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Journal of Dermatology and Dermatitis
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Case Report

Frostbite and Syncope from Pressurized Dust Cleaning Spray

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Received date: January 02, 2023; Accepted date: January 11, 2023; Published date: January 18, 2023

Citation: James Espinosa, Alan Lucerna, Risha Hertz, (2023), Case Report: Frostbite and Syncope from Pressurized Dust Cleaning Spray, *Dermatology and Dermatitis*, 8(1); **DOI:10.31579/2578-8949/116**

Abstract

Here we present the case of a 21-year -old patient who huffed pressurized dust cleaning spray with subsequent syncope and cold thermal injury to her hands. Air spray cleaners contain halogenated gas, which serves as a propellent to blow dust from electrical and computer devices. The halogenated compound can cause euphoria and can be used as an inhaled abused substance. Use of such substances has been associated with syncope, sudden death, hypoxia and cold thermal injuries. Airway swelling has been reported.

Keywords: frostbite; syncope; pressurized dust cleaning spray; ed; ems; volatile substance

Introduction

Air spray cleaners contain halogenated gas, which serves as a propellent to blow dust from electrical and computer devices. The halogenated compound can cause euphoria and can be used as an inhaled abused substance. The results can include significant morbidity and even mortality. Two associated medical problems are discussed in this case—syncope and cold thermal injury.

The Case:

A 21-year-old-female was brought the emergency department (ED) by emergency medical services (EMS), having been found in a public restroom with a decreased level of consciousness. Two cans of pressurized computer cleaning spray were found with a paper bag and some cloth handtowels. The patient became alert in the ED. She reported huffing the computer cleaning spray and recalled at least two episodes of syncope. Examination of the can showed that the dusting spray contained diflouroethane. She complained of bilateral hand pain. She denied any other complaints. She was not taking any medications. She denied suicidal ideation. She admitted to a two-year history of huffing of computer cleaning spray, sometimes from a paper bag and sometimes through direct inhalation. Her vital signs were within normal limits. On physical exam, deep second-degree burns were noted of both palms. Her physical exam was otherwise within normal limits. Basic laboratory studies were within normal limits. Her ECG showed a sinus rhythm with no acute ST-T abnormalities. After consultation with a burn center, the patient was transferred for further management.

Discussion:

Air spray cleaners contain halogenated gas, which serves as a propellent to blow dust from electrical and computer devices [1]. The halogenated compound can cause euphoria and can be used as an inhaled abused substance. Such substances can be used by direct inhalation (sniffing) or through inhalation from a saturated cloth or paper bag--(huffing/bagging).

Inhalation (huffing) of air duster can occur in any age group. It is more common in teenagers and adolescents [2-4]. The propellant in air duster is generally 1,1-Diflouroethane (DFE). Some dusting sprays contain triflouroethane. This compound has been associated with syncope, arrhythmias and even sudden death [3-5]. The mechanism of an arrhythmia has been shown in animal studies to be sensitization of the myocardium to catecholemines, probably due to the halogenated hydrocarbon moeity of DFE [5,6]. Inhalation abuse can cause angioedema[3]. If a tightly fitting bag is placed over the head with huffing, anoxia can result [5].

Cold thermal injury has been described in association with DFE containing inhalants [1]. The rapid release of pressurized gas causes a cooling effect on the can. Orofacial and digital frostbite has been described as a clue to the detection of the use of such inhalants [7]. Sweating in associated with hydrocarbon use has been hypothesized to allow deeper penetration of the cold injury to the skin [8].

Inhalants, such as 1,1-Diflouroethane containing products, are considered to be addictive. They can cause a sense of euphoria [4,5]. They are inexpensive and readily available. Volatile substance abuse is noted to be most common in males between the ages of 14 and 22 years of age

[7,9]. Inhaled hydrocarbons are absorbed through the lungs and exert are readily absorbed by lipids in the brain [6]. Inhalants can affect multiple central neurotrasmitters [2].

In summary, air spray cleaners contain halogenated gas, which serves as a propellent to blow dust from electrical and computer devices. The halogenated compound can cause euphoria and can be used as an inhaled abused substance. The rapid release of pressurized gas causes a cooling effect on the can. Orofacial and digital frostbite has been described as a clue to the detection of the use of such inhalants.

Conflict of Interest: There was no funding related to this case report. The authors declare that they have no conflicts of interest.

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DOI:10.31579/2578-8949/116