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2ND EDITION

Minor Emergencies: Splinters to Fractures

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Irritant Incapacitant Exposure

(Lacrimators, Riot Control Agents, Tear Gas)

Presentation

The patient may have been sprayed with tear gas (e.g., Mace) during a riot being dispersed by the police, or he may have accidentally sprayed himself with his own can. He complains of burning of the eyes, nose, mouth, and skin; tearing and inability to open his eyes because of the severe stinging; sneezing; coughing; runny nose; and perhaps a metallic taste, with a burning sensation of the tongue, nausea, vomiting, and abdominal pain. These signs and symptoms last 15 to 30 minutes after exposure. Redness and edema may be noted for 1 to 2 days after exposure to these aerosol agents.

What To Do:

- ✓ Segregate victims so that others are not contaminated. Ideally, this should be done outdoors in the fresh air. Secondary contamination can cause adverse symptoms and injuries in emergency medical personnel, can further contaminate your medical facility, and can potentially lead to costly medical facility closures and evacuations. Medical personnel should don gowns, gloves, and masks before helping victims. (Level C protection with an appropriate air-filtering gas mask approved for riot-control agents is adequate.)
- ✓ Remove contaminated clothing in a predesignated decontamination area, place the clothing in sealed plastic bags, and then shower with soap and water to remove the irritant incapacitants from the skin.
- ✓ Exposed eyes should be irrigated with copious amounts of tepid water or saline for at least 15 minutes, and contact lenses should be removed. If available, use a Morgan Lens (MorTan, Missoula, Mont). Washing the skin with water will remove the residue but will not inactivate it. Removal of contaminated clothing will aid in preventing reexposure. Effects on the eyes and respiratory system generally dissipate within 15 to 30 minutes of cessation of exposure.
- ✓ If "pepper spray" (oleoresin capsicum) was the offending agent, some studies suggest that magnesium-aluminum hydroxide suspension (MgAl) (Mylanta), applied to the affected area of skin during the initial 30 minutes, can provide prompt and dramatic relief. Since MgAl is cheap and readily available and has minimal side effects, it is considered an appropriate early treatment for such dermal exposure.

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✓ If eye pain lasts longer than 15 to 20 minutes, examine the eyes with fluorescein dye, looking for corneal erosions, which may be produced by tear gas or capsicum (see Chapter 16). Eye pain from pepper spray is largely dissipated within 1 hour. Topical anesthetics ameliorate the pain, but topical NSAIDs do not. Patients should be cautioned against rubbing their eyes so that they do not inflict further damage.

✓ Look for signs of, and warn the patient about, allergic reactions to tear gas, including bronchospasm and contact dermatitis. Minor prolonged skin irritation can be treated with hydrocortisone cream 2.5% (1 tube, 30 g), applied bid or qid, or lotion 2.5% (1 bottle, 59 mL), applied bid or qid.

What Not To Do:

⊗ Do not rush or allow others to rush to the aid of the patient who has been exposed to tear gas; rushing heedlessly can result in contamination and incapacitation of those attempting to help the patient.

⊗ Do not rub the patient's eyes. This may cause mechanical corneal abrasions in addition to the chemical irritation.

Discussion

Irritant incapacitants, also called riot control agents, lacrimators, and tear gases, are currently used by law enforcement agencies and are available to the public for personal protection. These relatively nontoxic agents cause temporary incapacitation by inducing eye pain, lacrimation, and uncontrollable blepharospasm. Exposure to these agents may also result in irritation in the nose and mouth, throat, and airways, causing difficulty breathing and burning sensations in the chest as well as nausea, vomiting, and skin irritation (particularly in moist and warm areas).

Two of the most common riot control agents include chlorobenzylidene malonitrile (CS) (named after its creators, Corson and Stoughton) and oleoresin capsicum (OC), also known as "pepper spray." CS has essentially replaced CN (chloroacetophenone). The U.S. military considers CN obsolete, although it is still common in police agency mixtures and survives as the principle component of Mace.

CS is a white crystalline powder with a pungent pepper-like odor that is immediately detectable. It is used extensively in tear gas. OC is a mixture of compounds obtained by extracting dried, ripe fruit of cayenne peppers. Capsaicin is the principal constituent.

A rinsing solution that may be available in the United States in the future is Diphoterine (Laboratories Prevor, Valmondois, France). Diphoterine is a hypertonic, polyvalent, amphoteric compound developed in France as an eye/skin chemical splash water-based decontamination solution. In vitro and in vivo, it actively decontaminates approximately 600 chemicals, including acids, alkalis, oxidizing and reducing agents, irritants, lacrimators, solvents, alkylating agents, and radionuclides. Diphoterine and its acid/alkali decontamination residues are not irritating to the eye or skin. Diphoterine is essentially nontoxic. It can prevent eye/skin burns following chemical splashes and results in nearly immediate pain relief.

Although most exposures do not result in life-threatening emergencies, bronchospasm and noncardiogenic pulmonary edema have been seen. Those exposures resulting in respiratory distress should be treated with supplemental oxygen and inhaled bronchodilators.

There is no evidence that a healthy individual will experience long-term health effects from open-air exposures to CS.

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Suggested Readings

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