VOLUME - 13, ISSUE - 12, DECEMBER - 2024 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Forensic Medicine

"FROM BOOST TO BREAKDOWN "PERFORMANCE ENHANCEMENT AND THE DARK SIDE OF MEPHENTERMINE ADDICTION" A CASE SERIES

Dr. Richa Gupta	Associate Professor, Department of Forensic Medicine and Toxicology, S.N Medical College, Agra
Dr. Ajay Singh*	Post Graduate Resident, Department of Forensic Medicine and Toxicology, S.N Medical College, Agra *Corresponding Author
Dr. Anjesh Mittal	Post Graduate Resident, Department of Forensic Medicine and Toxicology, S.N Medical College, Agra
Dr. Sobe Chaturvedi	Post Graduate Resident, Department of Forensic Medicine and Toxicology, S.N Medical College, Agra

ABSTRACT Mephentermine, a stimulant used to maintain blood pressure in hypotensive states, is also a drug misused for performance enhancement due to its central nervous system effects1. Here are four cases highlighting its misuse: in which a patient presented with insomnia and irritability experienced palpitation, headaches, hypertension, and depressive symptoms after using mephentermine for a year to boost work performance. Whenever he tried to discontinue or reduce the dose, he developed withdrawal symptoms like fatigue, weakness, agitation, irritability, aggressiveness, etc. In all cases, the misuse aimed at performance enhancement led to significant physical or psychiatric problems (mental health issues). This study helps to underscore the need for awareness about mephentermine's harmful and addictive effects and the importance of regulating its availability.

KEYWORDS : Mephentermine, drug misuse, withdrawal symptoms, psychiatric,

INTRODUCTION

Mephentermine (N,2-dimethyl-1-phenylpropan-2-amine) is structurally similar to amphetamine and methamphetamine.[2] This similarity contributes to its stimulant effects on the central nervous system, which is why it has been misused for performance enhancement. However, this also means it shares some of the risks with the potential for abuse and dependence as other stimulants. The use of Mephentermine sulfate is a global health concern. Mephentermine sulfate is structurally similar to amphetamine and acts directly or indirectly to noradrenergic receptors, which leads to the release of a high level of norepinephrine owning to its sympathetic action. Here, we are presenting a case series of amphetamine toxicity presented in the emergency department, most commonly presenting agitation, hallucinations, suicidal behavior, and chest pain. According to toxicological analysis, Amphetamines are not mixed with another stimulant.

Case 1

A 24-year-old single male preparing for a government examination was brought to an emergency department by his father. The patient complains of insomnia, palpitations, headache, irritability, and aggressiveness with ongoing abuse of injectable drugs for the last few years as far as their knowledge. The patient's father mentioned that the drug was introduced by one of his friends in Delhi, who advised him that it improves stamina, strength, and physique. The patient took the drug through injection. Initially, he took a small dose, gradually increasing to a higher dose.

The patient's family members noticed the change in his behavior, he became irritable, aggressive and barely slept at night, mostly engaged in conflict with friends and family members without any serious issues, and sometimes became uncontrollable, because of this they took him to a mental health facility where he was admitted for 5-6 months following which he showed improvement in his behavior. Later, he started taking Mephentermine without his family and friends knowing it.

In further interviews, the patient and his father denied any psychiatric illness or any other drug abuse, or any previous psychological problems. The patient denied any suicidal ideation, delusion, illusion, etc.

On general examination, the patient was well-built with a weight of about 72 kg, lusterless skin, and a blank face. There are multiple puncture marks on the cubital fossa as shown in fig1. His vital parameters were within normal limits. We didn't find any sensory or motor abnormalities.

Case 2

A 32-year-old male was brought by police, as he was in jail and he physically assaulted another prisoner. The jail warden complained that he used to assault another cellmate, was very irritable and aggressive, used abusive words, didn't sleep at night, and the patient used to say that someone was planning to kill him. Police also brought the vial of Mephentermine shown in fig2 and fig 3. Which they found in the patient's pocket when they arrested him.

On general examination, the patient had a lean body, weight was about 56kg and lusterless and dull skin. There are multiple dark dotted marks present (most probably puncture marks of the syringe) on the cubital fossa of his hands as shown in fig4. The patient's vitals are within normal limits, and there are no motor or sensory abnormalities. Initially patient was admitted to the Department of Medicine from where he was referred to the psychiatric department for further management.

Case 3

A 30-year-old male, who was self-employed, and educated till the 10th, was brought by his close friend to our emergency department with a complaint of self-harming behaviors, he was a regular user of TERMIN (Mephentermine) and inability to stop. On inquiry background revealed that the patient was interested in sports and had a passion for bodybuilding, he had participated in many bodybuilding championships, where he was informed by his fellow mate that he could easily improve his performance and bodybuilt with this injunction. Initially, he started with a 30 mg injection through a vein of his cubital fossa, after half an hour, he felt significantly energetic. Initially, he took the 30 mg, but gradually, he increased the dose to 700-900mg; any attempt to discontinue or decrease the

dose leads to drowsiness, fatigue, cold numbness of limbs, and restlessness. These symptoms will be relieved after taking the injection. The patient also revealed that his voice has trailed him to harm himself, and he is suspicious that people would harm him.

On General examination, the patient was well built, with a weight of about 72kg, dry lusterless skin, and multiple hypertrophic marks present on both of his arms. Vitals are within normal limits.

Case 4

A 22-year-old single male was brought by his father to our emergency department with complaints of weakness, irritability, and insomnia (hardly seep for 2-3 hours), on investigation the background revealed that the patient was preparing for an army test where the patient came to know about Mephentermine by one of his peers to improve physical performance, which patient think needed to clear the exam to join army. After the first dose of 1ml of Mephentermine, he experienced confidence, alertness, energy, and insomnia for 2 days. Initially, he used 1ml of Mephentermine to improve performance, he gradually increased the dose, and on the day of the examination, he consumed 1.5 ml of Mephentermine to boost his performance; although he didn't clear the exam, he continued to take Mephentermine daily and gradually increase to 5ml.

On examination, there was no history of any pathological or psychological illness or no history of any other drug addiction. The patient also denied any suicidal ideation, self-harming thoughts, or hallucinations.

On general examination, the patient was well built, with multiple needle puncture Marks and a hypertrophic scar present on his arm as shown in fig5.. Vitals are within normal limits.

DISCUSSION

As far as seeing the current scenario, sir Thakur M Roshan, concluded in his studies that there is a definite use of drug phentermine among the young population especially in athletes[5], however, use is not restricted to sportsmen and is also seen among professionals. Similarly sir Bhardwaj A, in his case report concluded that mephentermine abuse and dependence may only represent the fewer cases, especially in the gym setting, where multiple substance use is common[6].

Recent literature highlights a growing number of case reports on mephentermine dependence, with patients typically consuming around 500 mg daily, often alongside anabolic steroids and tramadol. Most users are sportspersons seeking performance enhancement, with many developing psychoses. However, depressive symptoms are rare. Dependence often begins in early adulthood and can lead to serious physical symptoms like palpitations, headaches, and hypertension. The drug poses significant cardiovascular risks, including hypertension, arrhythmias, and potential sudden cardiovascular collapse, underscoring the need for thorough mental and physical examinations.

Despite knowing its effects on physical and mental health, Mephentermine abuse and dependency have been relatively underreported in clinical literature. The first clear case of Mephentermine dependence was reported within the last 12 years after the initial publication of Mephentermine abuse. Subsequent reports have highlighted cases of abuse and related psychosis, including a survey from California where a small percentage of urine samples tested positive for Mephentermine, among other symptomatic amines.[3,4]

The topic has not been widely discussed in standard textbooks, and there is limited data on its prevalence in the community. However, online searches and newspaper report suggests that the problem may be more widespread than documented, indicating that, what is reported might be the tip of the iceberg[5,6].

CONCLUSION

Mephentermine misuse poses significant clinical risks, including severe physical and mental health impacts that can be fatal. It's crucial to raise awareness about these dangers, particularly among youth who may be susceptible to peer pressure and misuse of substances to enhance performance in different physical activities.

Ground-level measures are essential. Conducting surveys can help identify new substances of abuse, while health campaigns can educate the public about the risks. Implementing strict regulations for obtaining such substances should be applied. Addressing mephentermine abuse among youth requires a collaborative effort from policymakers, health professionals, and NGOs to tackle this challenge effectively.

figt. show the puncture mark on cubital fossa

fig2 show vial of Mephentermine

fig3 show vial of Mephentermine

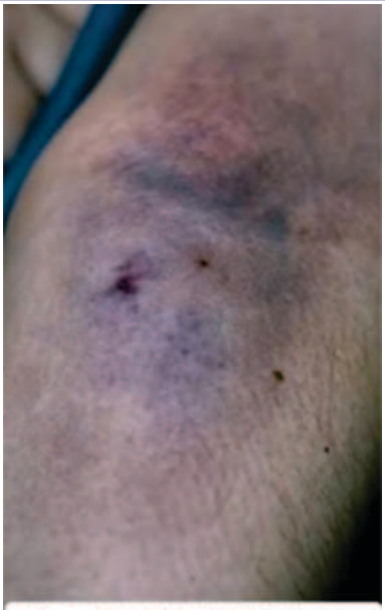

fig 4. show multiple puncture mark

fig5. show's puncture mark

REFERENCES

1. Kumar Yogendra et al, "Mephentermine Abuse" an Age-old Concern with New Challenges: Review of Literature with Case Series, Annals of Indian Psychiatry 7(3):p 262-266, Jul–Sep 2023. | DOI: 10.4103/aip.aip_59_23
2. Somani Aditya et al, Mephentermine depends on young Indian adult without psychosis ,BMJ case report, https://doi.org/10.1136/bcr-2020-236924
3. Swarndeep singh et al , Mephentermine depends in young athletes : case report with review and literature, Journal of Addiction Medicine 11(4):p 328-330, July/August 2017. DOI:10.1097/ADM.0000000000000313
4. Uday G.joshi et al, Mephentermine depends with psycosis, the British journal of psychiatry,DOI: https://doi.org/10.1192/bjp.152.1.129
5. Thakur, Manish & Upadhyay, Shreyash & Rehman, Sajjadur. (2024). Mephentermine dependence induced psychosis: A case report and a review of literature. Psychiatry Research Case Reports. DOI: 10.1016/j.psycr.2024.100214
6. BhardwajA, SharmaS, PrakashO. Mephentermine abuse of prescription drugs in gym.Int JBasic Clin Pharmacol 2020;9:1287-8