

Successful Medical Treatment of a Severe Reaction to Red Tattoo Pigment

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ABSTRACT

Tattoo allergies are often eczematous skin rashes that can be complicated by ulceration and infection. These allergies are difficult to resolve, sometimes requiring surgical or laser intervention, with varying success. Here we present a case of a 29-year-old woman with a serious skin allergic reaction to red tattoo ink that ulcerated and became secondarily infected. The patient expressed a desire to have the tattoo allergic reaction treated while preserving the cosmetic appearance of her tattoo for sentimental reasons. This case is being presented to provide an effective treatment algorithm for managing allergic tattoo reactions with ulceration and co-infection, while preserving the aesthetic integrity of the tattoo.

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CASE REPORT

A 29-year-old woman presented to dermatology clinic with an allergic reaction to a tattoo she had received two weeks previously. She was otherwise in excellent health, took no other medications, and had no history of allergies. This was her first tattoo and she expressed a specific desire to preserve the cosmetic integrity for personal reasons. On physical exam, there was focal erythema and ulceration in the areas of her tattoo with red pigment, and superficial honey-colored crusting indicative of co-infection (Figure 1). Review of systems was negative for any signs of extracutaneous allergic reaction. We educated the patient that based upon her physical exam findings, her skin reaction represented an allergy to tattoo ink, and offered medical management to preserve the cosmetic appearance of the tattoo. We also provided clear guidance to consider avoiding future tattoos, as the allergic reaction to a future tattoo may be worse than the first – locally with regards to her skin, and with a potential for systemic allergic symptoms.

She was treated with twice daily application of mupirocin ointment for one week, at which point the superficial infection resolved. The affected areas were then treated with twice daily application of white petrolatum to promote wound healing and 0.1% triamcinolone ointment to decrease the allergic reaction to the tattoo dye and decrease associated inflammation. After three months, the ulcers had fully re-epithelialized, and the patient was pleased she was able to preserve the integrity of her tattoo (Figure 2).

DISCUSSION

Tattoo allergies typically present with an eczematous eruption that may include focal edema, pruritus, papules, and/or nodules.[1] In rare instances, ulceration and co-infection can occur. This case is being presented to provide an effective treatment algorithm for managing allergic tattoo reactions with ulceration and co-infection, while preserving the aesthetic integrity of the tattoo.

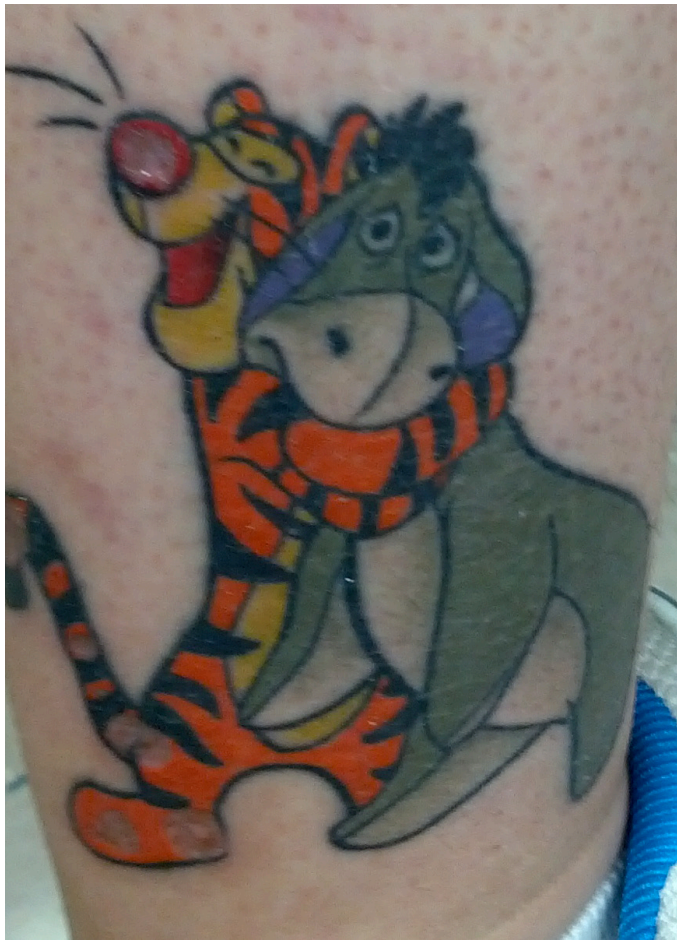
Hypersensitivity reactions to tattoos occur most frequently in areas of red pigment.[2] Mercury contained in red mercuric sulphide (cinnabar) has been identified as the causative agent associated with allergic reactions to red tattoos.[3] However, even when alternatives to mercury are used, sensitivity reactions may still occur. Other red dye pigments implicated in these reactions include sienna/red ochre (ferric hydrate), cadmium red (cadmium selenide), and organic vegetable dyes (sandalwood, brazilwood).[2] Since little regulation of tattoo ink composition exists, a single color can contain varying amounts of dyes and metals.[4] X-ray microanalysis has shown red tattoo pigment to include a number of metallic elements including aluminum, iron, calcium, titanium, silicon, mercury, and cadmium, all of which may cause allergic reactions.[5]

Patch testing to red pigments and their individual metallic components is often unreliable.[2] This may be due to the fact that pigments increasingly contain synthetic dyes that are not available for allergy diagnosis.[6] It has also been hypothesized that since the pigments are deposited with a needle directly into the dermis, they are presented only to local dendritic cells, and not to the epidermal Langerhans cells, which are the cells that react to patch testing.[6]

No consistently effective treatment for tattoo allergies has been reported. Conservative treatment options include topical, oral, and/or intralesional steroids, oral antihistamines, and protection from light. When these fail, destructive methods such as cryotherapy, electrosurgery, surgical excision, or laser (CO_2 laser, Q-switched lasers) have been utilized, with

FIGURE 1. Two weeks after tattoo placement, there is erythema, ulceration, and superficial infection (honey-colored crusting) in the areas of red pigment only.

FIGURE 2. Three months after anti-bacterial, anti-inflammatory, and topical wound care therapy, the areas of previous ulcerations have re-epithelialized, and the aesthetic integrity of the tattoo is preserved.



varying success.[1] Ironically, laser removal of tattoos has been reported to stimulate an allergic response itself, as it causes fragmentation of the pigment-containing cells, exposing the pigment to the extracellular environment where it can be recognized as foreign by the immune system.[7] It may also result in a systemic allergic response and potentially induce anaphylaxis, though this response has not been well documented in the medical literature.

This case illustrates that is possible to effectively manage a cutaneous tattoo allergy with co-morbid ulceration and infection with medical therapy alone. The treatment plan as outlined above spares patients the discomfort of surgical treatment and circumvents the risk of triggering a systemic allergic reaction with the use of laser modalities. Based on our patient's success, we believe that medical management is an attractive option, and should be considered as first-line therapy for treating tattoo allergies in patients seeking to preserve the cosmetic integrity of their tattoo.

DISCLOSURES

None of the authors have potential conflicts to declare.

REFERENCES

1. Juhas E, English JC. Tattoo-associated complications. *J Pediatr Adolesc Gynecol.* 2013 April; 26(2): 125-9.
2. Mortimer NJ, Chave TA, Johnston GA. Red tattoo reactions. *Clin Exp Dermatol.* 2003 Sep; 28(5):508-10.
3. McGrouther DA, Downie PA, Thomspon WD. Reactions to red tattoos. *Br J Plast Surg* 1977 Jan; 30 (1): 84-5.
4. Hubert-Preedy J, Bonhomme K, Hahn B. Female with Rash. Cutaneous tattoo reaction. *Ann Emerg Med.* 2013 Sep;62(2):275,279.
5. Sowden JM, Byrne JPH, Smith AG, et al. Red tattoo reactions: X-ray microanalysis and patch test studies. *Br J Dermatol* 1991 Jun;124 (6): 576-80.
6. Zwad J, Jakob A, Gross C, Rompel R. Treatment modalities for allergic reactions in pigmented tattoos. *J Dtsch Dermatol Ges.* 2007 Jan; 5(1): 8-13.
7. Ashinoff R, Levine VJ, Sotter NA. Allergic reactions to tattoo pigment after laser treatment. *Dermatol Surg.* 1995 Apr;21(4):291-4.

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