

Death Following Ingestion of *Clitocybe* Species Mushroom

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Abstract

Death due to muscarine toxicity after ingestion of wild mushrooms is a rare event. We present a case of a patient that developed a severe cholinergic toxidrome and subsequently died after ingesting *Clitocybe* mushrooms.

Case

An 88 year-old woman with a past medical history of coronary artery disease presented to the emergency department with diaphoresis, nausea, vomiting and diarrhea that began 30 minutes after ingesting mushrooms that she picked from her yard in a rural area. Her husband developed similar but milder symptoms after partaking in the mushroom meal. He described the mushroom as a “white cap with an umbrella”. The patient developed progressive altered mental status and respiratory distress with pulmonary edema. She was intubated and received symptomatic and supportive care but unfortunately died within 7 hours of ingestion. The husband identified pictures of mushrooms from the yard that looked similar to the ones that were picked and eaten. They were positively identified by a mycologist as *Clitocybe* species (Figure 1) as well as some *Coprinus comatus* (“shaggy ink cap”) and *Coprinus atramentarius* (“common ink cap”).



Figure 1: *Clitocybe* species as well as some *Coprinus comatus* and *Coprinus atramentarius*.

On autopsy, ingested mushrooms were found in the stomach that was morphologically consistent with *Clitocybe* species (Figure 2). According to the forensic autopsy report, moderate atherosclerotic cardiovascular disease, a 1.5 cm right renal cyst and lymphocytic thyroiditis was noted but there was no definitive competing cause of death was identified. Microscopic examination of the organs revealed that cardiac, lung, hepatic and renal histoarchitecture with adequate cell preservation. There was mild and focal interstitial cardiac fibrosis identified in the left ventricular section as is regionally prominent intra-cardiac vascular congestion without significant acute blood extravasation. No acute hypoxic/ischemic changes, inflammatory infiltrates or areas of hemorrhage were identified. Lungs showed mild

interstitial fibrosis and emphysematous change. There was regional pulmonary edema and atelectasis in the lung sections without acute or chronic parenchymal inflammation. No significant liver steatosis or background fibrosis was present. There was no evidence of acute hepatocyte injury or necrosis. Kidney inspection revealed subcapsular interstitial chronic inflammation and superficial cortical globally sclerosed glomeruli. Renal tubules were without specific histopathological change. The decedent had some renal vascular congestion without associated hemorrhage. Urine drug screen was negative. Blood drug screen was “presumptively positive for amiodarone.” Autopsy report concluded that death due to wild mushroom poisoning, (muscarine poisoning due to *Clitocybe*). Unfortunately, no muscarine levels were obtained.



Figure 2: Morphologically consistent with *Clitocybe* species.

Discussion

Mushroom toxidromes, groups of signs and symptoms constituting the basis for a diagnosis of poisoning, are classified into seven groups according to the toxins involved and the resulting clinical presentation. Mushroom toxidromes include amatoxins, orellanus, gyromitrin, ibotenic acid, psilocybin, coprine and muscarine. The toxin muscarine may be found in the mushroom species *Clitocybe dealbata*, *C. illudens*, *I. fastigiata* and *Boletus calopus* [1]. Cellular release of acetylcholine has been shown to be significantly enhanced by the muscarinic acetylcholine receptor against muscarine [2]. Muscarinic receptors in the autonomic nervous system are targeted by muscarine resulting in symptoms of cholinergic excess including nausea, vomiting, diarrhea,

sweating, salivation, lacrimation, salivation, bradycardia, bronchorrhea, and bronchospasm. Many patients recover within 24 hours with supportive care including atropine. Thankfully, death is rare after muscarine-containing mushroom ingestion [1]. There are few documented cases of muscarine poisoning due to mushroom ingestion in the literature. A case series of 14 ingestions of *Inocybe* mushrooms in Israel reported that all patients experienced symptoms of cholinergic excess and all recovered with supportive treatment within 12 hours of mushroom ingestion. Similar to our case, the mushrooms' identities were confirmed by an expert [3]. Another case series from India describes 4 patients who presented with "irritability, exhaustion, abdominal cramps, and diarrhea" and recovered within 10 hours after eating mushrooms described as *Clitocybe*. However, there was no expert identification of mushrooms [4]. Only one other case report in Australia describes a fatality of a woman 10 hours after eating a muscarine-containing mushroom identified as *Rubinoletus sensu lato pro tempe*. She presented similarly to our patient with a cholinergic toxidrome including symptoms of diaphoresis, emesis, diarrhea, and confusion which progressed to bradycardia and hypotension. Her partner was described to have eaten the mushrooms as well, although not as many, experienced emesis, and suffered no further illness [5].

There are limitations of the case report presented here. This case represents only one example of a patient that suffered muscarinic toxicity and death from ingestion of *Clitocybe* mushroom, an inherent limitation with case reports. We did not have access to the hospital medical record and were limited by using poison center and medical examiner records. However, it is our hope that the addition of this case

into the collective knowledge will increase awareness of potentially lethal poisoning from *Clitocybe* mushrooms.

Conclusion

While rare, poisoning from muscarine toxicity after ingestion of *Clitocybe* mushrooms may be fatal. Avoidance of ingestion of these mushrooms as well as aggressive symptomatic and supportive care after poisoning is recommended. In addition, this case demonstrates the need to provide public education about the distribution and seasonal occurrence of the *Clitocybe* species mushroom. It is a cautionary tale that serves as a reminder that unless mushrooms can be accurately identified, they should not be eaten.

References

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