Significant Chemical Burns Associated with Dermal Exposure to Laundry Pod Detergent

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Abstract Concentrated laundry pods have been reported to cause significant clinical effects including oropharyngeal burns and respiratory distress requiring intubation. Dermal burns have been reported, but no incidents of serious isolated dermal injury have been published. We report a case of significant, isolated dermal injury as a result of dermal exposure to a concentrated laundry detergent pod. Total body surface area partial thickness burns in this case were estimated at approximately 2 % with an additional 4–5 % of total body surface area (TBSA) displaying superficial burns/chemical dermatitis. Health-care providers should be aware of this complication and should perform thorough dermal decontamination in the event of an exposure. Parents should be educated regarding the dangers associated with dermal exposure to laundry pod compounds and the need to secure these items away from children as well as proper decontamination techniques should an exposure occur.

Keywords Toxicology · Chemical burns · Injury prevention · Laundry pod · Dermal injury · Dermal decontamination

Introduction

Concentrated laundry pods were introduced in the USA in 2012. Since that time numerous reports detailing the dangers of these products have been published, including respiratory distress requiring intubation [1–3]. Reports of dermal involvement have been reported [3], but no incidents of serious isolated dermal injury have been published. We report a case of significant, isolated dermal injury as a result of dermal exposure to liquid from a concentrated laundry detergent pod.

Case Report

A 10-month-old, otherwise healthy child was brought to the emergency department for evaluation of injuries sustained after exposure to a laundry pod. Per the patient's mother, the child had grabbed a laundry pod and attempted to place the pod in her mouth. Her mother noticed the pod immediately and, in an attempt to prevent the child from placing the pod in her mouth, grabbed the pod forcefully. This caused the pod to burst, spraying fluid on the patient's right jaw, neck, shoulder, axilla, right anterior thorax, and upper abdomen. The patient was immediately wiped off using a baby wipe, and an OTC diaper rash ointment was applied to the area (no further information about those two products is available). The mother noted some mild redness to the exposed area immediately following the exposure but did not feel the child needed to be evaluated as she did not seem to be uncomfortable. No additional decontamination was performed. The following morning, the child's mother noted persistent erythema to the exposed areas which progressed throughout the day to blistering. At that point, the child was brought to the emergency department.

In the ED, on postexposure day 2, the patient was noted to have partial thickness burns to the right anterior shoulder,

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neck, and upper chest as well as superficial burns to the right axilla (Fig. 1). Total body surface area (TBSA) partial thickness burns were estimated at approximately 2 % with an additional 4–5 % of TBSA displaying superficial burns/chemical dermatitis.

The patient was subsequently admitted for burn evaluation and treatment. Thorough decontamination of the exposed area was performed by the burn team. This decontamination was performed on a burn unit, under analgesia, using copious amounts of normal saline. Additionally, based on the circumstances of the event, child protective services and social services were notified. The patient required a single episode of burn care/debridement. Social services ultimately concluded the child's injuries were not malicious in nature. No other potential causes of injury were identified during their investigation. The patient's mother was educated regarding proper decontamination technique in the event of future chemical exposures. She was discharged in improved and stable condition with wound care and dressing change instructions.

Discussion

In this case, the parent was only able to identify the product as a "Tide Pod." The material safety data sheet (MSDS) for Tide PODS™, as listed on the Procter and Gamble product safety website, indicates that each pod contains sulfated and ethoxylated anionic (15–40 %) and ethoxylated nonionic (10–30 %) surfactants, ethoxylated polyethylene polyamine (3–7 %), and "enzymes" [4]. Propylene glycol (7–13 %) is the only specific chemical identified [4]. Though changes in ingredients, pH, and concentration have been theorized, it remains unclear as to why exposures to the contents of laundry

Pods result in far more significant effects than their non-pod counterparts [5].

Emergency and first aid procedures advised for dermal exposure, as listed in the MSDS, include rinsing thoroughly with water and removing contaminated clothing. In this case, the only decontamination performed was wiping the child down with baby wipes. We were unable to determine from the case notes whether or not the contaminated clothing was removed. The child was not bathed following the incident. It is reasonable to assume inadequate decontamination with prolonged exposure time contributed to the extent of injury in this case.

Numerous case reports have described the potential danger associated with pediatric ingestion/aspiration of the contents of laundry pods [1–3]. As a result of these reports, the awareness of both community pediatricians and pediatric emergency medicine specialists has been raised regarding the dangers of these exposures [5]. Though the focus of these reports has been on the potential damage to the oral and esophageal mucosa, as well as respiratory complications, the potential for significant dermal injury must also be stressed. Between January 1, 2012 and June 30, 2013, 989 cases of exposure to laundry pods with moderate or major clinical effects were reported to US poison centers. Of those, 24 (2.4 %) were noted to have second or third degree dermal burns. Continued efforts by public health agencies, such as those published by the CDC [5] and the Florida Poison Information Center [2], are necessary to heighten the awareness of laundry pod-associated injuries.

Though the burns in this case were not immediately life threatening, the patient did require admission to the hospital as well as conscious sedation for the purpose of wound care/debridement. Though conscious sedation is a safe procedure, it is not without the potential for complications [6].

In addition to the clinical implications of these exposures, these cases may result in questions of child abuse/neglect, as they did in this case. Multiple physicians caring for this patient were unaware that the compounds found in laundry pods were capable of causing significant dermal injury and therefore questioned the veracity of the history as provided by the patient's mother.

Conclusion

Dermal laundry pod exposure can result in significant chemical burns. Health-care providers should be aware of this complication and should perform thorough dermal decontamination in the event of an exposure. Skin should be thoroughly washed with copious amounts of water, and contaminated clothing should be removed. Parents should be educated regarding the dangers associated with dermal exposure to laundry pod compounds and the need to secure these items away

Fig. 1 Chemical burns associated with laundry pod detergent exposure

from children as well as proper decontamination techniques should an exposure occur.

References

1. American Association of Poison Control Centers. AAPCC and poison centers issue warning about concentrated packets of laundry detergent. American Association of Poison Control Centers, Alexandria, Virginia. May 17, 2012. <http://www.aapcc.org/press/3>. Accessed 5 Sep 2013
2. Florida Poison Information Center-Tampa. Medical alert—laundry “pods”. Florida Poison Information Center, Tampa; 2012. <http://www.poisoncentertampa.org/resources/1/substances/detergent-pack-2012-public.pdf>. Accessed 21 Jan 2014
3. Celentano A, Sesana F, Settimi L et al (2012) Accidental exposures to liquid detergent capsules. *Clin Toxicol* 50:353
4. The Procter and Gamble Company. “3-in-1 detergent—unit dose liquid laundry detergent materials safety data sheet.” Procter & Gamble product safety website, P&G Household Care, Fabric & Home Care Innovation Center. Issue date October 2013. http://www.pgproductsafety.com/productsafety/msds/Tide_Pods_MSDS_Nov_2013.pdf. Accessed 21 Jan 2014
5. Centers of Disease Control and Prevention (2012) Health hazards associated with laundry detergent pods—United States, May–June 2012. *Morb Mortal Wkly Rep*. Oct;(61)41:825–29
6. Ebach DR et al (1999) Experience with procedure sedation in a pediatric burn center. *J Pediatr Surg* 34(6):955–958