

Hydrogen Peroxide Ingestions

Hydrogen peroxide (H_2O_2) is a colorless, odorless liquid that is an oxidizing agent. Household products contain 3-5% H_2O_2 , and are used as antiseptics and bleach for hair or clothes. Because household H_2O_2 looks very similar to water, is packaged without child resistant closures and is often poured into a cup before using, unintentional ingestions by children and adults are common. Industrial strength H_2O_2 is available in 10-70% concentrations and is used as textile and paper bleach and as a component of rocket fuel; recently it has been used to clean fruit and vegetables before cutting. Health-food stores and internet sites sell 35% "food-grade" H_2O_2 for use as hyper-oxygenation therapy to treat medical conditions such as HIV, anemia and cancer.

Severe toxicity can result with the ingestion of as little as a mouthful of concentrated (>10%) H_2O_2 solutions due to direct cytotoxic injury to tissues as well as the release of oxygen. Vomiting, burns in the mouth and esophagus, gastric erosion and gastric perforation have occurred. Catalase converts H_2O_2 to $H_2O + O_2$. One mL of 3% H_2O_2 releases 10 mL of oxygen, while 1 mL of 35% H_2O_2 releases 100 mL of oxygen. When this reaction occurs in the stomach, a large intragastric pressure gradient is created by the volume of oxygen gas which, when coupled with local caustic injury, may result in its migration into the local vasculature. Oxygen bubbles in the portal venous system may increase oxygen tension and restrict flow in the mesenteric arteries and veins. In one case series of 11 patients, all had evidence of portal venous gas on abdominal CT (*Clin Toxicol* 2010;38:533-8). Cardiac and cerebral gas emboli can also occur, resulting in ischemia and stroke-like effects. Some authors recommend hyperbaric oxygen (HBO) therapy for the management of gas embolization with and without manifestations of ischemia. In the previously mentioned cases series, all patients received HBO therapy; most (9/11) experienced complete resolution and 2/11 experienced partial resolution of symptoms.

Unintentional ingestions of dilute (3-5%) household H_2O_2 products produce mild toxicity: nausea, vomiting, abdominal pain and gastric distention. Most unintentional ingestions of 3-5% H_2O_2 may be managed at home with fluids and symptomatic care. Gastrointestinal erosions and gas emboli are occasionally reported with ingestions of large volumes of dilute products; therefore, patients who have intentionally ingested household H_2O_2 should be evaluated in the ED.

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Did you know?

National Prescription Drug Take-Back Day is April 26, 2014.

The goal of this event, sponsored by the Drug Enforcement Administration (DEA), is to remove drugs from homes to keep them from being diverted, misused and abused. Collection sites throughout Maryland and the United States collect expired and unwanted medications for disposal. More than 3.4 million pounds of medications were collected in total at the seven previous events. To learn more about National Prescription Take-Back Day and to find collection sites, go to www.deadiversion.usdoj.gov/drug_disposal/takeback.

