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Nephrotoxic mushroom poisonings: Epidemiology, toxidromes, treatments and outcomes

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Introduction: Mushroom poisonings are increasing worldwide today as adolescents mistake poisonous mushrooms for psychedelic ones and recent immigrants mistake poisonous mushrooms for edible ones in their native homelands.

Objectives: Since mushroom poisonings are increasing worldwide following ingestions of known, newly described, and even formerly edible species, the objectives of this review were to identify all known nephrotoxic mushroom species, to present a toxidromic approach to earlier diagnoses based on the onset of renal insufficiency, and to compare the efficacies and outcomes of renal replacement management strategies.

Methods: Internet search engines were queried with the key words to identify peer-reviewed scientific articles on nephrotoxic mushroom poisonings and their treatments during the search period, 1957-present. The key words included: mushrooms, poisonous, nephrotoxic, myotoxic; Amanita, poisonous; Cortinarius, poisonous; orellanus syndrome, orellanine; and rhabdomyolysis, mushroom-induced.

Results: Although the hepatotoxic amatoxin-containing mushrooms cause most mushroom poisonings and fatalities, nephrotoxic mushrooms, most commonly Cortinarius species can cause renal insufficiency and kidney failure. Recently, several new species and even formerly edible species of nephrotoxic mushrooms have been identified including Amanita proxima and Tricholoma equestre in Europe; Amanita smithiana in the United States and Canada; Amanita pseudoporphyria in Japan; Amanita punctata in Korea; and Russula subnigricans in China. Renal replacement therapies including temporary hemodialysis are often indicated in the management of nephrotoxic mushroom poisonings with renal transplantation reserved for extracorporeal treatment failures.

Conclusions: Unlike the outcomes of amatoxic mushroom poisonings, which are often fatal without liver transplantation, nephrotoxic mushroom poisonings that are diagnosed early and managed with temporary renal replacement therapies have uniformly good outcomes with full recovery of pre-existing renal function unless irreversible renal failure ensues. Renal transplantation should not be recommended too early as partial to complete recovery of normal renal function has occurred even after months of hemodialysis.

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