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CASE REPORT

Epileptic seizure after ingesting a death cap mushroom in the course of online pseudo-therapy for mood disorders – case report

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Abstract

The growing popularity of Internet trends promoting poisonous mushrooms as 'natural therapies' poses a risk for public health. Amanita phalloides is a highly hepatotoxic species that can cause acute liver failure, while neurological complications are rare. The case is reported of a 57-year-old woman with depression, admitted after a generalized tonic-clonic seizure. She had ingested dried Amanita phalloides for three weeks, and the day before admission an additional powdered dose, which caused diarrhea, loss of consciousness, and convulsions. Believing in the therapeutic effect, she had also placed mushroom fragments in the umbilical region. Laboratory tests showed elevated creatine kinase and mildly increased aminotransferases; EEG revealed temporo-parieto-occipital abnormalities. Supportive treatment led to clinical improvement. The case highlights the risks of Internet-based pseudotherapies, and the importance of thorough history-taking.

Key words

Amanita phalloides, Amanita muscaria, amatoxins, Lion's mane mushroom, generalized seizure

INTRODUCTION

The dangerous trend of using natural medicine preparations based on *Amanita muscaria* and *Amanita phalloides* has been known and practiced for centuries. Despite existing legal regulations and the increasing dissemination of information about the risks associated with consuming these mushrooms, their use remains an attractive form of supplementation and alternative treatment, with a dedicated following. An example of the scale of this phenomenon is that when entering the term *Amanita muscaria* into the Google search engine, a link encouraging the purchase of products labelled as natural medicine containing this ingredient appears in the third position.

The growing popularity of *Amanita muscaria* is primarily driven by its psychoactive properties, resulting from the presence of muscimol and ibotenic acid. Ibotenic acid undergoes decarboxylation to muscimol during drying, which acts on the central nervous system, causing transient excitation followed by depression [1]. *Amanita phalloides*, also known as the 'death cap' mushroom, is the one most frequently responsible for fatal or severe liver and kidney poisoning. Clinical symptoms typically appear several hours after ingestion and are primarily gastrointestinal, including nausea, vomiting, diarrhea, abdominal pain, and jaundice. Early diagnosis is crucial, though it is challenging due to the non-specific nature of the symptoms, which overlap with many other conditions [2].

Most publications on *Amanita muscaria* and *Amanita phalloides* poisoning take the form of case reports, often involving young adults. This indicates a significant lack of public awareness regarding the dangers of consuming these mushrooms. Some cases arise from attempts at holistic treatment, often due to limited access to medical care and patients seeking easily available alternative therapies. As a result, these patients eventually present to physicians, often in a significantly worse clinical condition, sometimes with irreversible organ damage from prolonged supplementation. Other cases are related to recreational use, frequently involving large doses or improper preparation in which the ibotenic acid has not fully decarboxylated to muscimol. This can lead to acute liver failure, often requiring transplantation or even resulting in death [3].

In this report, the case is presented of a patient with depression who supplemented with *Amanita phalloides* in an attempt to improve mood, particularly during periods of marked depression.

CASE REPORT

A 57-year-old woman was brought by the Emergency Medical Team to the Clinical Emergency Department of University Hospital No. 4 in Lublin, eastern Poland, due to a generalized tonic-clonic seizure, during which she involuntarily urinated. The patient had been found unconscious, with laboured breathing; initial examination revealed fragments of a mushroom cap sealed with a plaster in the umbilical area. After stabilization, she was transferred to the neurology ward.

History revealed that for approximately three weeks she had been orally ingesting a teaspoon of powdered dried *Amanita phalloides* caps daily, as a form of 'supplementation'

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(homemade preparation). According to the patient, this practice was initiated based on advice found on social media, where the mushroom was presented as improving vitality, mood, and cognitive function. The day before the seizure, she ingested an additional portion of powder, which was soon followed by acute diarrhea, loss of consciousness, and convulsions. The fragments of fresh mushroom cap had been placed in the umbilical region in the belief that they could 'cure diarrhea', and were secured with a plaster to prevent displacement.

Neurological examination revealed difficulty in maintaining a standing position at the bedside, tremor of the lower limbs, shuffling gait with small steps when walking with support, and generalized pain in the lower limbs and buttocks. Laboratory tests showed a marked elevation of creatine kinase (CK: 3100 U/L → 1797 U/L after one day), indicating muscle damage, possibly due to seizures or general metabolic disturbance from poisoning. Aminotransferases (ALT, AST) were only slightly elevated (ALT 47 → 46 U/L, AST 92 → 71 U/L), not indicative of typical acute liver failure – significant given the ingestion of *Amanita phalloides*. Table 1 presents the relevant laboratory findings to better illustrate the patient's clinical status.

Table 1. Deviations in laboratory tests from 16 November 2024 and from 17 November 2024

LABORATORY PARAMETER	16.11.2024	17.11.2024
White blood cell (WBC)	12.0	9.5
Red blood cell (RBC)	4.1	4.1
Haemoglobin (HGB)	12.7	12.7
Haematocrit (HCT)	38.1	38.6
Alanine Aminotransferase (ALT)	47 U/L	46 U/L
Aspartate Aminotransferase (AST)	**92.0 U/L**	**71.0 U/L**
Total protein	5.8 g/dl	-
C-reactive protein (CRP)	6.1 mg/L	-
Total bilirubin	0.6 mg/dl	-
Creatine kinase (CK)	**3100.0 U/L**	**1797.0 U/L**
Myoglobin	**150.0 ng/ml**	**44.0 ng/ml**
Protein concentration (urinalysis)	Trace	-
Ketone bodies (urinalysis)	5.0 mg/dL	-
Amorphous phosphates (urinalysis)	Numerous HPF	-

Brain magnetic resonance imaging (MRI) with contrast showed scattered, small, chronic vascular lesions not correlating with the patient's condition. No acute focal lesions or intracranial haemorrhage were observed (Fig. 1). Electroencephalogram (EEG) revealed bilateral temporo-parieto-occipital theta-alpha activity, more pronounced on the right side, with accelerated background activity, interpreted as global excitation and possible neuronal dysregulation. Neuropsychological consultation identified depression with anxiety, but no suicidal intent; the patient reported that mushroom ingestion was intended as a 'therapeutic' attempt to improve her mood.

Supportive therapy included fluid replacement, analgesics, circulatory support, antidepressants (sertraline), and agents supporting cardiorespiratory function. After several days, neurological status significantly improved, and on discharge from hospital, the overall condition of the patient

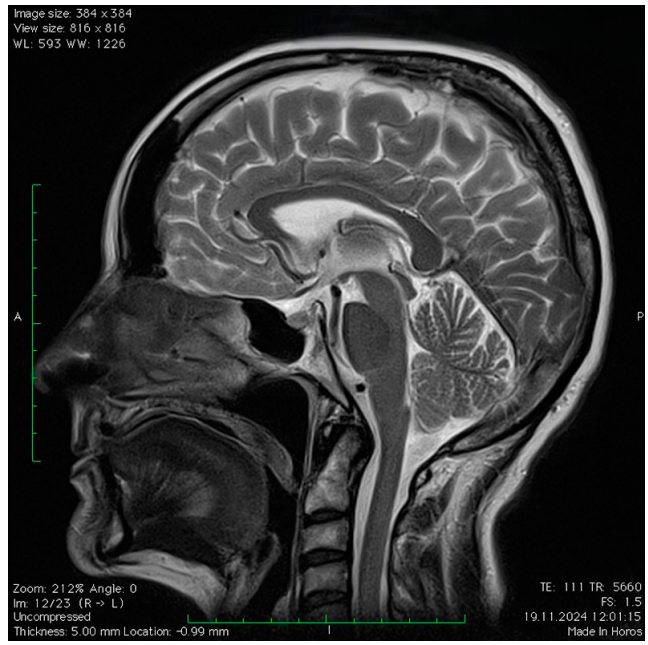

Figure 1. T2-weighted image showing scattered small vascular-origin lesions (chronic changes)

was good. Seizures did not recur. Continued psychiatric care, neurological follow-up, and therapy with sertraline (50 mg/day orally) and thiazolidine-carboxylic acid (1 tablet orally twice daily) were recommended.

DISCUSSION AND CONCLUSIONS

Dangerous trends. In recent years, social media has seen a growing and highly dangerous trend promoting allegedly 'health-promoting' preparations made from poisonous mushrooms. Numerous platforms feature content encouraging the consumption of *Amanita phalloides* or *Amanita muscaria*, with instructions for preparing cakes, alcoholic beverages, tinctures, soups, powdered 'spices', and other home-made products (Figs. 2–5). These practices, lacking scientific basis, pose a real risk to public health, reflected in the increasing number of cases of poisoning, particularly involving *Amanita muscaria* [4].

Users typically seek to alleviate migraines, depressive symptoms, anxiety disorders, or rheumatic pain. Influencers promoting these mushrooms often claim mood enhancement, 'mind cleansing', or heightened perception, encouraging individuals with psychiatric disorders to experiment with highly toxic, unregulated doses. Although the claims often promise improved daily functioning, such supplementation may lead to severe poisoning, resulting in liver, kidney, and heart failure, encephalopathy, ICU hospitalization – or death [5].

Pięta-Chrystofiak and Brohsa (2023) found that educated, employed men aged 30–40 were the predominant users of *Amanita muscaria* products, showing that this trend affects a broad population, not only marginalized groups. During preparation, ibotenic acid – a potent neurotoxin – is decarboxylated to muscimol, a psychoactive compound. Excess exposure can cause confusion, hallucinations, agitation, seizures, vomiting, diarrhea, respiratory failure, and impaired consciousness, including coma [4].

Figure 2. Photo illustrating the drying process of red mushroom caps (Amanita muscaria). https://agroprofil.pl/wiadomosci/trend-na-jedzenie-muchomorow-opanowuje-internet-konsekwencje-spozycia-moga-byc-tragiczne/

Figure 3. Photo showing the drying process of fragments of red mushroom caps (Amanita muscaria). https://agroprofil.pl/wiadomosci/trend-na-jedzenie-muchomorow-opanowuje-internet-konsekwencje-spozycia-moga-byc-tragiczne/

Figure 4. Screenshot from an instructional video showing the complete preparation process for consuming red mushroom caps (Amanita muscaria). The video is available on a popular social media platform. https://www.youtube.com/watch?v=CE3vYHBoeMc

Toxic compounds in *Amanita phalloides*, called amatoxins, cause the phalloides syndrome. Symptoms such as nausea, vomiting, diarrhea, and severe abdominal pain appear

Figure 5. High-proof tincture for topical application prepared from red mushroom (Amanita muscaria). Text on the jar: "Red mushroom tincture for topical use 07.10.22–07.12.22." https://agroprofil.pl/wiadomosci/trend-na-jedzenie-muchomorow-opanowuje-internet-konsekwencje-spozycia-moga-byc-tragiczne/

6–24 hours post-ingestion, often followed by a temporary improvement phase, while toxins continue circulating, progressively damaging hepatocytes, leading to acute liver, kidney, and cardiac failure. Amatoxin poisoning accounts for 90–95% of deaths from poisonous mushrooms worldwide. α-Amanitin is particularly toxic, with an estimated lethal dose of 0.1–0.15 mg/kg. Despite intensive research, no specific antidote exists; treatment remains supportive, including fluids, gastric lavage, and activated charcoal [5]. Early diagnosis is crucial, but non-specific symptoms and initially normal imaging or laboratory tests complicate detection. Therefore, detailed history-taking – including diet and supplements – is essential [6].

Safe alternatives to poisonous mushroom supplementation. *Hericium erinaceus* (lion's mane) has recently gained attention as a dietary supplement supporting cognitive function and mood regulation. Preclinical studies suggest its bioactive compounds may stimulate brain-derived neurotrophic factor (BDNF) synthesis and promote neuroplasticity. In healthy individuals, however, long-term supplementation may help prevent or delay neurodegenerative diseases [7].

In a study of healthy young adults, a single 1.8 g dose or 28 days of regular supplementation improved task performance compared to baseline. After 28 days, potential stress-reducing effects were observed compared to placebo and baseline [8]. Lion's mane may provide mood and cognitive benefits similar to those sometimes attributed to *Amanita muscaria*, but without the toxic risk. Increased public awareness and safer alternatives may help shift interest away from the use of dangerous mushrooms.

Seizure activity after poisonous mushroom ingestion. Some *Amanita* species exhibit direct neurotoxicity, causing altered consciousness, coma, and seizures. A recent case of *Amanita pantherina* poisoning reported coma with simultaneous seizure activity confirmed by EEG, attributed to GABAergic toxins affecting neuronal excitability [9]. This confirms that *Amanita* compounds can disrupt neurochemical balance and trigger seizures, even in individuals without prior epilepsy.

In the presented case, the patient ingested *Amanita phalloides* – primarily hepatotoxic rather than neurotropic, and the literature does not associate it with direct pro-epileptic effects. Nonetheless, the patient experienced a seizure, suggesting significant secondary toxic mechanisms such as metabolic disturbances, toxic encephalopathy, and CNS dysfunction.

Comparing neurotoxic (*A. pantherina*) and hepatotoxic (*A. phalloides*) poisoning highlights a broader clinical problem: toxins from different *Amanita* species can disrupt neuronal homeostasis through primary and secondary mechanisms. The presented case expands the spectrum of *A. phalloides* complications to include seizure activity, relevant for neurology and toxicology practice.

CONCLUSIONS

The growing popularity of Internet-promoted poisonous mushroom 'therapies' poses a real and underestimated risk for public health, especially for individuals with mood or anxiety disorders. *Amanita phalloides* poisoning, although classically hepatotoxic, may also cause severe neurological complications, including seizures, likely through secondary metabolic and encephalopathic mechanisms. Seizures can be the first clinical manifestation, even without typical laboratory signs of acute liver failure. Non-specific symptoms and delayed laboratory results make thorough history-taking crucial, including the ingestion of supplements and practices influenced by social media.

The presented case report emphasizes the need for interdisciplinary management involving neurologists, psychiatrists, and toxicologists. It also underscores the urgent need for educational campaigns and promotion of evidence-based, safe natural supplements, to reduce the risk of severe, potentially fatal outcomes from uncontrolled consumption of toxic mushrooms.

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