Case Report

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Acute Maras Powder Intoxication-Case Report

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Abstract

Maras Powder, a smokeless tobacco known as Aztec tobacco globally, is made by mixing dried Nicotiana Rustica leaves with tree ashes. It results in absorption of nicotine that is approximately 10 times higher than that from regular cigarettes. Due to its high nicotine content, it can cause severe toxicity and requires prompt treatment in cases of acute intoxication. This case report describes a 48-year-old male who developed confusion and syncope from Maras Powder use. The symptoms improved within hours, and the patient was fully recovered after 24 hours. Even though there are some cases associated with Maras powder use, this is, to our knowledge, the only documented case of acute symptomatic Maras Powder intoxication in adults. It should be suspected in regions where it is commonly used, with careful attention to patient history.

Keywords: Aztec Tobacco, Maras powder, Maras powder intoxication, nicotine intoxication, smokeless tobacco

Introduction

Smokeless tobacco has become more prevalent worldwide and is known by different names in various cultures (1). A type of smokeless tobacco known worldwide as *Aztec tobacco* and in Turkey as "Maras Powder" (Figure-1 and 2) is generally made by mixing the dried leaves of the *Nicotiana Rustica* plant with the ashes of trees such as oak, although its production methods may vary (2). About a teaspoon of the powder is used either alone or wrapped in cigarette paper and placed on the upper or lower labial mucosa, where it is held for 5 to 10 minutes. The frequency of use varies depending on the level of addiction and the individual's physiology (3). In regular cigarettes, the amount of nicotine absorbed per cigarette ranges from approximately 0.05 to 2.5 mg, whereas the amount of nicotine absorbed from Maras Powder ranges from 7 to 9 mg. This indicates that it delivers nearly 10 times the amount of nicotine compared to cigarettes (4).

Use of Maras Powder has been observed to be more common among married men with low educational and income levels. Additionally, in a study by Akbay and colleagues its use found to be more prevalent among individuals over the age of 46 who have previously smoked. These data suggest that younger users may turn to Maras Powder over time as an alternative to cigarettes to enhance satisfaction (5). It is also known that Maras Powder is preferred as a means of quitting smoking (6). Due to its high nicotine content, Maras Powder is a substance that can cause severe toxicity and must be promptly recognized and treated in cases of acute intoxication (7). In our case report, we aim to describe the clinical presentation of confusion and syncope resulting from Maras Powder use.

Figure 1. Nicotiana Rustica (Wikipedia contributors. Nicotiana rustica (Aztec tobacco, wild tobacco) [Internet]. [cited 2025 Feb 2].

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Figure 2. Maras Powder [Internet]. [cited 2025 Feb 2]

Case Report

A 48-year-old male patient was brought to the emergency department with complaints of syncope and confusion. Apart from a history of coronary angiography three years ago, he had no other medical history and was taking a beta-blocker and acetylsalicylic acid (100 mg). Upon admission, his general condition was moderate, he was confused, and his Glasgow Coma Scale (GCS) score was assessed as 12. During the intervention, he exhibited agitation and purposeless movements.

On physical examination, there was no nuchal rigidity, and Kernig and Brudzinski tests were negative. His body temperature was 36.6°C, heart rate was 78 bpm, respiratory rate was 15 breaths per minute, and blood pressure was 105/60 mmHg. His electrocardiogram (ECG) showed a sinus rhythm. A brain computed tomography (CT) scan revealed no signs of acute hemorrhage and diffusion MRI showed no findings suggestive of acute ischemic stroke.

Laboratory tests showed a pH of 7.24, PCO_2 of 45 mmHg, HCO_3 of 19.5 mmol/L, and lactate of 7.70 mmol/L. Aspartate aminotransferase (AST), alanine aminotransferase (ALT), creatinine, blood urea nitrogen (BUN), and troponin-I levels were within normal limits. His glucose level was 100mg/dl. No findings suggestive of anemia were detected. He and his relatives didn't report any psychiatric history, substance or alcohol use.

However, a history obtained from the patient's relatives revealed that he had been using Maras Powder regularly for the past two weeks to quit smoking. The patient was started on intravenous 0.9% NaCl (1000 mL), 5 mg midazolam, and nasal oxygen at 2 L/min. He was monitored in the emergency department and continued receiving supportive treatment.

Three hours after admission, arterial blood gas analysis showed pH: 7.37, PCO_2: 42 mmHg, HCO_3: 23 mmol/L, and lactate: 0.78 mmol/L. As his blood gas values returned to normal, his confusion improved, and his GCS score increased to 15. After 24 hours of observation, he was discharged from the emergency department.

Discussion

Nicotine intoxication has become more common in recent years, particularly with the increasing use of e-cigarettes, which often include oral nicotine pouches. It exhibits a bimodal distribution, with accidental ingestion being more frequent in children under the age of 10, while intentional use for suicide is more common in adults (8). Similarly, in our country, cases of Maras Powder intoxication among pediatric patients presenting to the emergency department, particularly in Kahramanmaraş and its surrounding areas, have been reported as cases of accidental ingestion (7). In our case, however, intoxication resulted from the unintentional overuse of Maras Powder due to a lack of awareness regarding its high nicotine content.

Acute nicotine intoxication presents with a biphasic pattern due to its ability to both stimulate and inhibit cholinergic receptors. Initially, it may manifest with symptoms such as excessive salivation, nausea, vomiting, diarrhea, and sweating. Additionally, vasoconstriction can

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lead to pallor and increased blood pressure. Tachycardia and, in some cases, cardiac arrhythmias (such as atrial fibrillation) may also occur (9). After a certain period, nicotine-induced desensitization of acetylcholine receptors can result in confusion, somnolence, muscle weakness, and, in severe toxicity, respiratory depression and cardiac arrest (10). The literature also reports delirium associated with oral nicotine gum use and chest pain due to nicotine-induced coronary vasospasm (11). In cases of Maras Powder intoxication observed in the pediatric population in our country, symptoms such as vomiting, somnolence, metabolic acidosis, and convulsions have been reported (7). In our patient, the presence of hypotension and confusion suggested that these symptoms were primarily due to the acetylcholine-related effects of Maras Powder.

Nicotine's half-life varies depending on factors such as gender and genetic influences. In a study by Benowitz and colleagues itranged from approximately 90–150 minutes in non-smokers and 100–200 minutes in smokers (12). Consequently, symptoms tend to resolve quickly, with most patients achieving full recovery within 12 hours (9). In our case, symptom improvement and normalization of blood gas levels were observed within 3 hours, and the patient was discharged in a fully recovered state at the 24-hour mark.

Cotinine, a metabolite of nicotine, is considered the most sensitive and specific biomarker for assessing nicotine exposure. It can be measured in blood, saliva, or urine and has a longer half-life than nicotine (13). However, studies in the literature have shown that cotinine levels do not always correlate with clinical presentation. This discrepancy may be due to the varied causes of nicotine intoxication or liver damage in severe cases affecting nicotine metabolism (10). Additionally, cotinine levels can increase with chronic exposure, meaning that elevated levels do not necessarily indicate acute intoxication. Therefore, routine cotinine measurement in acute poisonings remains debatable (9). There is no specific antidote for Maras Powder/nicotine toxicity. Treatment is primarily symptomatic and supportive. The first priority is to secure the airway and provide respiratory support. Atropine is used to manage parasympathetic symptoms such as excessive salivation, wheezing, and bradycardia. In cases of severe poisoning, endotracheal intubation may be required for airway protection and ventilation support. Seizures should be treated with benzodiazepines. Hypotension is initially managed with fluid boluses and 0.9% NaCl infusion; if unresponsive to volume resuscitation, a vasopressor such as norepinephrine should be administered. Cardiac arrhythmias should be treated according to standard advanced cardiac life support (ACLS) protocols. Nicotine elimination is accelerated in acidic urine, but due to the risks outweighing the benefits, this method is not recommended (9,14). Oral rinsing with water may be advised upon initial presentation. In pediatric patients or cases involving suicidal ingestion of Maras Powder, gastric lavage and activated charcoal administration within the first hours may be beneficial (15). However, in adult intoxication cases, nicotine absorption occurs primarily through the oral mucosa, making these interventions therapeutically ineffective. In our case, due to the patient's agitation upon arrival, intravenous administration of 5 mg midazolam was required.

Conclusion

This case report is, to our knowledge, the only documented case of a smokeless tobacco product or Maras Powder intoxication in the adult population in the literature. Given the broad clinical spectrum of Maras Powder-related intoxication, it should be considered with a high index of suspicion in regions where this product or similar productsare commonly used, and patient history should be carefully assessed. Further research is needed to determine the exact amount of Maras Powder consumption that leads to intoxication, its effects on nicotine and metabolite levels, and the rate at which these changes occur. Additionally, studies should investigate the potential impact of other components in Maras Powder, such as wood ash, on nicotine metabolism.

References

1. Tanriverdi G. Dumansız Tütün Maraş Otunun Sağlığa Zararları: Geleneksel Derleme. Halk Sagligi Hemsire Derg. 2022;4(3):284-92.
2. Erenmemisoglu A, Tekol Y, Kartal M, Kurucu S. Smokeless tobacco use in our country "Maras powder." Doga Turk J Med Sci. 1992;16:867-76. Turkish.
3. Buyukbese MA, Ozdemir M, Celik MM, Ozisler C, Turgut H, Arslan E, et al. Effects of smokeless tobacco "Maras powder" use on respiratory functions. Tohoku J Exp Med. 2004;204(3):173-8.
4. Goolsby MJ. Smokeless tobacco: the health consequences of snuff and chewing tobacco. Nurse Pract. 1992;17(1):24-31.
5. Akbay C, Kafas A. Kahramanmaraş il merkezinde tüketicilerin sigara ve Maraş otu kullanımını etkileyen faktörlerin analizi. KSU Dog Bilim Derg. 2017;20(3):276-82. Turkish.
6. Irmak İ, Ozgur ES, Aydemir YC, Celik MM, Akkurt B, Arslan E, et al. Comparison of the effects of smoking and smokeless tobacco "Maras Powder" use on pulmonary function, electrocardiogram, and other parameters. Eur Arch Med Res. 2019;35(4):233-41.
7. Güneş H, Sarışık N. Maraş Otu İntoksikasyonu ile kliniğimize başvuran çocuk olguların değerlendirilmesi. Mersin Univ Tip Fak Lokman Hekim Tip Tarihi Folklorik Tip Derg. 2020;10(3):495-501. Turkish.
8. Maessen GC, Wijnhoven AM, van Beek AJ, de Vries I, de Groot RE. Nicotine intoxication by e-cigarette liquids: a study of case reports and pathophysiology. Clin Toxicol (Phila). 2020;58(1):1-8. doi:10.1080/15563650.2019.1636994.

9. Goldfrank LR, Flomenbaum NE, editors. Goldfrank's Clinical Manual of Toxicologic Emergencies. 2nd ed. New York: McGraw-Hill; 1998. p. 436-9.

10. Scarpino M, Rosso T, Lanzo G, Lolli F, Bonizzoli M, Lazzeri C, et al. Severe neurological nicotine intoxication by e-cigarette liquids: systematic literature review. Acta Neurol Scand. 2021;143(2):121-30.

11. Maclaskey DC, Buchholz MC, Hodges K, Bourgeois JA. Case report: delirium associated with excessive consumption of nicotine gum. J Clin Psychopharmacol. 2022;42(3):327-9. doi:10.1097/JCP.0000000000001537.

12. Benowitz NL, Jacob P 3rd. Nicotine and cotinine elimination pharmacokinetics in smokers and nonsmokers. Clin Pharmacol Ther. 1993;53(3):316-23. doi:10.1038/clpt.1993.27.

13. Benowitz NL. Biomarkers of environmental tobacco smoke exposure. Environ Health Perspect. 1999;107 Suppl 2:349-55. doi:10.1289/ehp.99107s2349.

14. Kim JW, Baum CR. Liquid nicotine toxicity. Pediatr Emerg Care. 2015;31(7):517-21. doi:10.1097/PEC.0000000000000486.

15. Hulzebos CV, Kuiper JR, van der Linde JA, Brand R, Kuis W, Heymans HS. Accidental ingestion of cigarettes by children. Ned Tijdschr Geneeskd. 1998;142(47):2569-71. Dutch.