

# Managing the Blue Man: Multiple Traumas Involving a Paint-Carrying Truck

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## Abstract

**Introduction:** This report describes the difficulty in evaluating a patient with multiple traumas because he was covered with paint poured from a truck in a car accident. Cleansing with paint thinner and isotonic saline solution was necessary.

**Case Report:** A 29-year-old male patient was admitted to the emergency department following the collision of his car with a paint-carrying truck. His head, face, neck and hands were covered with a cyan-blue oil paint, and bloody "paint mud" covered all frontal and occipital areas of the scalp. Abdominal guarding was identified. A rapid cleansing with normal saline solution (0.9% NaCl) was attempted in order to expose the lesions of the patient, but it had no effect on the drying paint. The patient's scalp, face and neck were cleaned with paint thinner (60% toluene). The patient was then diagnosed as having a maxillofacial fracture and underwent surgery for open reduction and rigid fixation by plastic and reconstructive surgeons. Thinner was not used for the eyes for fear of further chemical injury. Normal saline removed corneal and conjunctival paint remnants but proved ineffective for cleansing of the eyelids and eyelashes.

**Conclusion:** Removal of the paint from the skin and the eyes was a prerequisite for the evaluation of the underlying structures. It is difficult to find a cleansing material that can be used effectively and safely in different parts of the body.

**Key Words:** Multiple traumas, accident, paint, skin cleansing, contaminated wound, eye wounds.

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## Introduction

PATIENTS WITH CONTAMINATED WOUNDS are not uncommon admissions in an emergency department (ED). Although there is evidence to suggest that wound cleansing is not always necessary for wound care (1, 2), appropriate cleansing of the patient is a must to allow evaluation of underlying structures. This paper reports a patient with multiple traumas complicated by contamination with paint poured from a paint-carrying truck in a car accident, and the patient's evaluation and management with the help of paint thinner and saline solution.

## Case Report

A 29-year-old male patient was admitted to the ED of a private hospital following a collision of

his car with a paint-carrying truck. On admission, his entire head, face, neck and hands were covered with a cyan-blue oil paint. He had subconjunctival hemorrhage and chemosis on the right eye, and his eyelashes were all covered and stiffened by the paint. He had a linear 3-cm long cut on the left zygomatic area, which was covered by the dry paint, and bloody "paint mud" covered all frontal and occipital areas of the scalp. External ear canals were covered as well, but no hemorrhage was seen. Abdominal guarding was identified on examination. No neurologic deficit or any other abnormality was detected.

A rapid cleansing with normal saline solution (0.9% NaCl) was attempted in order to expose the lesions of the patient, but it had no effect on the drying paint. To remove the paint, it became necessary to use paint thinner (60% toluene), which was identified as the solvent of the paint on the package label. Following consultation with a dermatologist, the patient's scalp, face and neck were cleaned with thinner, which was then washed off with normal saline solution. Reevaluation of the patient revealed edema and ecchymosis of 5 cm in diameter around the right eye and a linear, full-thickness 3-cm cut on the left zygomatic area. The "mud," consisting of blood and paint, was also removed, and no other lacerations or cuts were noted

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in the scalp. A cream, including hydrocortisone in combination with fusidic acid, was then applied in the erythematous areas to avoid a possible contact dermatitis and secondary infection.

Abdominopelvic ultrasonography was normal. Cranial computed tomography revealed fracture in the anterior walls of maxillary sinuses bilaterally, in the left pterygopalatine plate and in the posterior part of the left lamina pteopropia; hemorrhage in the maxillary sinuses bilaterally, in the anterior and posterior ethmoidal cells and in the left sphenoid sinus; and a small contusion area localized in the periventricular substantia alba in the posterior part of the right nucleus caudatus.

The patient was diagnosed as having a maxillofacial fracture and underwent surgery for open reduction and rigid fixation by plastic and reconstructive surgeons. No lesions of contact dermatitis were observed, and there was no sign of acute neurotoxicity.

In the ophthalmology consultation, oil paint covering the eyelids and eyelashes made the first evaluation difficult. After local anesthetic application and retraction of eyelids, the patient's eyes were irrigated for approximately 30 minutes by isotonic saline solution. Residual substances in the eye were removed by sponge. Thinner was not used for the eyes, for fear of further chemical injury. Normal saline successfully removed corneal and conjunctival paint remnants but proved ineffective for cleansing of the eyelids and eyelashes. At the first examination of the patient, his vision was 7/20 in both eyes, and diffuse punctate epithelial defects were detected on his corneas and conjunctivae. Intraocular pressures were within normal limits and there were no other injuries in anterior and posterior segments. In the first-line treatment, topical cyclopentolate 1% (three times a day), topical ofloxacin (four times a day) and polyvinyl alcohol eye drops (four times a day) were applied. Two days later, ophthalmologic examination was repeated, and it was observed that the oil-painted eyelashes were everted and caused additional epithelial defects on the cornea. Sponges with warm water were applied on the eyelids and eyelashes to soften the stiffened paint, and his eyes were again washed with normal saline solution. (A forceps was used in the unsuccessful attempt to remove some more paint.) The cleaning was also repeated on the following days. Corneal and conjunctival damage resolved on the third day without any additional treatment. Complete removal of paint from eyelids and eyelashes was accomplished by the fifteenth day.

## Discussion

Patients with multiple traumas sometimes present in the ED with contaminated wounds. Although there is evidence to suggest that wound cleansing is not always necessary for wound care (1, 2), appropriate cleansing of the patient is necessary for the evaluation of underlying structures. When managing a multiple trauma patient, physical examination is of vital importance in terms of diagnosis, treatment and outcome. To inspect a wound thoroughly, contaminants should be removed and the wounds should be cleaned using normal saline solution whenever possible, as it is harmless and gentle to the tissue (2, 3). Most reports about care of the contaminated wound in the ED focus on wound healing and secondary infection risks. Saline solution and surfactants are suggested media for the cleansing (4). Yet saline solution may not be sufficient to clean the wounds to allow a thorough inspection, as was the case with our patient. And it was necessary to cleanse the wounds to find out the extent of trauma in the tissue itself. Paint thinner (60% toluene) was used to remove the dried cyan-blue paint, because of its solvent properties. Exposure of the skin to thinner has some known untoward effects such as contact dermatitis and neurotoxicity, which can result from chronic repeated exposure (5–7). The risk of contact dermatitis, which may be caused by the paint itself as well, was faced because of the possibility of a life-threatening trauma. Systemic toxicity of thinner was not a concern here, as it was used over the face, which is a small percentage of the total body surface, and thus systemic absorption and toxicity was expected to be minimal. Also, thinner toxicity has been reported to occur in chronic exposure (5–7). Because of the possibility of a life-threatening head trauma and because all risks due to thinner exposure seemed to be of secondary importance, the patient's face was cleansed with paint thinner and then washed with normal saline. Reevaluation of the patient after cleansing revealed ecchymosis around the eyes and the maxillary area, possible indicators of a maxillofacial injury. Although technological advances in radiologic imaging facilitated the diagnosis, the importance of clinical evaluation cannot be overlooked. (A thorough literature search failed to yield any similar paint-cleansing procedure that had employed toluene.)

Corneal and conjunctival injuries following exposure to chemical substances are fairly common emergencies. Industrial materials with acid and alkaline content can cause severe burns and anterior segment injury. These injuries may vary

from superficial corneal and conjunctival epithelial defects to severe corneal opacification, or even loss of vision. Exposure time, content of chemical substance (alkaline or acid) and its potency are important factors in determining the level of injury. Any patient referred to the ED for possible chemical exposure should be investigated for the type of chemical substance and its strength. Eyes should be immediately irrigated by physiologic saline solution, and an ophthalmologist should be consulted (8, 9). In this case, the most difficult procedure was cleansing the eyelids and eyelashes from the paint. Unavailability of a non-toxic substance to remove the paint from the eye increased the damage and prolonged the treatment period. Working on this case, we realized that there might not be a safe and effective paint remover for the eyes. At least we could not identify such a material in the literature.

It was essential to cleanse the skin and eyes of this patient. Removal of the paint was a prerequisite for evaluating the underlying structures. Eye cleansing was necessary to prevent further damage caused by the dried paint in the eyelashes. But it was difficult to find a cleansing material that could be used effectively and safely on different parts of

the body. If possible, the product label should be consulted for appropriate cleansing agents.

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