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ANAPHYLACTIC REACTION AFTER ONGOING EXPOSURE TO HAIR GLUE: A NOVEL CASE REPORT

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Abstract—Background: Latex allergy is thought to be present in up to 6.5% of the general population, and can be much higher among those with chronic exposure. It is, however, uncommonly associated with severe anaphylactic reactions. Hair-care practices, such as the application of a hair weave, are a potential cause of latex-related anaphylaxis because the adhesives often contain natural rubber latex. **Case Report:** We report the first case in the emergency medicine literature of successful treatment of a patient with airway compromise secondary to hair glue exposure. This case involved a 29-year-old woman who presented to the emergency department with severe angioedema and airway compromise. The patient had recently had an adhesive substance applied to her scalp for a hair weave placement. The patient did respond initially to antihistamine and alpha-adrenergic medication, however, because the allergen could not be removed, she relapsed, was subsequently intubated, and admitted to the intensive care unit. The latex-containing hair glue was removed over a period of several hours using an oil-based hair-conditioning product. **Why Should an Emergency Physician Be Aware of This?:** This unique and potentially lethal situation required innovative management. Successful resolution of this case required a high degree of cultural literacy leading to the correct diagnosis and treatment, and utilization of resources outside of the health care field. Clinicians treating patients in areas where similar hair-care practices are prevalent should be aware of this pathology, and consider similar management strategies. © 2014 Elsevier Inc.

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INTRODUCTION

Prevalence of allergy to natural rubber latex (NRL) varies in the general population, ranging from 1% to 6.5% (1–3). The spectrum of clinical severity of the allergy ranges from a mild local reaction to severe anaphylactic shock. Most latex exposures result from protective glove use or exposure to other items that are dipped in NRL. In these instances, removal of the offending agent and use of medications such as antihistamines are usually enough to prevent progressing reactions (2,4,5). We present a case of severe anaphylaxis due to a scalp adhesive containing NRL, which was difficult to remove rapidly and resulted in angioedema, thus compromising the patient's airway.

CASE REPORT

A 29-year-old African American woman with known allergy to NRL and no other pertinent medical history presented to the Emergency Department (ED) with symptoms of an anaphylactic reaction, which included urticaria and angioedema. The patient had a hair weave applied several hours prior to arrival, utilizing hair glue

to attach the weave to her scalp. Shortly after the hair glue was applied, she began complaining of lacrimation, tongue swelling, shortness of breath, and pruritus. The hairdresser administered diphenhydramine without improvement, and the patient was subsequently transported to the ED by private vehicle. Upon arrival in the ED, intravenous access was established, oxygen was administered, and cardiac monitoring was implemented. On physical examination, the vital signs were as follows: blood pressure 126/99 mm Hg, heart rate 124 beats/min, respiratory rate 20 breaths/min, temperature 36.2°C, and pulse oximetry 98% on room air. She had clear signs of a compromised airway, manifesting as an inability to speak, difficulty controlling secretions, and lip and tongue edema. Examination of the skin demonstrated mild urticaria. Treatment including 50 mg intravenous ranitidine, 50 mg intravenous diphenhydramine, 10 mg intravenous dexamethasone, and 0.5 mg intramuscular epinephrine was immediately administered. These medications provided prompt but incomplete relief of the patient's symptoms, and there was significant improvement in the lip and tongue swelling. After initial treatment, the patient was able to speak, and was able to confirm her history of an allergy to latex. However, within 5 min of receiving the medications, the facial swelling and respiratory distress returned and the patient was unable to speak. At this point, the clinicians realized that the hair glue was secured to the patient's scalp. An attempt at manual removal of the allergen with forceful use of a comb was unsuccessful. After speaking with several of the nursing and ancillary staff members familiar with local hair-care practices, it was determined that removal of the offending agent would take several hours. The patient was given a subsequent dose of intramuscular epinephrine.

The patient continued to have transient and incomplete responses to repeated doses of epinephrine. After four doses, it was determined that removal of the offending agent would not be feasible immediately, and intubation seemed to be a necessary step in the care of the patient. Due to concerns regarding laryngeal edema, the patient was intubated utilizing a fiberoptic laryngoscope and subsequently transferred to the intensive care unit. Consultation was made with the hair stylist who initially applied the hair glue, and the adhesive material was removed. This procedure required soaking the patient's hair in hair bond remover, an oil-based solution that can be purchased at any beauty salon, for 2 to 3 h before the hair glue could be safely removed. In addition, the patient received repeated doses of corticosteroids and antihistamines. The patient was successfully extubated 36 h later, after complete removal of the allergen and resolution of the angioedema. She was discharged from the hospital in good condition, with no neurological deficits. Given

the patient's history of NRL allergy, and symptoms subsiding after successfully removing the hair glue, which contained NRL, no other source of allergen was sought. The patient gave consent for publication of this report on condition of anonymity.

DISCUSSION

This case provides a unique opportunity to illustrate the management of NRL-induced anaphylaxis presenting with severe airway compromise requiring endotracheal intubation, complicated by the difficulty in removing the offending agent. Among the unusual and unique aspects of this case were the time required, techniques used, and difficulty encountered removing the offending agent. This case also emphasizes the critical role of cultural literacy in recognizing the patient's pathology, and consultation with staff members from a similar cultural background.

Management of patients with an anaphylactic reaction to NRL has been well documented, however, few cases have involved NRL found in hair glue (2,4,6–8). Moreover, the cases that have been documented of allergic reaction to hair glue containing latex did not describe scenarios in which the adhesive material was difficult to remove (9–12).

Cogen and Beezhold described one patient with a mild allergic reaction to hair glue (9). That case involved a 37-year-old woman who had prior experiences of delayed pruritus when exposed to NRL. When exposed to the hair glue, she experienced diffuse urticaria, angioedema, rhinoconjunctivitis, and tachycardia. Before any airway obstruction occurred, a dose of 25 mg diphenhydramine was sufficient to relieve her symptoms (9). The hair glue was manually combed out, and this was performed immediately.

Another case report concerns a 40-year-old woman who developed anaphylactic symptoms from adhesive material for hair extensions that occurred immediately after exposure (10). The patient had prior episodes of allergic reactions when exposed to NRL (i.e., rubber gloves) and was able to remove the adhesive material immediately. She was treated successfully with epinephrine and chlorpheniramine in the ED, and made an uneventful recovery. Both of these cases describe an easily removable adhesive material, and no further intervention was required after initial medication was administered.

The third case reported to date had a fatal outcome. The case involved a 28-year-old woman who had a history of latex allergy, as well as various other allergies (i.e., nuts, cats, dogs) and severe asthma (11). After application of hair extensions, using hair glue, she developed a severe anaphylactic reaction, which included facial

angioedema, severe dyspnea, and diffuse urticaria. The patient self-administered chlorpheniramine and used her salbutamol inhaler, with no relief of symptoms. Despite presence of an epinephrine injector in her handbag, she did not use this medication. Paramedics who arrived at the scene found the patient in cardiopulmonary arrest. The patient was intubated at the scene, and several doses of epinephrine were administered, but the resuscitation efforts were futile, and the patient died. An autopsy was performed, and severe laryngeal edema was found, as well as mucosal swelling and mucus plugging of the bronchi. In addition, the deceased was found to have an elevated level of immunoglobulin E antibodies to latex in her serum. These findings led to the conclusion that severe anaphylactic reaction was the cause of her death. Of note, the authors report that there was an attempt to remove the adhesive, and although the hair extensions were immediately removed during resuscitation, it is not clear if the adhesive (source of allergen) was completely removed.

Our case is remarkable in that it is the only one described to date in which a patient was successfully resuscitated in the ED after angioedema and airway compromise. Once the pathology was recognized, the futility of further conservative management was apparent, as the allergen could not be removed, and the airway was secured. This allowed the time necessary for removal of the hair glue.

WHY SHOULD AN EMERGENCY PHYSICIAN BE AWARE OF THIS?

This case is an example of an anaphylactic reaction secondary to exposure to NRL from an uncommon source, which was influenced by the dominant culture of our patient population. African Americans encompass the vast majority of the population we see in our ED, and cultural awareness of different hair-care practices was crucial to patient management in this case. It is important to understand the different cultural and esthetic norms affecting health and behavior in the surrounding community, which may lead to variation in the types of pathologies that present to the ED (13).

In the context of various ethnic backgrounds, a number of pathologies can be associated with the use of different hair oils and treatments. These conditions can range from inflammatory conditions of the scalp, such as seborrheic dermatitis, to NRL exposure and anaphylactic shock from hair glue (12). Some hair care practices require the use of hair glue application to the scalp, such as securing the

placement of a hair weave or hair extension (12). Generally speaking, oil-based products (e.g., olive oil, oil-based lotion, grease) have been known and utilized to dissolve the adhesive properties of the hair glue. If possible, one should consider the use of an oil-based product if hair glue remover is not readily available. In addition, as a preventative measure, it is always important for patients to understand the severity of their allergies to have a heightened awareness to avoid exposure. In our patient's case, having skin tested for sensitivity might have detoured her from ever risking exposure to NRL.

Our case demonstrates why it is important for emergency physicians to be aware of relevant cultural and lifestyle preferences, which influence the ways in which patients may present. Sensitivity to the surrounding culture can ultimately improve the diagnosis and management of patients and improve connections with the community (14). In our case, cultural literacy played a role in identifying a unique scenario of anaphylaxis caused by hair glue that is typically used by patients in our practice environment.

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