete resolution of psychotic symptoms and biological functions were restored. Diagnosis was revised to stimulant-induced psychotic disorder. Psychoeducation sessions were taken with the patient and motivation enhancement therapy was started. The patient was discharged and as the patient resumed his routine and completed his course, the antipsychotic was gradually tapered off over six months.

Case 3:
A 20 years old male, working as a gym trainer presented to emergency with complaints of suspiciousness towards family members, auditory and visual hallucinations, physical aggression and sleep disturbances from previous ten days.

Informants gave information regarding history of suspected IV use of some medications since two weeks. Physical examination also revealed puncture wounds at injection site along with autonomic hyper activity.

At presentation, chemical restraints were used to manage the agitation of the patient. After two days of admission, Tablet Risperidone was started. BPRS scores on day of admission was 59 and after five days of antipsychotic, drastically reduced to 38. On serial interviewing, the patient revealed administration of 4-5ml/day administration of

mephentermine sulphate injection. The patient was discharged within one more week and continued on Tab Risperidone for following four months, during which he remained asymptomatic and abstinent from substance. Eventually, patient did not follow up further.

DISCUSSION

The first cases of mephentermine abuse and dependence were reported by Greenberg and Lustig, 1966 (4) and Angrist et al, 1970 (5). The demethylation of mephentermine to amphetamine (2) could be a possible mechanism of psychosis.

The compound is reported to cause anxiety, incoherence, drowsiness, hallucinations and convulsions at hight doses (1) and in some vulnerable individuals, due to conversion to amphetamine, agitation and frank psychotic symptoms (6) can be seen. Our patient was consuming mephentermine at a dose of 60-90 mg daily, thus increasing the propensity of paranoid psychosis.

The acute onset symptoms readily resolving with abstinence and antipsychotics, matched the accounts reported previously in a similar patient profile.

The significant potential abuse and drastic effects on cognition and functioning mandate further research into the long term effects and management strategies in this area.

Table 1: Case reports/ series in of mephentermine use/ dependence associated with psychosis

Case Reports/ Series	Management
Joshi et al, 1988 (7)	Halperidol 20 mg and Tablet benzhexol 4 mg, oral
Basu et al, 2009 (8)	Not mentioned
Sawant et al, 2012 (9)	Risperidone 4 mg , THP 4 mg oral
Gehlawat et al, 2013 (10)	Olanzapine 5 mg, oral
Vishwakarma et al, 2020 (11)	Abstinence and Supportive management

CONCLUSION

Our three index cases presented with symptomatology of acute psychotic episodes with predominantly paranoid delusions, hallucination and significant aggression, all of which resolved quickly after starting antipsychotics.

After the acute phase, benefits were sustained in the following months. It was noted that mephentermine use can cause psychotic symptoms of acute onset along with autonomic instability, thus the regulations with respect to this substance stand well justified owing to the severity of psychiatric manifestations which may occur in certain individuals.

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