Perforating granuloma annulare-like tattoo reaction within the red tattoo: a case report

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ABSTRACT:

SITTHIKORNSAWAT W, SUDTIKOONASETH P, KATTIPATHANAPONG P.PERFORATING GRANULOMA ANNULARE-LIKE TATTOO REACTION WITHIN THE RED DYE OF TATTOO: A CASE REPORT. THAI J DERMATOL 2015; 31: 237-242.

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Various cutaneous pathology have been reported in association with tattoo. These include lichenoid infiltrate, granulomatous, spongiotic, psoriasiform, pseudolymphomatous and pseudoepitheliomatous patterns. Granuloma annulare [GA]-like palisading granulomatous reaction to tattoo is rare and there were only six cases reported so far. Here, we describe a patient with GA-like tattoo reaction to red tattoo.

Key words: Granuloma annulare, tattoo reaction

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บทคัดย่อ:

วลัยรัตน์ สิทธิกรสวัสดิ์, ปุณวิศ สุทธิกุลณเศรษฐ์, ปิ่นนรี ขัตติพัฒนาพงษ์ รายงานผู้ป่วยที่มีปฏิกิริยาทางผิวหนังจากการสักในบริเวณรอยสักสีแดง ร่วมกับมีลักษณะพยาธิวิทยาคล้ายโรค PERFORATING GRANULOMA ANNULARE. วารสารโรคผิวหนัง 2558; 31: 237-242.

สถาบันโรคผิวหนัง

ปฏิกิริยาทางผิวหนังอันเนื่องมาจากการสักมีลักษณะทางพยาธิวิทยาในหลากหลายรูปแบบเช่น lichenoid infiltrate, granulomatous, spongiotic, psoriasiform, pseudolymphomatous และ pseudoepitheliomatous patterns เป็นต้น รายงานฉบับนี้นำเสนอผู้ป่วยที่มีปฏิกิริยาทางผิวหนังในบริเวณรอยสักสีแดง ที่มีลักษณะพยาธิวิทยาคล้ายโรค Perforating granuloma annulare ซึ่งพบได้น้อยมาก มีรายงานผู้ป่วยลักษณะนี้เพียง 6 ราย

คำสำคัญ: ปฏิกิริยาจากการสัก

Case report

A 59-year-old Thai man presented with itching, swelling and erythema of a tattoo over his left forearm for 5 months. The tattoo was done 6 years previously by an amateur tattooist using black, blue and red inks. The rash has allocated over the red-tattooed area extended slightly to the surrounding skin, areas of black and blue tattooing at the same time were not affected (Figure 1) and (Figure 2). The patient had no cutaneous manifestations of GA or any evidence of systemic disease. His past medical history was unremarkable, and he did not take any medication. On dermatologic examination, multiple erythematous plaques with superficial scaling were seen over areas where the red ink was originally present, while the black and blue ink was uninvolved. On palpation, it was indurated, non-tender, and did not exude any fluid. Examination was otherwise unremarkable with no sign of systemic disease.

Histopathological examination of the specimen revealed focal aggregates of histiocytes reminiscing palisading granuloma located on the superficial dermis. Focal epidermal eruption is noted on the epidermis above the lesion. Degeneration of collagen in the center is noted. Black particles are identified (Figure3), and (Figure 4).

The above histopathologic findings support the diagnosis of perforating GA-like tattoo reaction. No microorganism were seen on Periodic Acid Schiff [PAS] and acid fast staining. Culture were negative. His routine examinations were within normal limits. He was treated with intralesional corticosteroid and clinical improvement was thereafter noted.



Figure 1



Figure 2

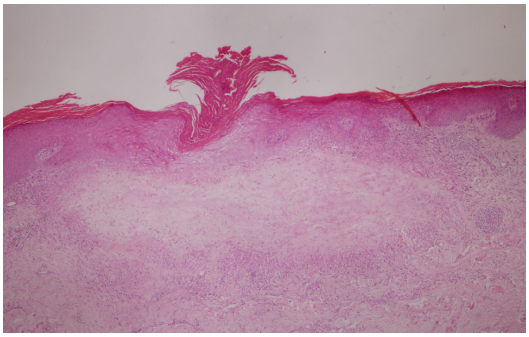


Figure 3

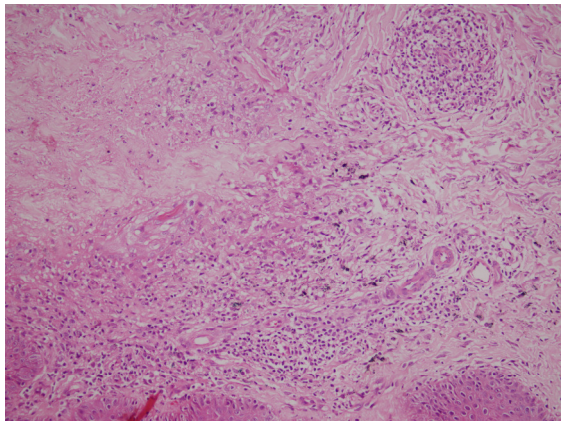


Figure 4

Discussion

Various cutaneous pathology, including inflammatory skin reactions, transmissible infections, and rarely neoplasia have been reported in association with tattoo[1]. Hypersensitivity to exogenous tattoo pigments of many shades has been well described in the literature. Hypersensitivity reaction, 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] tattoos[2]. Adverse reactions to tattoos occur to the exogenous pigment or its carrier solution. The most common inciting agent in adverse reactions to tattoo pigment containing mercury though reactions can also occur to other metal salts and vegetable dyes.[3]

A lichenoid infiltrate is the most common reaction to permanent cosmetic tattoo, but other patterns are also reported[4,5]. These include granulomatous, spongiotic,

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psoriasiform, pseudolymphomatous and pseudoepitheliomatous patterns[1,6].

GA is a benign, common cutaneous disease that classically presents as localized clusters of small papules, coalescing to annular plaques. Numerous clinical variants of GA have been described with overlapping features including patch, papular, nodular, generalized, perforating and subcutaneous GA. The 2 basic pattern of histology are seen in GA, classic palisading and interstitial. Although both may be seen in same specimen comprising of a mixed pattern[7].

Table 1 Summary of Previously Reported Cases of Granuloma annulare Tattoo Reaction

References	Age, yrs/Sex	Ink Color	Interval Between Tattooing and Onset of Symptoms	Clinical Presentation	Histological Type	Systemic Illness
Gradwell and Evans[8]	56/M	Red	37 yrs	Multiple small, indurated papules with scaling involving the red areas	Perforating GA	NA
Bagwan et al[9]	34/M	Blue/ black	7 mo	Erythematous, pruritic, and inflamed area	Palisading GA	None
Kamyab et al[10]	31/M	Red/ black	7 mo	Itchy, indurated small nodules arising in the red and black areas	Palisading GA	NA
Kluger et al[11]	36/M	Red	10 yrs	Itchy, infitrative reaction limited to the red area	Palisading GA	None
Sweeney et al[12]	23/F	Red	4 mo	Firm raised nodule localized to red areas	Perforating GA	None
Andrew et al[13]	35/F	Red	3.5 yrs	Erythematous swelling localized to the red area with erythema extending to surrounding skin	interstitial GA + NL	None
Current case	59/M	Red	6 yrs	Erythematous swelling localized to the red area with erythema extending to surrounding skin	Perforating GA	None

F, female; M, male; NA, information not available

The 6 cases of GA-like tattoo reaction were all of the established palisaded or perforating type[8-13] **[Table1]**. GA-like histology is a reaction pattern that is generally idiopathic. The exact mechanism is unknown but possible theories include type IV delayed hypersensitivity, Th1 inflammatory reaction with IFN-Y-provoking lymphocyte, lymphocyte-mediated activation of monocytes, and elastic tissue injury as the primary alteration[14].

In general, steroids, laser therapy, and excision are the treatment for allergic reactions to tattoos. Our patient had been treated with intralesional corticosteroid one time and he lost to follow up.

In conclusion, we report a case of a localized granulomatous dermatitis to the red tattoo that histologically resembled perforating GA.

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