

## AMANITA MUSHROOMS

A wild mushroom species (*Amanita phalloides*) ingested by mistake for edible mushrooms. Results in GI discomfort and delayed hepatic damage. Often seen in outbreaks, for example, after family picnics, reported clinical effects include diarrhea and vomiting progressing to hepatic cell death, coma, and renal tubule necrosis. Hemodialysis and hemoperfusion controversial because amanitin is not readily measured and CI is unknown; anecdotal reports of recovery are positive and negative. Recent reports on the Molecular Adsorbents Recirculating System (MARS; uses resins and albumin to remove protein-bound toxins) have reported success in case series and case reports.

## METHOTREXATE

An inhibitor of dihydrofolate reductase; interrupts DNA synthesis of dividing cells. Manifestations of MTX toxicity are marrow suppression and its consequences and severe mucositis in the GI tract from mouth to intestinal mucosa; in addition, MTX may induce tumor lysis and has been shown to be teratogenic; may also induce hemorrhagic cystitis, which in the long term can cause bladder cancer.

Initial treatment involves supportive care and leucovorin rescue. It has been known for some time that MTX (molecular weight, 454 Da) is removable by hemodialysis (and its modifications CAVHD or CVVHD), multiple-exchange peritoneal dialysis, and hemoperfusion. High-flux hemodialysis efficiently removes MTX and may prevent toxicity, with CI values around 70-143 mL/min.

## PROCAINAMIDE

Class 1a antiarrhythmic drug introduced in 1951; was used for atrial fibrillation and Wolf-Parkinson-White syndrome; rarely used now. Hemodialysis (alone or combined with hemoperfusion) efficiently removes PA and NAPA; however, because the  $V_d$  is large, repeated treatment often is required to decrease their plasma concentrations.

## CONCLUSION

There are other illnesses without renal involvement where CRRT might be of value. These include sepsis and other inflammatory syndromes such as acute respiratory distress syndrome (ARDS) and cardiopulmonary bypass where removal of inflammatory mediators by hemofiltration is hypothesized to improve outcome. Adsorption appears to be the predominant mechanism of mediator elimination. However, the observed hemodynamic improvement can, at least partially, be attributed to a reduction of body temperature or to fluid removal, and the evidence for a clinically important removal of proinflammatory cytokines remains limited. Continuous and therefore smooth fluid removal may improve organ function in ARDS, after surgery with cardiopulmonary bypass, and in patients with refractory congestive heart failure. Continuous removal of endogenous toxins, eventually combined with intermittent hemodialysis, is probably beneficial in inborn errors of metabolism, severe lactic acidosis, or tumor lysis syndrome. Hemodialysis and Hemoperfusion are also effective in treatment of certain poisonings.

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