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CASE REPORT

A Case Study: Rare *Lepiota brunneoincarnata* Poisoning

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Amatoxin poisoning from the genus *Lepiota* may have a deadly outcome, although this is not seen as often as it is from the genus *Amanita*. In this report, we present a patient who was poisoned by a sublethal dose of *Lepiota brunneoincarnata* mushrooms. The patient was hospitalized 12 hours after eating the mushrooms. The patient's transaminase levels increased dramatically starting on day 4. Aspartate transaminase peaked at 78 hours. Starting at 1265 IU/L, alanine transaminase peaked at 90 hours at 5124 IU/L. The patient was discharged on day 8 to outpatient care, and his transaminase levels returned to normal ranges in the subsequent days. A toxin analysis was carried out on the mushrooms that the patient claimed to have eaten. Using reversed-phase high-performance liquid chromatography analysis, an uptake of approximately 19.9 mg of amatoxin from nearly 30 g of mushrooms was calculated. This consisted of 10.59 mg of α-amanitin, 9.18 mg of β-amanitin, and 0.16 mg of γ-amanitin. In conclusion, we present a patient from Turkey who was poisoned by *L. brunneoincarnata* mushrooms.

Key words: Lepiota brunneoincarnata, amatoxin, sublethal toxicity, HPLC

Introduction

Amatoxins' responsibility for nearly all fatal mushroom poisonings increases their importance. Amatoxins inhibit nuclear RNA polymerase II, and this inhibition results in impaired protein synthesis and cell death.[1] Because the liver is an organ in which protein synthesis and cell turnover are high, it suffers the most distinct damage in amatoxin poisonings, as happened to our patient.[2] This damage is directly proportional to the dose of toxin received.[3] Liver damage is characterized by massive centrilobular necrosis and in many cases by acute hepatic failure with subsequent complications, including hepatic comas, coagulation disorders, and secondary renal failure.[4,5]

Amatoxins are contained in some *Amanita, Galerina,* and *Lepiota* species. From the genus *Amanita,* particularly *Amanita phalloides,*[6] *Amanita virosa,* and *Amanita verna,*[7] major causes of poisonings are attributable to their high amatoxin content. Some *Lepiota* species (*Lepiota brunneoincarnata, Lepiota brunneolilacina, Lepiota helveola, Lepiota josserandii*) are also very toxic, but are less frequently involved in human poisoning than the *Amanita* species of current interest.[1,8] Amatoxins are very toxic and primarily consist of α-amanitin (AA), β-amanitin (BA), and γ-amanitin (GA).[6,7] *L. brunneoincarnata* mushrooms also contains amanitin, but intoxication from them is very rarely seen in Turkey.[9] It is not fully known which amatoxins in what amounts *L. brunneoincarnata* mushrooms contain or what amount of consumption of this mushroom may be lethal in humans. In this report, we present a case known to be the first in Turkey. The patient was poisoned in a sublethal dose by this mushroom and was treated successfully.

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Case Report

A 39-year-old male patient weighing 72 kg was admitted to the emergency room of a private hospital with diarrhea, nausea, vomiting, abdominal pain, and dehydration. In his anamnesis, he stated that on October 18, 2013, he collected 2 types of natural mushrooms, mixed all of these mushrooms, cooked them, and ate them; no one else ate this meal. When he came to the emergency room, almost 12 hours had passed since he had eaten the mushrooms. This patient's initial vital signs and physical examination were normal, other than dehydration. The patient's aspartate aminotransferase (AST) was 30 IU/L, his alanine aminotransferase (ALT) was 34 IU/L, his

total bilirubin was 0.5 mg/dL, his direct bilirubin was 0.2 mg/dL, his total protein was 8.1 g/dL, his albumin was 4.3 g/dL, his prothrombin time (PT) was 11.9 seconds, and his international normalized ratio (INR) was 1.03. His hepatitis B surface antigen, hepatitis B surface antibody, hepatitis B core antibody, immunoglobulin M, and antihepatitis C virus antibody were found to be nonreactive. His lactate level, complete blood cell count, electrocardiograph, posteroanterior lung radiography, and complete urine test were normal.

A nasogastric tube was put in place, and gastric lavage was performed on the patient. Activated charcoal was initiated and continued at a dose of 50 g every 6 hours for 3 days. The patient was rehydrated via intravenous administration of 0.9% sodium chloride and 5% dextrose to guard against the risk of hypoglycemia. The patient was given acetyl cysteine (150 mg/kg for 1 hour, followed by 50 mg/kg for 4 hours, followed by 150 mg/kg for 16 hours), ranitidine (50 mg, 4 times a day), vitamin B (250 mg/3 mL, once a day), vitamin C (500 mg/5 mL, once a day), corticosteroid (40 mg, once a day), fresh frozen plasma (15 mL/kg, once a day), and vitamin K (1 mg, once a day).

The patient, who had been monitored and treated in a medium-sized hospital, was referred to a university hospital on the fourth day for more comprehensive treatment because his liver enzymes had increased. During the period in which the patient was being monitored in the emergency internal diseases intensive care unit of the university hospital, his relatives contacted our Clinical Pharmacology and Toxicology Unit through social media after they had searched on mushroom poisonings on the internet. The next day, we went with the patient's relatives to the place where he had collected the mushrooms (Turkey, Sakarya, Kaynarca district, on soil, in pasture, 41°1′53.17″N-30°18′34.91″E, 60 m, October 25, 2013, Akata 5992), and we collected some of these described mushrooms (*Agaricus bisporus* and *L. brunneoincarnata*). The patient and his relatives confirmed that these were the suspicious mushrooms he had eaten. Five *L. brunneoincarnata* mushrooms in the sizes and amounts he said he had eaten were set aside to be analyzed. These mushrooms were identified macroscopically as *L. brunneoincarnata,* and their identification was verified microscopically as well (Figure 1).[9] The details of the mushrooms are as follows: family,

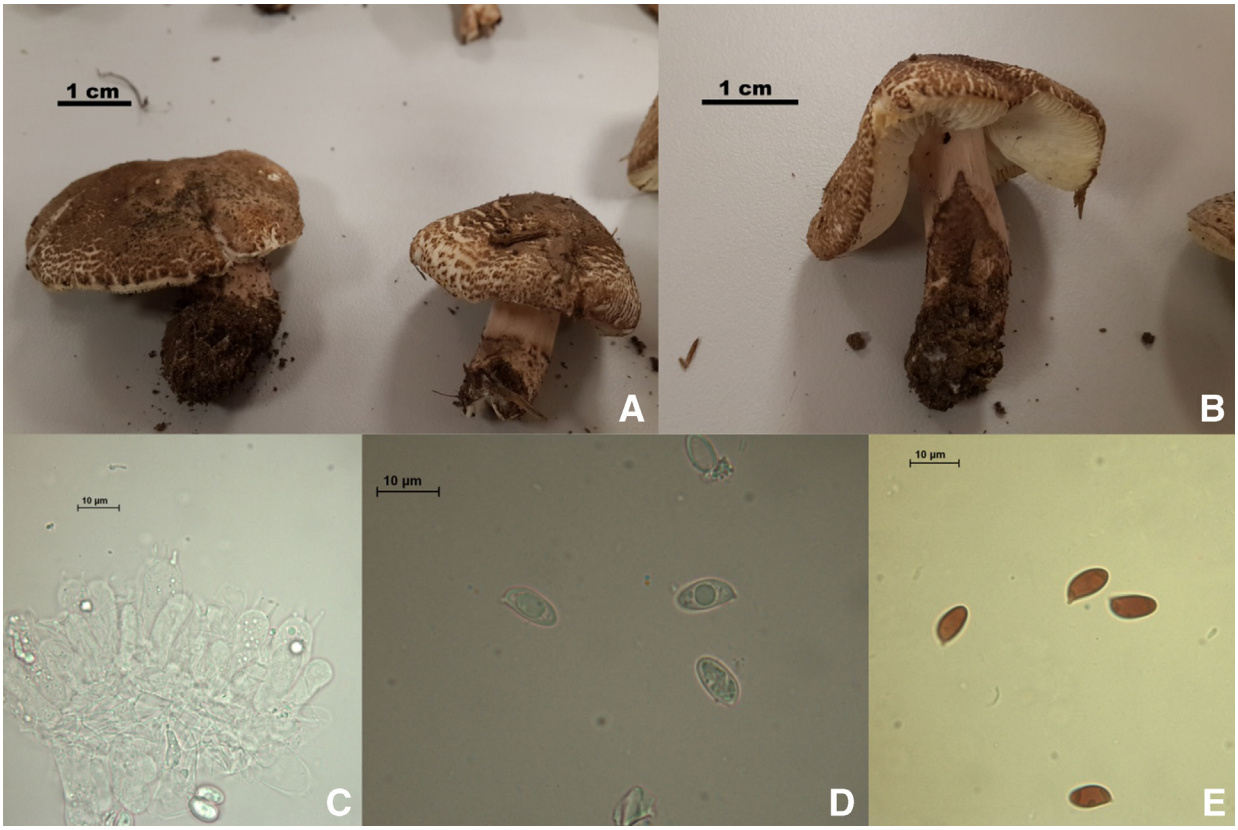

Figure 1. Macroscopic and microscopic features of the *Lepiota brunneoincarnata* mushrooms collected from the region where the patient picked mushrooms. A, B, Fruiting body. C, Basidia. D, Spores. E, Dextrinoid spores.[9]