



Blistering Agents

Information for Healthcare Facilities

Adapted with permission from the Kansas Poison Control.
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Causative Agent

Blister agent exposures, including mustard agents, phosgene oxime, lewisite, and T2 mycotoxins.

Hospital Precautions

Hospital personnel performing hospital-based decontamination procedures should dress in appropriate chemically protective equipment. In the absence of more specific information, this should be at OSHA Level B or higher, including a supplied air respirator or powered air-purifying respirator with appropriate cartridge filters for the agent(s) in question.

Transmission

Blistering agents can be transmitted from direct person-to-person contact. They can also be inhaled.

Decontamination

- Remove patient clothing. Double bag all exposed materials and place in appropriate location. Blot any areas of moisture and/or possible residual chemical on the skin with a dry towel, then discard the towel as contaminated waste. Flush with copious amount of water and wash gently with soap.
- Care must be gentle to avoid causing further sloughing of potentially viable skin. If water is in short supply, adsorbent powders such as flour, talcum powder or Fuller's earth may be applied to the skin and then wiped off with a damp cloth. Dilute (0.5%) hypochlorite solutions (prepared by a 10:1 dilution of 5% chlorine bleach with water) may also be used for skin decontamination.

Mechanism

Blistering agents can penetrate the skin, mucous membranes, cause airway irritation, and ultimately can react with enzymes, proteins, and DNA.

Routes

Blister agents are liquids or vapors; dermal, ocular, or inhalation route of exposure are anticipated.

Symptoms/ Onset

- Mustard causes damage within 3 minutes but actual symptoms are delayed from 2 to 24 hours. The skin shows large dome shaped translucent yellowish blisters. The fluid is clear but does not contain mustard. Other symptoms include conjunctivitis, corneal damage, photophobia, blepharospasm, rhonchi or rales, dyspnea, fever, productive cough, loss of voice and hoarseness, nausea, vomiting, abdominal pain, diarrhea. Death may occur due to respiratory failure or infection.
- Lewisite and phosgene oxime produce irritation and pain on contact. Tissue damage will be evident within minutes. Damage to eyes, skin, and airways is similar to mustard described above. Blisters are not as pronounced. Blindness can occur if eyes not immediately decontaminated.

Treatment

- Monitor for respiratory distress as it may be delayed up to 24 hours. Administer oxygen and assist ventilation as required. Treat bronchospasm with an inhaled beta2-adrenergic agonist.
- After dermal decontamination, clean area, apply topical antibiotics, silver sulfadiazine, bacitracin, and neosporin. The eyes should be immediately and thoroughly decontaminated.
- For mild ocular lesions, apply steroid antibiotic ointment. For severe ocular lesions, apply one drop atropine sulfate solution 1%. A few drops of sodium sulfacetamide 1% solution should be applied every 4 hours to prevent infection.
- Lewisite exposures may be treated with British Anti-Lewisite (BAL) IM if there is a large burn area (>5%) or systemic symptoms are noted. BAL skin ointment may decrease the severity of skin lesions. BAL ophthalmic ointment may decrease severity of eye lesions. (BAL should never be given IV) BAL is of unproven value against mustard agents and phosgene oxime.
- There is no known prophylaxis for exposure to blistering agents.

REFERENCES

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