

Iron Overdose

Iron is a dietary supplement used for the treatment and prevention of certain types of anemia. Iron is available alone, in multivitamin formulations, and in some oral contraceptives. Iron overdoses occur mostly as unintentional ingestions within the pediatric population, with clinical effects ranging from benign to very serious, depending on both the formulation and the amount of iron ingested.

The available forms of iron are: ferrous fumarate, ferrous sulfate, ferrous gluconate, polysaccharide iron, and carbonyl iron. Ferrous fumarate, ferrous sulfate, and ferrous gluconate are collectively referred to as the iron salts. Overdoses of iron salts may require medical care depending on the dose and amount of elemental iron per tablet. Patients who ingest carbonyl iron or polysaccharide iron preparations usually do not need medical treatment since these forms of iron have not been associated with serious toxicity.

Symptoms of a toxic iron overdose often follow a clinical course of five separate phases. Phase I occurs ½ to 2 hours following ingestion. In this phase, the patient will most likely experience gastrointestinal symptoms and may be lethargic or in shock. Immediately following Phase I, patients enter Phase II where they may appear to recover or show some improvement in symptoms. Phase III occurs 2 to 12 hours after Phase I, and in this phase, patients experience profound shock, acidosis, fever and cyanosis. Phase IV occurs at 2 to 4 days when hepatic, lung and other organ toxicity may occur. Phase V, occurring days to weeks later, is marked by gastrointestinal scarring, strictures, and small intestine necrosis. It is important to note that all of the phases of iron toxicity may not occur in all patients.

Activated charcoal is not effective in adsorbing iron and should only be used if there are coingestants. Gastric lavage may be attempted if the ingestion has been within one hour, is potentially life-threatening, and the patient has not vomited. Whole bowel irrigation may be considered in a large overdose to hasten the removal of iron tablets from the gastrointestinal tract. Deferoxamine is used to enhance the elimination of iron in patients with significant signs and symptoms of toxicity or serum iron concentrations ≥ 500 mcg/dL.

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DID YOU KNOW THAT... deferoxamine is a chelating agent used as an antidote for iron poisoning?

Deferoxamine chelates free iron, forming ferrioxamine which is excreted by the kidneys. Ferrioxamine induces the urine to change to a vin rosé, or orange-red color. Deferoxamine is administered IV in a maximum dose of 15 mg/kg/hour for up to 24 hours. Rate-related hypotension, pulmonary toxicity and infection have been reported with rapid infusions or therapy for longer than 24 hours. Deferoxamine should be discontinued when serious symptoms resolve and there is no longer a urine color change.



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