

Background

Twenty-five states have legalized marijuana, leading to the public's increased access to a vast array of psychotropic compounds through dispensaries and online platforms.

Amanita Muscaria(AM) is a mushroom with psychoactive compounds of muscimol and ibotenic acid which is readily available online. It is known to have potent anticholinergic activity, and hallucinogenic properties.

When evaluating altered mental status, it is imperative consult/liason psychiatrists take thorough histories of possible substances ingested and keep a broad differential diagnosis. The possibility of anticholinergic toxicity should be given particular attention in the setting of recent AM use.

Literature Review

Authors	Patient	AM Source	Ingestion Circumstances	Symptoms	Treatment	Prior Conditions	Recovery?
Maung et al.	46 y/o F	Online order	500mg raw AM x 2 weeks, 1000mg night prior to admission	Aggression, AVH, slight lactic acidosis	Supportive	None	Consciousness regained 8 hours after ingestion; 24 hours of hospital care
Rampolli et al.	44 y/o M	Collected in the wild	500 grams raw AM	Loss of consciousness, sialorrhea	Intubation, gastric lavage, activated charcoal and IV fluid	None	Consciousness regained after 72 hours; 4 total days of hospital care
Meisel et al.	44 y/o M	Online order	6-10 dried specimens of AM	Loss of consciousness, vomiting, and sudden cardiac arrest	Intubation; supportive	None	Life support discontinued after 9 days; fatality
Meisel et al.	75 y/o M	Collected in the wild	1 raw AM specimen	Loss of consciousness, vomiting, AVH, bradycardia, hypotension	Intubation, atropine, norepi infusion	Treated for DM/COPD	Consciousness regained after 24 hours; further treated for aspiration pneumonia
Mikaszewski-Sokolewicz et al.	21 y/o M	Unknown	Unknown	Loss of consciousness, seizures, sialorrhea,	Gastric lavage, supportive treatment, intubation	MDD; stopped fluoxetine 3 weeks prior to presentation	Consciousness regained after 11 hours; 3 days of hospitalization

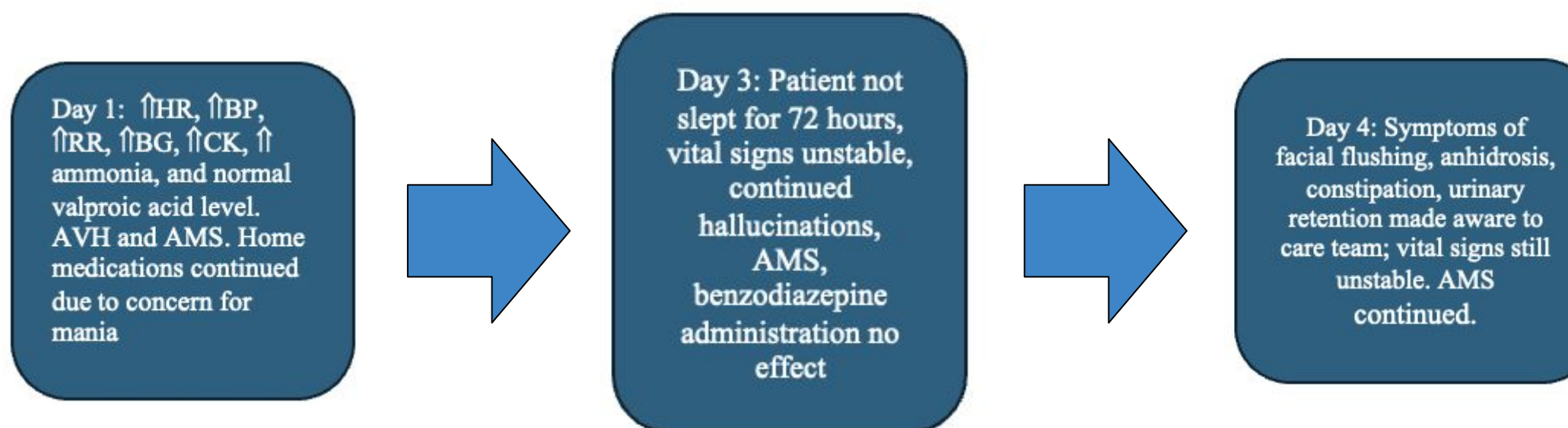
Figure 1. The literature review was conducted searching key terms of "amanita muscaria poisoning". Filtering for studies from the last 10 years, 17 results were available. Studies were further refined to case studies only involving humans. Four case studies remained; none examined AM poisoning in the context of concurrent psychotropic medications.



Figure 2: Commercially produced Amanita muscaria products; vape and gummies. Source: from left to right, Rokin.com and NaturallyMingon.com

Case Report

A 41-year-old male with a past psychiatry history of bipolar disorder presented to the hospital disoriented, paranoid, and hallucinating. Per mother, patient had been functioning normally until 1 hour prior when he frantically entered her room, responding to internal stimuli, non-reality based, and agitated. Collateral revealed patient was compliant on his prescribed medications of valproic acid 1500mg, amitriptyline 50mg, mirtazapine 15mg, olanzapine 5mg and fluconazole 100mg daily for recently diagnosed esophageal candidiasis. Family also revealed he had been taking a "natural remedy" for his candidiasis he had ordered online. This was disclosed to be Amanita muscaria 500mg capsules of which he had ingested 3 days of 1500mg doses along with his prescribed medications.



Concern for anticholinergic crisis began to arise on day 4. A literature review revealed that amanita muscaria had anticholinergic properties and it was postulated that his home medications of amitriptyline, mirtazapine, olanzapine, and fluconazole may be contributing to his presentation. Although the patient was still demonstrating psychosis, the decision was made to stop his home medications; operating on the hypothesis that the patient was not manic but rather suffering from anticholinergic crisis and delirium.

Within 12 hours, the patient was alert and oriented to his surroundings. He was able to participate in a reality-based conversation and had a linear and logical thought process. His outpatient psychiatrist was contacted to ensure a titration back onto his medication once his medication wash-out period was complete and he was discharged shortly thereafter.

Discussion

Stigmatization of mental illness can have severe consequences on patients' health. Due to this patient's history of bipolar disorder, the patient's presentation was attributed to a manic episode. The symptoms of anticholinergic toxicity were overlooked until day four of hospitalization. The decision to continue his home medications after an ingestion of AM caused his condition to intensify and may have been fatal if not identified.

Although he was stable on his medication regimen, adding fluconazole, a CYP3A4 inhibitor, increased his serum concentration of mirtazapine, a CYP3A4 substrate with some anticholinergic properties. This medication interaction along with amitriptyline, olanzapine and the intake of AM capsules likely induced his anticholinergic crisis.

Conclusion

This appears to be the first reported case of Amanita muscaria poisoning in a patient on psychiatric medication, highlighting the dangers of diagnostic anchoring and the need for a comprehensive evaluation of altered mental status. This is especially critical as, in recent years, commercially produced products, such as muscimol gummies, vapes (Figure 1), and pre-rolls blended with hemp flower and muscimol, have entered the market. The rise of online advertisements, retailers, and a 114% increase in Google searches related to Amanita muscaria from 2022 to 2023 suggest growing consumer interest (Figure 2). Therefore, continued vigilance from consultation-liason psychiatrists is essential.

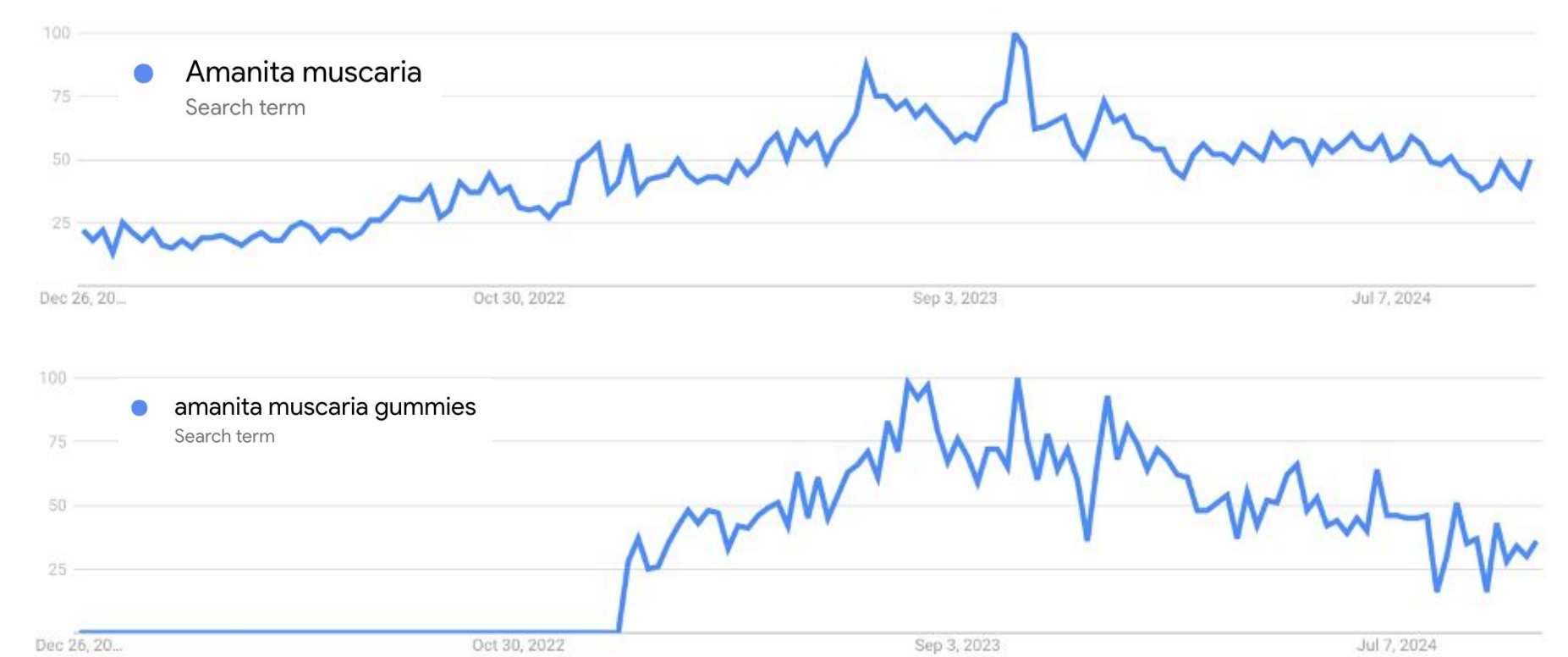


Figure 3. Google trends analysis on the google search terms "Amanita muscaria" and "amanita muscaria gummies" from December 2021 to October 2024. Y axis represents search interest relative to the highest point on the chart. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. A score of 0 means there was not enough data for this term.

Bibliography

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