

## CASE REPORT

# Contact dermatitis due to temporary tattoo or pseudo tattoo Case report and graphic presentation of other types of non-classical tattoos

Verónica Úraga,\* Lorena Quiroz,\* Maria Luisa Silva,\* Enrique Úraga\*\*

\* Dermatologist Dermatology  
Clinic Area - Úraga  
Dermatology Center

\*\* Director of the Dermatological  
Center "Dr. Úraga"

Corresponding author:  
veronica\_uraga@hotmail.com

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## ABSTRACT

Tattoos are a technique based on the introduction of various pigments into the skin. There are several types of tattoos and among them are the so-called transitory tattoos or pseudotattoos with very few days of duration. Perhaps, for that reason, it is thought that there would be no major complications. But, that is not the reality. Presentation: the case of a patient who, after having a temporary tattoo made with "black henna", had an acute inflammatory reaction circumscribed to the tattoo, probably caused by paraphenylenediamine, a highly allergenic component of "black henna".

## INTRODUCTION

Tattoos consist of the introduction of exogenous pigments of vegetable or mineral origin into the dermis of the skin.

The etymology of the word "tattoo" is not totally clear. For some, it derives from the Polynesian (Tahitian), "TA", which means hitting, or, from an ancient creation practice of tattoos by tapping one bone against another on the skin, causing a "tau-tau" sound that gives rise to the Polynesian "tatau", which means "to emphasize"; a word adopted by the English captain Cook in Tahiti in 1769, which in turn gave rise to the English word "tattoo". It is believed that Polynesians took it from the Maori of New Zealand who used the verb ta, meaning tattoo, and that Tahitians gave permanent use to the term.<sup>1,2</sup> The suitable word for tat-

tooing is the latin "stigma". Among the definitions of this word are "mark made with a sharp instrument", "mark for recognition made on the skin of a slave or criminal" and "mark of guilt". In Spanish, the equivalent word is "taracear".

M.S. Plaza and M. Yunga, in their thesis at the University of Cuenca, entitled "Descripción de las prácticas de tatuaje en la ciudad de Cuenca", report about Bernal Díaz del Castillo in his story "True History of the New Spain", where Mexican Indians "se taraceaban" the skin, that is, they were tattooed.<sup>3</sup>

### Classification

Tattoos can be classified as follows:<sup>4,5</sup>

1. **Intentional tattoos**
  - a. Ethnic (social, mourning, magical)
  - b. Decorative (political, religious, erotic, sexual)

- and others) (Photos No.1 and 2)
- c. **Temporary or pseudo-tattoos** (fake tattoo simulating real ones, created by contact with henna on the skin; reddish color, disappearing in a few days or with other system) (Photo No. 3)
  2. **Accidental tattoos** (due to unexpected circumstances such as abrasion) (Photos No.4 and 5)
  3. **Iatrogenic tattoos** (caused by chemical agents for therapeutic purposes, such as iron salts, gentian violet, amalgams in mucous membranes in dental treatments (silver and mercury)) (Photos 6 and 7, Photo 8 and 9) or, as unexpected results of aesthetic procedures (Photo 10).
  4. **Professional tattoo** (gray abrasion blue bands in coal miners, or silver salt tattoos in goldsmiths).
  5. **Medical or therapeutic tattoos** (intended to correct unsightly lesions, such as acromias in vitiligo, absence of eyebrows and eyelashes, scars, etc.) (Photo No. 11)
  6. **Compulsive tattoos** (those that are done without consent, such as marks or numbers with identifying purposes (Photos No. 11 and 12) or numerical tattoos, as in concentration camps.<sup>13</sup>



Photos 1 and 2. Decorative tattoos. Photo 1. Musical Cat. Photo 2. Initials with halo and horns (the saint and the devil).

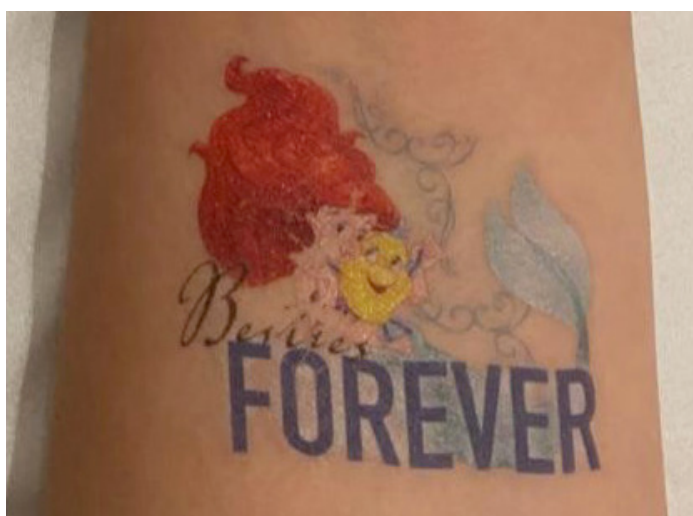
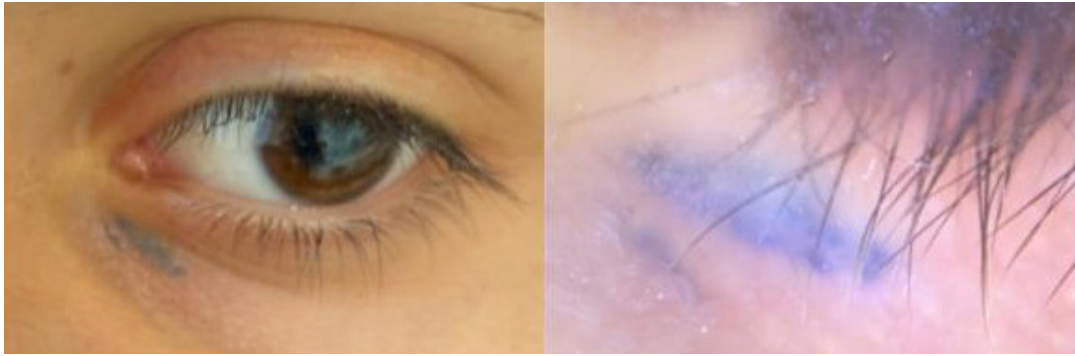


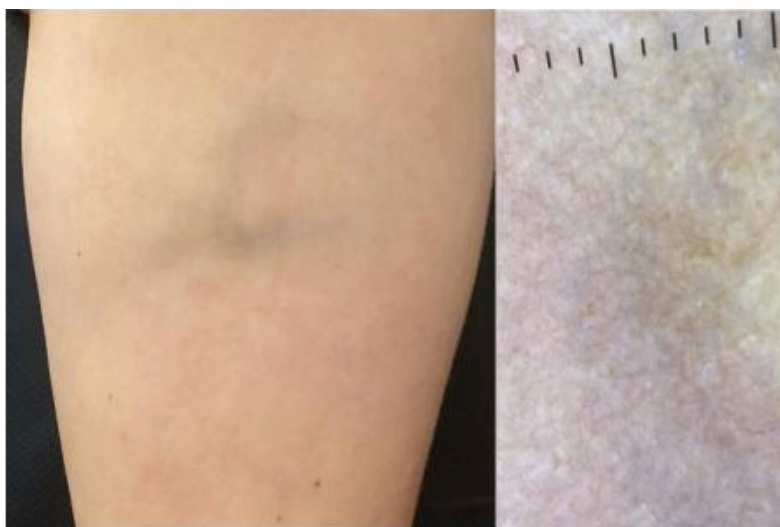
Photo 3. Temporary tattoo, currently very popular, and preferred by children.



*Photos 4 and 5. Accidental tattoo with slate marker. 2 years of evolution. Photo 4 it corresponds to the image seen with the naked eye. Photo 5 corresponds to the dermoscopy that allows the pigment to be clearly visualized.*



*Photos 6 and 7. Iatrogenic tattoo. Post-treatment tattoo with glycolic acid and an unidentified substance. Photo 6. Clinical image. Photo 7. Dermoscopy to visualize the pigment.*



*Photos 8 and 9. Iatrogenic tattoo by injection of iron in the arm. The patient reports 11 years of spontaneous evolution and decrease of pigment. Clinical imaging and dermoscopy.*



Photo 10. Iatrogenic tattoo. Lined permanently, causing unwanted tattoo (white arrows).

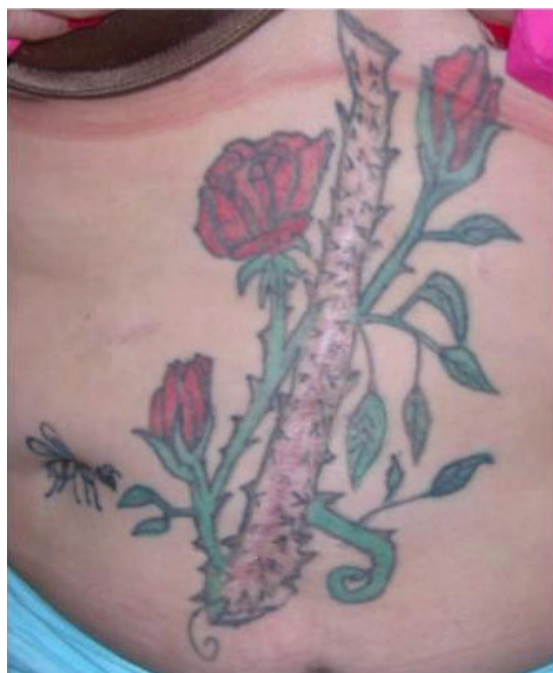


Photo 11. Therapeutic tattoo intended for them stem to camouflage the central linear scar.



Photos 11 and 12. Compulsive tattoos made as marks. In both cases in the process of therapeutic removal.



Photo 13. Identification tattoo in concentration camps. Extracted online. "Auschwitz, tattooed in memory." Mundo /. Wednesday, January 27th, 2021

## CLINICAL CASE

A 26-year-old male patient, with no previous history of allergies or tattooing, reports a temporary tattoo on his arm 20 days before the consultation. The technician recommended "black henna" for greater definition, stability and duration. 7 days after the procedure, the clinical picture shows pruritus, which increases rapidly, along with severe burning locally. Immediately, erythematous papules manifest, accompanied by elevated vesicles which trace the figure of the original tattoo, along with a branch. Lesion is erythematous and always itchy (Photo No. 14.-). Photo No.15 shows close approximation in which you can appreciate the presence of papules and some vesicles, as well as meliceric crusts.

Diagnosis of allergic contact dermatitis by temporary tattoo required treatment of cold, topical and systemic corticosteroids and oral antihistamines. Upon three weeks, the patient phoned us to inform that the lesion had almost completely resolved, leaving discrete hypopigmented spots.



Photo 14. Erythematous papular lesions following the trace of the original tattoo.



Photo 15. close approximation. Erythematous papules, vesicles and meliceric crusts.

## DISCUSSION

Henna is a type of plant pigment originating from a plant called *Lawsonia inermis* of the family Lythraceae. It is commonly known as alheña or arjeña. Etymologically, it comes from the English word henna. The Royal Spanish Academy recognizes it as henna or jen. This plant has been cultivated for centuries in Africa and the Middle East. It is processed by crushing dry leaves of this shrub, thus obtaining fine powder that, mixed with water, forms a paste which, placed on the skin and, depending on the time of application, forms a darker shade. The longer the time of application, the darker the shade. This substance is widely used for religious or aesthetic purposes in hair dyes and eyebrows, as well as cosmetic products.<sup>6</sup>

Contact dermatitis occurs as an unwanted effect of the application of a substance on the skin. According to its pathogenic mechanism, different clinical variants can manifest, such as irritative, allergic, phototoxic and phytoallergic dermatitis. It is important to note that the same substance may be responsible for causing contact dermatitis through various mechanisms. Irritant or allergic contact dermatitis due to henna is quite rare since its sensitizing capacity is very low.<sup>7</sup> However, since stability and persistence are not high, it is important to improve it by adding paraphenylenediamine (PPD) as a dye to shorten the permeation time. This substance is used for hair dyes without major pro-

blems, but in tattoos the percentage of PPD added to natural henna is higher. In this case, it is responsible for most allergic contact dermatitis due to hair dyes and black henna tattoos.<sup>8</sup>

Among dermatological complications reported by contact with henna, contact dermatitis, leukoderma, reactions similar to erythema multiforme, hypertrichosis, keloids, angioedema and hand eczema are found. It is important to know that there have been systemic complications, such as heavy metal toxicity and hemolytic seizures.<sup>9</sup> Black tattoos are considered in certain reports as the second most frequent complication and referred to as papulo-nodular reactions. Sarcoidosis is reported as relatively frequent in colored tattoos, and in black tattoos is considered of much higher incidence.<sup>10</sup>

The maximum permitted concentration of PPD in hair dyes within the European Union is 6%. Black henna kits do not specify the concentration of PPD. Some studies have found concentrations of 15.7%, this being a highly allergenic substance. The excess of percentage increases the risk of contact dermatitis.<sup>11</sup>

When PPD contact dermatitis manifests in henna tattoos, it may be due to:<sup>12</sup>

1. **Prior sensitization**, usually appearing in the first 24 to 48 hours of contact.
  - a. By contact with hair dyes
  - b. Retouching or repainting tattoos (Photos No.16-17-18)
  - c. Sensitization to textile dyes, either by PPD derivatives or by azo dyes that cross-react with PPD.
2. **Active sensitization**, appearing at the first exposure to the tattoo, 10 to 15 days after contact.

A curious and relatively recent aspect of this condition was published in a cross-sectional study<sup>13</sup> about epidermal barrier function and skin homeostasis on skin with permanent tattoos and adhesives. It was found that the latter can affect the barrier function in the skin, while permanent tattoos can have a lesser impact.

The most commonly used treatments for patients with hypersensitivity to black henna are topical and systemic corticosteroids. Treatment based on the combination of mometasone and silicone gel has also been recommended. The latter is used to reduce the appearance of residual skin lesions.<sup>14</sup> In many cases, after three or four weeks, the reaction tends to resolve spontaneously.

## CONCLUSION

Nowadays, temporary tattoos are widely used by children and teenagers. Warnings from Europe and the United States about adverse effects, such as high degree PPD, requires parents and caregivers to be more cautious about allowing their use in children. Moreover, this has happened already. Injuries caused by black henna tattoos can range from moderate to very severe. The fact that there is not always certainty about the percentage of PPD in a tattoo, enables those type of reactions. Since tattooing is a common practice in the present era, it is important to know its different types, composition, consequences, as well as how to act in case of reactions.

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Photo 16. Black scorpion tattoo.

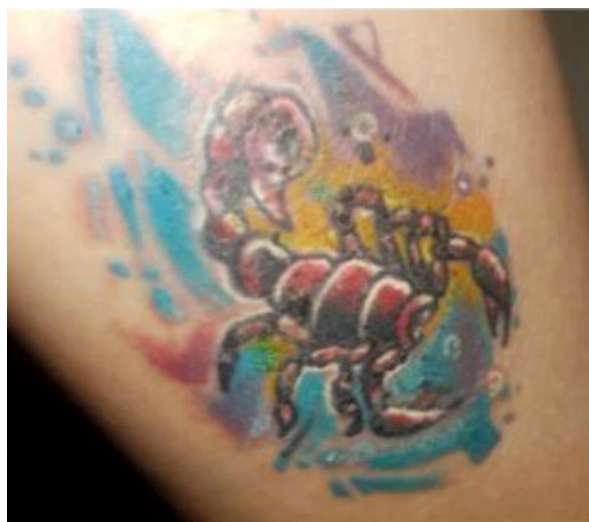


Photo 17. Colour retouching.



Photo 18. Severe contact reaction to tattoo retouching.

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