TOXIC SYNDROME DESCRIPTION

Ricin or Abrin Poisoning

Summary statement

Ricin is a potent biological toxin that is derived from castor beans. Its mechanism of action in the body is inhibition of protein synthesis. Clinical manifestations are dependent on the route of exposure. Ingestion of ricin typically leads to profuse vomiting and diarrhea followed by multisystem organ failure and possibly death within 36 to 72 hours of exposure. Inhalation of ricin typically leads to respiratory distress, fever, and cough followed by the development of pulmonary edema, hypotension, respiratory failure, and possibly death within 36 to 72 hours.

The amount and route of the exposure to ricin and the premorbid condition of the person exposed will contribute to the time of onset and the severity of illness. For example, the inhalation of ricin would be expected to lead to a quicker onset of poisoning and to cause a more rapid progression of poisoning compared with the ingestion of ricin, given the same exposure amount.

Signs and symptoms of exposure

The following is a more comprehensive list of signs and symptoms that may be encountered in a person exposed to ricin. The list does not convey prioritization or indicate specificity. Also, partial presentations (an absence of some of the following signs/symptoms) do not necessarily imply less severe disease.

Gastrointestinal

- Abdominal pain
- Vomiting
- Diarrhea (nonbloody or bloody)
- Abnormal liver function tests
- Multiple ulcerations and hemorrhages of gastric and small-intestinal mucosa on endoscopy

Respiratory

- Cough
- Chest tightness
- Dyspnea
- Hypoxemia
- Noncardiogenic pulmonary edema

Skin and mucous membranes

- Redness and pain of eyes and skin

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General

- Fever
- Fatigue
- Weakness
- Muscle pain
- Dehydration

Other organs

- Seizures (uncommon)
- Cardiovascular collapse (hypovolemic shock)

Laboratory (nonspecific)

- Metabolic acidosis
- Increased liver function tests
- Increased renal function tests
- Hematuria
- Leukocytosis (two- to five-fold higher than normal value)

Note: The actual clinical manifestations of a ricin or abrin exposure may be more variable than the syndrome described above.

Differential diagnosis

Inhalation:
- Staphylococcal enterotoxin B
- Exposure to pyrolysis byproducts of organofluorines (Teflon, Kevlar)
- Oxides of nitrogen
- Phosgene
- Ozone

Ingestion:
- Enteric pathogens
- Mushrooms
- Caustics
- Iron
- Arsenic
- Colchicine

This toxic syndrome description is based on CDC's best current information.
It may be updated as new information becomes available.

For more information, visit www.bt.cdc.gov/chemical, or call CDC at
800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

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