Tridimensional Matryoshka Tattoo: An Important Adverse Reaction

Dear Editor,

Tattooing is a global and ancient practice that has endured until the present day. It was originally used to indicate religious beliefs, tribal affiliation, loyalty to a leader, or had a therapeutic function.

Adverse reactions from tattooing are common, and cutaneous reactions to red pigment have been widely reported (1,2).

Herein we report a case of a 30-year-old female patient admitted to our Department of Dermatology for a reaction to a tattoo localized at the violet and black areas of the tattoo on the upper part of her left leg.

The patient reported that the tattoo had been made two years earlier, but the cutaneous alterations appeared after she decided to change the color from pink to violet.

On physical examination, multiple erythematous nodular itching lesions were present at the areas of the tattoo in which the violet and black color were used (Figure 1).

She had undergone antibiotic therapy without resolution after which topical corticosteroids were applied with temporary remission of signs and symptoms.

Personal and familial medical history were negative. The patient reported a jewelry allergy that had never been investigated.

Based on the suspicion of an allergic reaction we decided to execute a patch test SIDAPA series and patch test special tattoo series (copper sulfate 1% water, dimetilaminoazobenzene-p 1%, aminoazotoluene-o 1%, blue scattered 3 1%, blue scattered 124 1%, yellow scattered 3 1%, orange scattered 3 1%, red scattered 1 1%, gentian violet 2%, cadmium chloride 1% in water, nickel sulphate 5%, iron chloride 2% in water, potassium dichromate 0.5%, chromium trichloride 2%, aminoazobenzene-p 0.25%, cobalt chloride 1%, aluminum chloride 2%, titanium dioxide 0.1%, zinc 2.5%, mercury chloride 0.05% in water, kathon cg 0.01% in water, phenol 0.5%, ethylenediamine hydrochloride1%, phenylenediamine base-p 1%, formaldehyde 1% in water, phthalic anhydride 1%, rosin 20%, dibutyl phthalate 5%, hexamethylenetetramine 1%, benzophenone 5%).

Both series of patch test showed positivity for nickel sulfate 5% at 48 hours (++) and 72 hours (+++).

We then performed a 4 mm punch biopsy of the nodular lesions localized at the black and violet areas. The histological examination revealed dermal sclero-

Figure 1. Erythematous, itching, and nodular lesions localized at the violet and black areas of the tattoo.

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sis characterized by inflammatory reaction with lympho-mononuclear infiltration in the perivasal zone. Macrophages with red and black pigment were present. The histological pattern was compatible with a granulomatous reaction.

Tattooing can result in a wide variety of complications, whose prevalence and incidence still remain unclear. Some authors (3) classify such cutaneous complications in various ways, such as according to:

- the length of their evolution: acute and chronic reactions;

- the delay of onset after tattooing: early – during the healing phase – or delayed – after tattoo healing;

- the type of reaction: infection, hypersensitivity reaction, etc.

The practice of tattooing may have local or systemic complications. Dermatoses such as psoriasis, systemic erythematous lupus, sarcoidosis, lichen planus, and pseudo-epitheliomatous hyperplasia can be localized in the area of the tattoo, but allergic sensitivity to one of the pigments is the most frequent cause of dermatological reactions in the site of tattoo (4,5). In fact, adverse reactions to tattoo pigments, especially the red one, are well-described in literature. Furthermore, these compounds frequently contain components which are not systematically characterized.

In our case, the granulomatous reaction did not correspond to an allergic reaction to the pigment. In fact, the patch test was negative for all pigments investigated, only showing a positive result for nickel sulfate. However, the specific and well-defined localization of the nodular lesions on the black and violet areas led us to hypothesize that the tattoo pigments in these areas contained some unknown component causing the reaction. In our opinion, a possible explanation could be that the new pigment that had been used contained a small amount of nickel sulfate, which caused the granulomatous reaction.

In conclusion, we presented this clinical case to emphasize the widespread incidence of tattoo-related adverse effects, which are mostly caused by red pigment. Dermatologists should constantly strive familiarize themselves with current research on this practice and its complications. On the other hand, people with potential risk factors for adverse reactions should refer to a specialist before getting tattoos. Tattooists should use a checklist and informed consent to screen people with such potential risk factors.

Furthermore, it is necessary to perform additional studies concerning ink and pigment components, with the aim of systemically characterizing the substances used in tattoos.

Lastly, as emphasized by our case, patients at risk should referred to the dermatologist not only before getting a new tattoo but also in case of color changes in a pre-existing tattoo.

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Antonella Tammaro[1], Chiara Iacovino[1], Francesca Magri[1], Alessandro Capalbo[1], Domenico Giordano[1], Romana Parisella Francesca[2], Severino Persechino[1], Camilla Chello[1], Gabriella De Marco[1]

[1]NESMOS, Sant'Andrea Hospital, Dermatology Unit, Sapienza, University of Rome, Italy

[2]Queensland University, Faculty of Medicine, Brisbane, Australia

Corresponding author:

Antonella Tammaro, MD, PhD

NESMOS, Sant'Andrea Hospital, Dermatology Unit, Sapienza, University of Rome

Via di Grottarossa 1035

00189 Rome

Italy

tammaroantonella@gmail.com

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