

Cutaneous lymphoid hyperplasia caused by cosmetic lip tattoo successfully treated with tacrolimus 0.1% ointment

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CASE REPORT

A 52-year-old Caucasian woman was referred to our Contact Eczema Department with a vermillion skin reaction after a micropigmentation tattoo lasting 1 year. She reported a tattoo micropigmentation 5 years earlier. She had no significant past medical or family history.

The primary care physician had treated the lesion with acyclovir for 1 year.

Physical examination showed red papules and nodules on the lip vermillion, exclusively affecting the tattooed area (Figure 1A). Patch tests were performed with the European Comprehensive Baseline Series (Chemotechnique Diagnostics, Vellinge, Sweden), the Textile

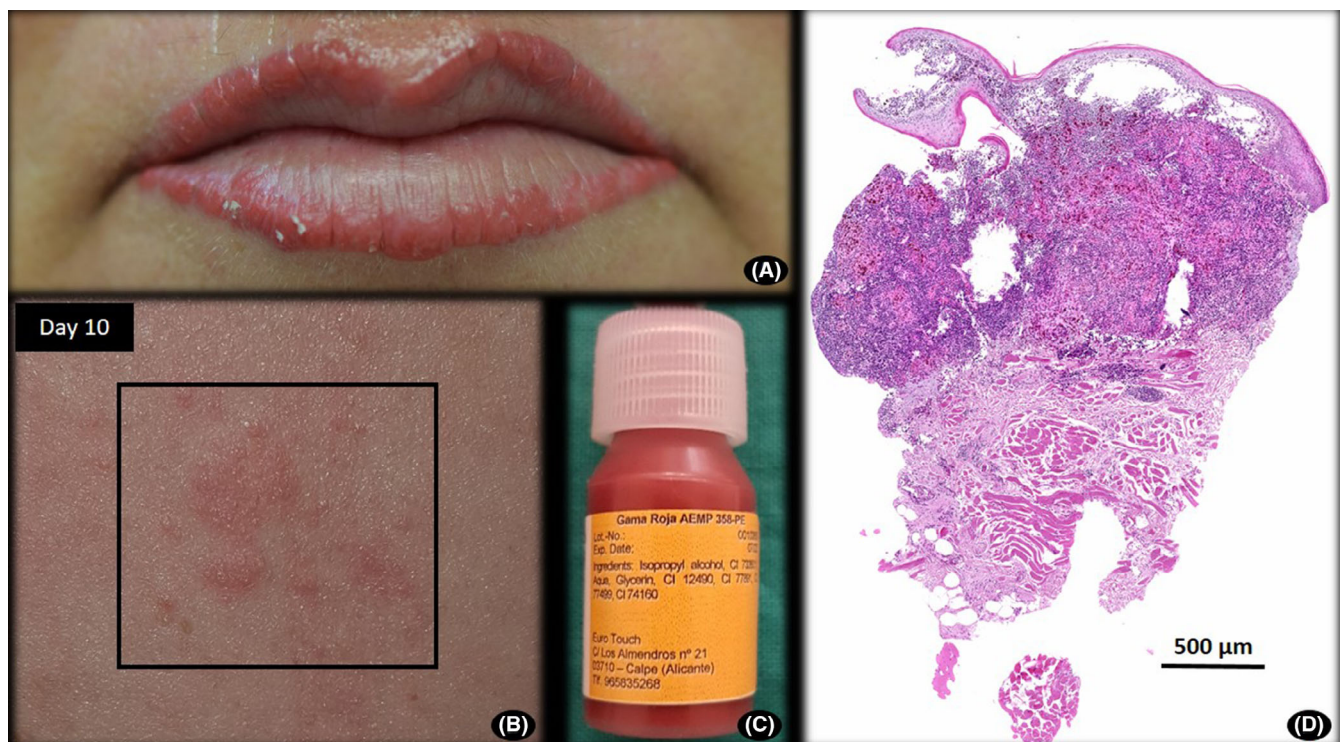


FIGURE 1 (A) Linear red papule-nodules on the lip vermillion. (B) Delayed reaction at day 10 with the ink tattoo (open test). (C) tattoo ink. (D) dense lymphoid infiltrate located in dermis (Hematoxylin & Eosin $\times 1$)

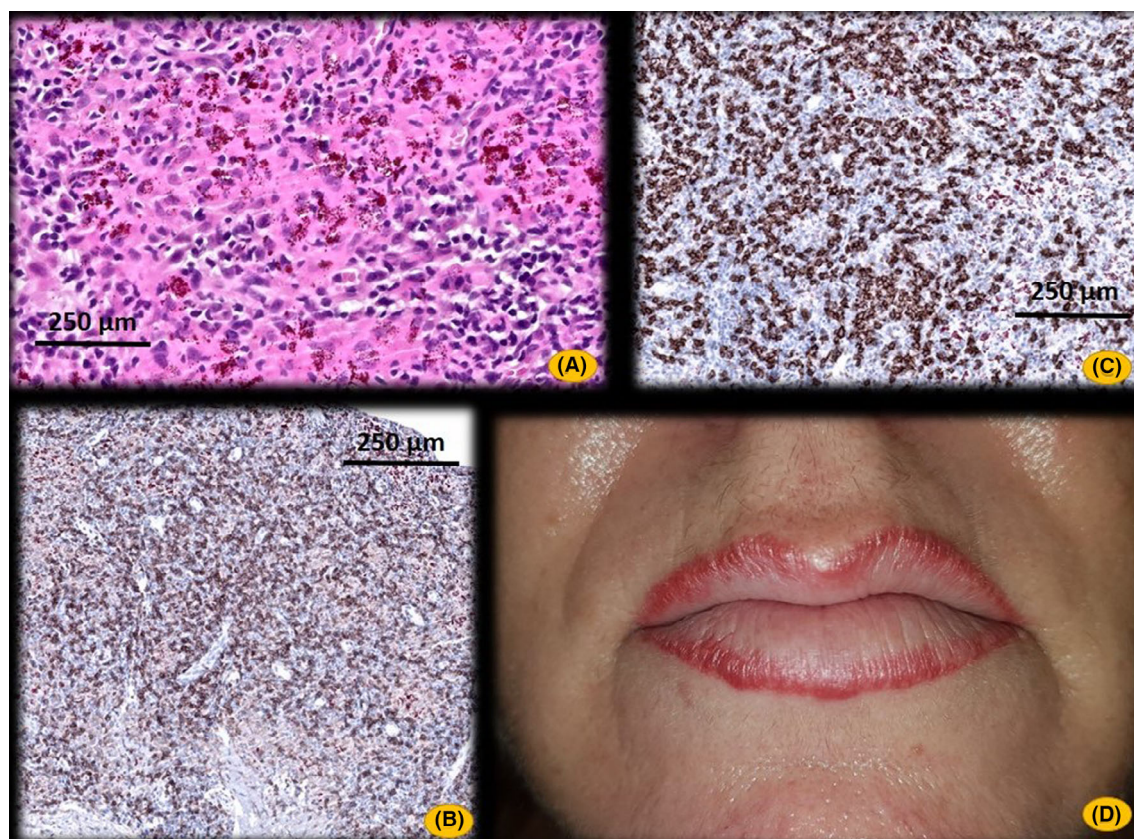


FIGURE 2 (A) Presence of exogenous red pigment (Hematoxylin & Eosin $\times 40$). (B) Staining positivity for CD3 T lymphocytes (CD3 $\times 10$). (C) Staining positivity for CD20 B lymphocytes CD4 $\times 20$). (D) Successful treatment with tacrolimus 0.1% ointment after 4 weeks of treatment

Colours and Finish series (Chemotechnique Diagnostics), a metal series (Chemotechnique Diagnostics), and an open test with tattoo ink "as is". The results were interpreted according to the criteria of the International Contact Dermatitis Research Group. Patch tests were read on day (D) 2 and D4. The patient showed a positive patch test reaction to tattoo ink (Figure 1C) "as is" at D10 (delayed reaction) (Figure 1B). A skin lip biopsy revealed cutaneous lymphoid hyperplasia (Figure 1D). The presence of exogenous red pigment was observed (Figure 2A). Staining demonstrated CD3 and CD4 lymphocytes (Figure 2B,C). A skin biopsy of the trunk reaction of a patch test with tattoo ink "as is" showed the same histopathological findings. The patient refused administration of intralesional corticosteroids. Topical tacrolimus 0.1% ointment twice daily was prescribed. The patient showed almost complete improvement at 1-month follow-up (Figure 2D).

Cutaneous lymphoid hyperplasia caused by permanent makeup ink (CI 12490; CAS: 6410-41-9) was diagnosed. Currently, the patient is still being treated with tacrolimus ointment three times a week with no recurrence.

DISCUSSION

The popularity of cosmetic facial tattooing is increasing. Red pigments are one of the more common culprits,¹ and pure colour red pigment (CI 12490) is used in soaps and cosmetics.

Cutaneous lymphoid hyperplasia is considered less common than granulomatous or lichenoid reactions. Pseudolymphoma is a rare complication that occurs from tattooing² but the etiology remains unclear. Lymphocyte proliferation may be induced by an immunogenic pigment, which leads to sensitization and development of a delayed hypersensitivity reaction. Photosensitivity has been reported in some cases.³ Photochemical reactions to pigment or pigment-breakdown products in situ in the skin, with induction of reactive oxygen species, is presumed to be one of the causative mechanisms. Histopathological study allows accurate diagnosis of pseudolymphoma. The delay of onset of pseudolymphoma after tattooing ranges from 2 months to 2 years.⁴ Pruritus, swelling, and infiltration can be reported by the patient. Patch tests can be performed, although they give disappointing results. Metals (nickel, palladium or mercury), carbon black, diketopyrrolopyrrole, quinacridone, anthraquinone, dioxazine (purple), or quinophthalone (yellow) dyes have been detected during patch tests for tattoo hypersensitivity.⁵ An open test is recommended with the ink "as is" (Euro-Touch Dermasafe, Alicante, Spain). Sometimes the sensitizing agent is not declared on the ink label, so it is necessary to contact the manufacturer to ascertain the exact ingredients of the ink for further testing.

Treating inflammatory reactions from tattoos is challenging. Corticosteroid ointments give disappointing results, according to the study by Kluger et al.⁶ Intralesional triamcinolone is a therapeutic option, although skin atrophy may result as an unwanted side effect. Hydroxychloroquine was recently reported to be a therapeutic option in an

allergic reaction to a red cosmetic lip tattoo.⁷ Tacrolimus ointment offers an interesting, long-term anti-inflammatory effect, without unwanted side effects. It is possible that the response to topical tacrolimus in lymphomatoid contact dermatitis⁸ is better than in granulomatous reactions, although there is no information on this in the literature.

In conclusion, we present a case of cutaneous lymphoid hyperplasia caused by micropigmentation using red (CI 12490) makeup ink. Complete response to tacrolimus ointment was observed in our patient. To our knowledge, this is the first published case where treatment with tacrolimus was successful.

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AUTHOR CONTRIBUTIONS

Francisco José Navarro Triviño: Conceptualization; data curation; formal analysis; investigation; methodology; validation; visualization; writing-original draft; writing-review and editing. **María José Naranjo-Díaz:** Conceptualization. **Ricardo Ruiz Villaverde:** Supervision; validation; writing-original draft.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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