Allergic Reactions to Red Tattoo Ink: Comparison of Two Patients with Secondary Dermatologic Consequences

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BACKGROUND & PURPOSE

Allergic tattoo reactions are most commonly seen with red pigment. Reactions may be diagnosed clinically or may require biopsy with histological examination. If left untreated, tattoo reactions may progress to secondary consequences such as ulceration, infection, and scar formation. Various treatments include topical/oral steroids, intralesional kenalog, laser treatments, excision and/or superficial radiation therapy. We compare two treatment plans that were implemented in two patients with similar severe red tattoo reactions.

OBJECTIVE

The aim of this report is to present two cases of unusually severe hypersensitivity reactions to red pigmented tattoos and to discuss the clinically challenging treatment options. These two cases compare secondary dermatological reactions treated with either topical/oral/intralesional triamcinolone vs. excision with Superficial Radiation Therapy (SRT) and overall outcomes are discussed.

METHODS

Case 1 is a 26 year old Caucasian male who presented with a non-healing, indurated, well defined plaque limited to the red tattooed areas of his one week old multicolored tattoo (Fig 1A). The lesion was treated with clobetasol 0.5% ointment twice a day. On his two week follow up, the pain had seemed to improve slightly and the course was continued. Two weeks later, small denuded areas formed in the red tattoo and mupirocin was added. Unfortunately, the red tattooed areas continued to worsen with severe ulcerative necrotic changes (Fig 1B). High dose prednisone was prescribed along with lidocaine 4% gel and intralesional triamcinolone 5.0mg/cc x 2cc was injected into the painful areas. Empiric bactrim DS was started but bacterial culture proved negative. An additional 6cc of intralesional triamcinolone 5.0mg/cc was injected one week later (Fig 1C). Medical care with corticosteroids continued until the inflammatory reaction subsided and the red foreign body tattoo was phagocytized out to leave a relatively smooth, non-pigmented lesion void of the culprit antigen (Fig1D).

Case 2 is a 67-year-old female who previously sought treatment at another clinic and presented with a history of a painful, ulcerated tattoo on her left superior back one week after getting a tattoo (Fig2A). Her red inflammatory reaction was limited to the red pigment in the rose petals of her multicolored tattoo. She was prescribed mupirocin ointment daily without any corticosteroids. When the lesion continued to ulcerate (Fig 2B), it was excised and allowed to heal by secondary intention due to its large size. Although the red tattoo reaction had been removed, the secondary keloid formation was unbearable due to the severe itching and sharp pains in the excised area that did not respond to intralesional triamcinolone injections (Fig 2C). The patient's keloid was treated with re-excision and intermediate closure (Fig 2D) followed immediately by superficial radiation therapy (Fig 2E).

Case 1:

FIG 1A

FIG. 1B

FIG. 1C

FIG. 1D

Case 2:

FIG. 2A FIG. 2B FIG. 2C

FIG. 2D FIG. 2E

DISCUSSION AND CONCLUSION

There is a rising incidence of tattoo reactions, predominantly with the use of red dye, and there is an urgency to educate the community about the risks of developing severe allergic dermatitis, in addition to granulomatous reactions, from various ingredients used in the ink.

Allergic dermatitis is seen predominantly with red pigmented tattoos containing azo compounds. When azo compounds are combined with energy and heat it produces amines that trigger the immune system's common allergens causing pruritus, erythema and tenderness[5]. Haptens are small molecules in the immune system that form a complex mechanism to initiate T cells for specific allergens causing skin sensitization[4]. The level of reaction is dependent on the concentration and the amount of sensitivity to allergens. These eczematous reactions can remain dormant up to a year post receiving a tattoo. Patch testing has not been helpful in identifying the allergen.

Although laser therapy is the gold standard for removal of non-inflammatory tattoos, studies have reported some success with the use of Q-switched 532 nm Nd:YAG laser[3]. However, laser removal of inflamed tattoos is often contraindicated due to its exacerbation of the allergic response. Furthermore, protection against ultraviolet (UV) light plays a vital role in the prevention of allergic tattoo reactions, specifically the photo-allergic subtype, as tattoo pigment is placed in collagen directly below the first layer of the skin, making it more prone to sun damage[2]. Current recommendations for new tattoo care include using sunscreen of SPF 30 or higher directly on the tattooed area, as well as covering the tattoo with clothing to physically block damaging and potentially allergy-inducing UV rays[1].

RESULTS

Conservative medical management should be recommended as the first line of therapy in the management of inflammatory red pigmented tattoo reactions to protect the aesthetic integrity of the skin. As seen in Case 1, the anti-inflammatory and immunosuppressive effects of the steroids eventually allowed resolution of the hypersensitivity reaction without multiple surgeries and resulting scarring seen in Case 2.

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DISCLOSURES

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