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Irritant Contact Dermatitis to Accidental Exposure of Cyanide

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Sir,

Cyanides are both man-made and naturally occurring in some foods such as apricot pits and roots of cassava plants.[

1] In very small amounts, cyanides is necessary requirement in the human diet. In India, cyanide is commonly used by goldsmiths. Cyanides are readily absorbed by inhalation, oral and dermal routes of exposure, which in turn will cause early and late effects of cyanide poisoning.[2,3] Irritant contact dermatitis is the most common occupational skin disease to many irritants, and cyanide is one of them.[4] Hereby, we present a case of irritant contact dermatitis to accidental exposure of cyanide topically.

A male patient (cop) aged about 50 years presented with itchy skin lesions over left side of the chest of 2 hours duration. He gave the history of keeping seized cyanide powder from a prisoner in his left upper pocket wrapped in a piece of paper. After 1 hour of his work, when his sweat came in contact with cyanide, he developed localized burning and itching sensation over the contact area, which was ignored. Thirty minutes later, he noticed appearance of fluid-filled skin lesions localized to the contact area.

Examination revealed a central irregular erosion surrounded by grouped vesicles on a sharply demarcated, erythematous, and edematous base over left side of chest underlying the pocket area of shirt [Figure 1]. Systemic examination of the patient was normal.



Figure 1
An irregular erosion surrounded by grouped vesicles on erythematous and edematous base over left side of chest

The various diagnoses considered were irritant contact dermatitis to cyanide, paederus dermatitis and herpes zoster. Herpes zoster was ruled out by negative Tzanck test. Circumstantial evidence favoured the diagnosis of irritant contact dermatitis to cyanide. In view of cyanide toxicity under occlusion, patch test was not done.

Cyanides are acutely toxic to humans. Liquid or gaseous cyanide and alkali salts of cyanide can enter the body through inhalation, ingestion or absorption through the moist mucous membranes and skin.[

2,3] The rate of skin absorption is enhanced when the skin is cut, abraded or moist and may cause systemic poisoning with little or no irritant effect on the skin itself.[2,3] For contact with unabraded skin, the LD50 is 100 mg/kg body weight and assuming cyanide is released from the compound.[5,6] No matter how cyanide gets into the body, it works as early effects (anxiety, headache, faintness, vertigo, confusion, hyperventilation, tachypnea and increased heart rate) and later effects (coma, convulsions, paralysis, hypoventilation, hypotension, bradycardia, ventricular arrhythmias, cardiac arrest and death) of cyanide poisoning.[3] However, the systemic examination was normal in our case.

Apart from causing acute poisoning, cyanide can cause reactions to the skin due to the irritant nature of cyanide and thus causing an irritant dermatitis termed as "cyanide rash", which is characterized by itching, vesiculation and disruption of the skin as seen in our case.[

4] Two cases of contact dermatitis from electroplating solutions attributed to irritation from cyanide salts were reported.[7] This presentation aims to highlight the importance of toxicity to cyanide, even with dermal route of exposure and to make people aware of accidental cyanide poisoning.

References

Go to:

1. Honig DH, Hockridge ME, Gould RM, Rackis JJ. Determination of cyanide in soyabeans and soyabean products. *J Agric Food Chem.* 1983;31:272. [PubMed]
2. Hathaway GJ, Proctor NH. Cyanides. In: Proctor NH, Hughes JP, editors. *Chemical Hazards of the Work Place.* 5th ed. New-Jersey: Wiley-Interscience; 2004. pp. 190-1.
3. Hamel J. A review of acute cyanide poisoning with a treatment update. *Crit Care Nurse.* 2011;31:72-81. [PubMed]
4. Cyanide Poisoning. *Health Hazards.* 1st ed. Canberra: Australia Government Public Service; 1989. National occupational health and safety commission. *Worksafe guide Australia;* p. 4.
5. Baskin SI, Brewer TG. Cyanide poisoning. In: Sidell FR, Takafuji ET, Franz DR, editors. *Medical aspects of chemical and biological warfare.* 1st ed. Washington DC: TMM Publications; 1997. p. 276.
6. Washington DC: In cyanide management institute; c2006-10; [Last updated 2010 Mar 30; cited 2011 Jun 13]. Cyanidecode.org [Internet] Available from: http://www.cyanidecode.org/cyanide_environmental.php.
7. Mathias CG. Contact dermatitis from cyanide plating solutions. *Arch Dermatol.* 1982;118:420-2. [PubMed]

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