

A rare type of reaction to tattoo materials: A granuloma annulare-like reaction

Kambiz Kamyab, MD¹
Samaneh Jamshidi, MD¹
Hamed Ghasemi, MD²
Maryam Seraj, MD¹

1. Department of Dermatology, Tehran University of Medical Sciences, Razi Hospital, Tehran, Iran

2. Department of Ophthalmology, Tehran University of Medical Sciences, Farabi Hospital, Tehran, Iran

Corresponding Author:
Samaneh Jamshidi, MD
Department of Dermatology, Tehran University of Medical Sciences, Razi Hospital, Tehran, Iran
Email: drsamanehjamshidi@yahoo.com

Conflict of interest: None to declare

Received: September 13, 2010

Accepted: December 21, 2010

Granuloma annulare represents a reaction pattern that is recognized as idiopathic in many cases but is attributed to a variety of inciting factors in some cases. In this report, we present a case of granuloma annulare-like pattern reaction to tattoo pigment.

Keywords: granuloma annulare, tattoo, side effect, necrobiotic reaction

Iran J Dermatol 2011; 14: 35-36

INTRODUCTION

Dermatologic side effects of tattoos are common and have been attributed to the metallic salts used in composition of the pigment. The histological patterns of tattoo reactions are diverse and consist of lichenoid infiltrate, granuloma, cutaneous lymphoid hyperplasia and photoallergic reactions, which are well described in text books ^{1,2}.

Granuloma annulare represents a reaction pattern that is recognized as idiopathic in many cases but is attributed to a variety of inciting factors in some cases such as insect bites, cat bite, waxing-induced pseudofolliculitis, tuberculin tests, Bacille Calmette-Guerin (BCG) vaccination, hepatitis B vaccination, etc. In this report, we present a case of granuloma annulare-like pattern reaction to tattoo pigment ^{3,4}.

CASE REPORT

A 31-year-old man was visited at our clinic with an indurated area on the tattoo of both upper arms. He had this tattoo since seven months ago

and one month after tattooing, the lesion became indurated, scaly and itchy. The tattoo material was composed of red, black, and green pigments. Small nodules were seen in the black and red areas of tattoos and his chief complaint was scaling and itching (Figure 1,2).

Histopathological examination showed a granulomatous reaction pattern (necrobiotic type),

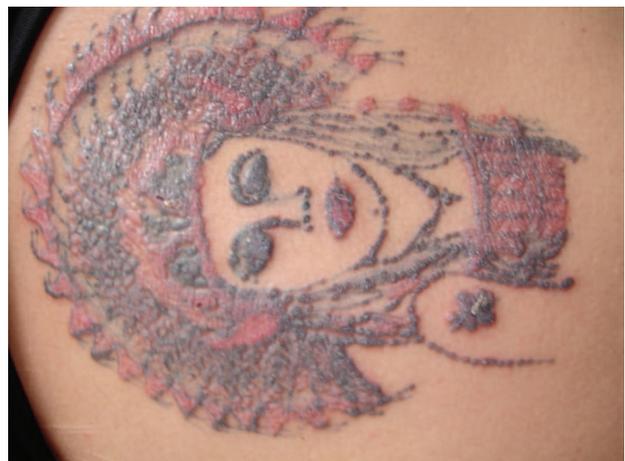


Figure 1. Clinical appearance of the lesion on the arm



Figure 2. Clinical appearance of the lesion on the arm

busy dermis due to increased inflammatory cells, mainly histiocytes and lymphocytes, which were arranged around vessels and between collagen bundles separated by connective tissue mucin. Necrobiosis, surrounded by histiocytes and lymphocytes, were seen in the superficial and mid dermis. Black pigments deposition was also noted in dermis (Figure 3). This histopathologic feature mimics granuloma annulare reaction.

DISCUSSION

Hypersensitivity reactions to tattoo lesions have been reported in many papers and are well recognized⁵. Hypersensitivity reactions, although most common with red (mercuric sulphide) tattoos, have also been reported with yellow (cadmium sulphide), brown (iron oxide), blue (cobalt), purple (manganese), green (chromium) and black (carbon) tattoo. A lichenoid infiltrate is the most common reaction to tattoo dyes, but other types of reaction like granulomas, cutaneous lymphoid

hyperplasia and photoallergic reactions are reported. Pathogenetic mechanisms implicated in reactions to tattoo pigments include a localized T-cell mediated delayed hypersensitivity response (granulomatous and lichenoid reaction), B-cell mediated follicular centre cell reaction (cutaneous lymphoid hyperplasia or pseudolymphoma), photoinduction (spongiotic), and even a Koebner response (granulomatous reaction as a manifestation of systemic sarcoidosis)¹⁻³.

Granuloma annulare is a common dermatological condition that is generally considered to be idiopathic; however, as mentioned earlier, it has an association with defined etiologies⁶. To our knowledge, there is a limited number of reports about a tattoo reaction histologically resembling granuloma annulare. In our case, the development of this reaction pattern, which was confined to the tattoo area, probably represented a delayed hypersensitivity reaction.

REFERENCES

1. Rubegni P, Fimiani M, de Aloe G, Andreassi L. Lichenoid reaction to temporary tattoo. *Contact Dermatitis* 2000; 42: 117-8.
2. Balfour E, Olhoffer I, Leffell D, Handerson T. Massive pseudoepitheliomatous hyperplasia: an unusual reaction to a tattoo. *Am J Dermatopathol* 2003; 25: 338-40.
3. Goldstein AP. Histologic reactions to tattoos. *J Dermatol Surg Oncol* 1979; 5: 896-900.
4. Yang DS, Kim SC, Lee S, Chung Y. Foreign body epithelioid granuloma after cosmetic eyebrow tattooing. *Cutis* 1989; 43: 244-7.
5. Rapaport MJ. Granuloma annulare caused by injectable collagen. *Arch Dermatol* 1984; 120: 837-8.
6. Smith M, Downie J, DiCostanzo D. Granuloma annulare. *Int J Dermatol* 1997;36:326-33.

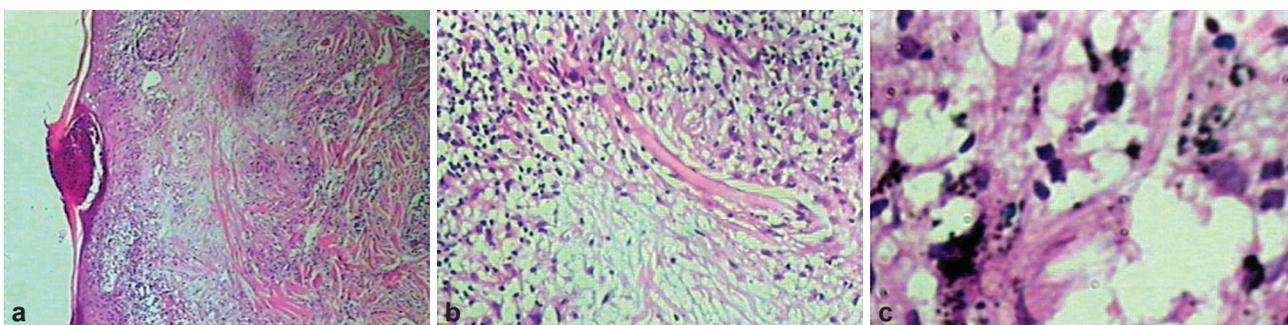


Figure 3. Histopathologic features. a, b. increased inflammatory cells, mainly histiocytes and lymphocytes, which were arranged around vessels and between collagen bundles separated by connective tissue mucin. Necrobiosis, surrounded by histiocytes and lymphocytes, were seen in the superficial and mid dermis (H&E *10, H&E*40). c. Black pigments deposition was also noted in dermis (H&E*100).