Hydrofluoric acid : poisoning and burns  

Introduction

Symptoms: 2 toxic mechanism: acing; poisoning by fluoride whereat the second is more critical. The action time depends on the concentration: <20% till after 24h possible, 20-50% after 1-8h, >50% immediately.

Skin: Mean symptom is a strong continuous pain (even without acing).

Further symptoms: redness, blistering, necrosis, large-scale acing even with low concentrations, also small-scale acing with high concentrated fluoride acid can cause grave systemic poisoning as cordial arrhythmic, blood-clotting disorder or shock syndrome.

Oral: Mucous membrane irritation or acing in the upper gastrointestinal tract, vomiting. Beside the grave acing all resorptive symptoms as described above could also happen.

Inhalation: Irritating or acing effects on the upper respiration system. Pulmonary edema. Systemic effects (vide supra) cause by pulmonary resorption.

Eyes: Acing effects: Conjunctivitis, Cornea-lesions, Necroses.

Factors promoting a serious course: oral or inhalative exposition, concentration >20%, large-scale contamination, quick pain (within few minutes).

An inhalative exposition is probably, if the concerned skin area >5%, the cloths are contaminated, the concentration >50%, or head and cervix are spilled.

First Aid  

Don’t forget the self-protection!

1. After inhalation of gaseous hydrofluoric acid or hydrofluoric acid fume
   I. Move the victim into fresh air.
   II. In case of ventilatory arrest start artificial breathing (with Ambu bag or mouth-to-mouth).
   III. Apply external cardio resuscitation in case of cardiac arrest.

2. After ingestion of hydrofluoric acid
   I. If the patient is fully alert (without altered mental status), give him orally 200ml calcium- or magnesium-containing fluids (e.g. milk, solved calcium- or magnesia-preparations) or if not available pure water.
   II. In case of ventilatory arrest start artificial breathing (with Ambu bag or mouth-to-mouth).
   III. Apply external cardio resuscitation in case of cardiac arrest.

3. After cutaneous contact with hydrofluoric acid
   I. Remove contaminated clothes. Involved skin area immediately flash vigorously with plenty of tap water. Caution: Helpers must protect themselves!
   II. Put calciumgluconate-hydrogel on the affected area (approx. 5mm thickness, replace the gel after a couple of minutes with new gel which must be left.
   III. In case of ventilatory arrest start artificial breathing (with Ambu bag or mouth-to-mouth).
   IV. Apply external cardio resuscitation in case of cardiac arrest.

4. After contact off the eyes with hydrofluoric acid
   Immediately flush of the eyes with plenty of hand-warm tap water for at least 10 minutes.

Content of the ETH Zurich emergency  

For Help call 888

(Emergency Operation Centre)

100 g Calcium glucanate – hydro gel (2.5%).

Additional material for self-protection and as application aid:

- 1 pair of nitrile gloves.
- 1 plastic spatula to spread the gel
- 2 compresses (5x5 cm)