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Clinical Case

Black Henna Tattoo Can Cause a Severe Reaction in People

María de las Mercedes de Dios-Aguado[1,*], Sonia Ana Ramírez Parenteau[2], Montserrat Avilés Peño[3], Isabel Caballero Vargas[4] and Gabriel Blanco Paradelo[5]

[1]*Specialist in Family and Community Nursing. Primary nurse in the pediatric area of Sillería Health Center, Toledo, España*
[2]*Pediatrician at Sillería Health Center, Toledo, España*
[3]*Specialist in Family and Community Nursing, España*
[4]*Primary nurse at Sillería Health Center in Toledo, España*
[5]*Specialist in Family and Community Nursing, España*

***Corresponding authors:** María de las Mercedes de Dios-Aguado, Specialist in Family and Community Nursing. Primary nurse in the pediatric area of Sillería Health Center, Toledo Toledo, España

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Summary

Henna, a natural reddish pigment, when combined with Paraphenylenediamine [1] (PPD), results in black henna, a substance used in temporary tattoos. This type of tattoo has become a very common practice for some people. Although it is a bloodless and easy-to-perform practice, it is not without risks.

Here we present the case of a 9-year-old girl who experienced an adverse reaction 21 days after having a black henna tattoo and developed permanent sensitization to PPD. This fact poses a risk of developing serious systemic complications or anaphylaxis if, throughout her life, she comes into contact with PPD again.

Keywords: Hypersensitivity; Tattooing; Paraphenylenediamine; Primary Care Nursing

Introduction

The practice of applying black henna temporary tattoos has become common among children and adolescents, especially during holiday periods [1,2].

Henna, a natural reddish pigment extracted from the dried leaves of the Lawsonia inermis plant, has a low skin sensitization capacity and its pigmentation is short-lived [3]. To prolong skin pigmentation and achieve a darker tone, other substances such as walnut shell, beet, sugar, or PPD are added, resulting in black henna tattoos [4].

PPD can be found in hair and fabric dyes, shoe polish, various dark paints, pen ink, lithography ink, printer ink, dyes used in dried floristry, etc [5]. This substance, very common in black dyes, can also be present in dyes of other colors [4].

Clinical Case

We present the clinical case of a 9-year-old girl who had a black henna tattoo done during her neighborhood festivities. It was her first time getting a tattoo, so she chose a body part that was easily accessible and where the design would be very visible, selecting her left forearm. Up until the time of the tattoo, her personal medical history was unremarkable, as she had not shown any allergies to medications, dyes, clothing, or any other substances, and her skin was not a topic.

During the tattoo application, the patient did not report any discomfort or pain and no alarm signs were triggered. However, 21 days after the tattoo was done, she began experiencing itching and a skin reaction in the tattooed area. By the 23rd day, the itching had become very intense, her forearm was swollen, and the design had become more prominent, prompting her parents to seek medical attention **(Figure 1)**.

Figure 1: Photograph taken 23 days after the henna tattoo.

Upon examination of the patient, the parents were distressed for allowing their daughter to get the tattoo, as it was elevated, presenting erythema, papules, vesicles, and exudate with the skin being eczematous. All of these signs caused itching, stinging, as well as distress, fear, and discomfort to the girl.

The treatment of the acute phase of the condition addressed intense itching with oral antihistamines; on the other hand, eczematous skin, erythema, papules and vesicles were treated with topical corticosteroids. In light of suspicion of possible superinfection due to scratching and uncertainty whether the black henna used in the tattoo met sanitary conditions for application, it was decided to apply topical mupirocin to reduce the exudate present in the lesion.

Additionally, the lesion was treated with moist wound care using a polyurethane dressing that is impermeable to liquids and permeable to gases. This dressing consists of a layer of non-woven viscose fabric and a silicone layer.
The acute process resolved 7 days after treatment began, transitioning to a chronic phase, as the tattooed design turned into a hyperpigmented keloid scar.

During the chronic phase, moist dressing was applied at night to allow the girl to tolerate the treatment better and not interfere with her daily activities. The patient and her family were instructed to ensure the dressing adhered well to the scar overnight. Every morning, after waking up, the patient removed the dressing during her personal hygiene routine, then applied a sunscreen with a protection factor of 50 and left the scar exposed.
Throughout the nocturnal scar treatment, the girl continued all her school and extracurricular activities, gradually tolerating the scar, overcoming her fear of the lesion she loathed, and gaining self-confidence as she took better care of her forearm each day **(Figure 2)**.

Figure 2: Photograph taken at the end of the treatment after 3 months.

Discussion

Henna skin pigmentation is an ancestral ritual in certain cultures, forming part of their religious and festive ceremonies. Although it is a bloodless and easy practice to perform, it is not without risks [6,7].

Currently, to prolong skin pigmentation and darken the color PPD is added, a fact that fascinates young people and leads them to believe they have a conventional tattoo, increasing the demand for these tattoos among this population group [2,6]. PPD, upon binding to an intracellular or extracellular protein, stimulates T lymphocytes, and in susceptible individuals, generates an allergic reaction clinically manifesting as contact dermatitis [6,9].

Scientific literature warns that patients with sensitivity reactions caused by black henna often present cross-reactions to various substances with molecular similarities to PPD, so certain oral antidiabetics, local anesthetics like benzocaine and procaine, diuretics like hydrochlorothiazide, and some dyes used in the textile and cosmetic industries can trigger an allergic reaction that could lead to significant, life-threatening consequences for the individual [8,10].

The application of black henna tattoos should be restricted in children or adolescents due to the life-threatening risks involved. Sensitization of the skin is permanent, and although dermal lesions are the first to appear, there is a possibility of developing severe systemic complications or anaphylaxis if re-exposed to PPD. Thus, individuals cannot use products containing this substance throughout their lives [10].

Conclusion

When parents authorize their children to get a black henna tattoo, they often do not know whether the person applying the tattoo has the necessary authorization and whether the location complies with current safety regulations. Frequently, these tattoos are done at stands located at fairs, markets, beaches, parks, etc. They are also unaware of the hygienic conditions in which the black henna was prepared and if it was made in the concentration authorized by health regulations.

It is important to disseminate information about these types of lesions for several reasons: to warn about the dangers of black henna tattoos, to properly care for the wounds they cause, to prevent possible complications, and most importantly, to advise patients about the potential future risks if the sensitized individual comes into contact with PPD again.

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