

# SKINimages

## Case of Geometric Papules and Plaques within a Tattoo

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### CASE PRESENTATION

A 36-year-old man presented to dermatology clinic reporting a 3-month history of a pruritic rash consisting of scaly papules and plaques within a 5-year-old tattoo on his forearm and other non-tattooed areas on the torso. His medical history was notable for chronic plaque psoriasis with previous complete clearance on guselkumab. Guselkumab was discontinued eight months prior to presentation due to loss of insurance coverage. The patient was otherwise healthy and had no other known cutaneous disease.

Physical exam revealed numerous well-demarcated, skin-colored to erythematous, scaly 1-2 mm papules and plaques confined within the lines of a left-forearm tattoo. There were additional salmon-colored plaques on the torso. There was no peripheral lymphadenopathy, and laboratory results were unremarkable.

The patient's presentation was favored to be secondary to recurrence of psoriasis. He was restarted on guselkumab and experienced complete resolution of his symptoms within 8 weeks.

### DISCUSSION

The Koebner phenomenon (KP), also known as isomorphic reaction, describes the onset of new lesions of a pre-existing dermatosis in areas of injured, previously normal skin, frequently observed in psoriasis<sup>1</sup>. Eruption of psoriatic lesions in uncommon locations of the body such as around the eyes, on the penis, in scars, or confined to tattoos suggests KP may be responsible<sup>1</sup>.

Decorative tattooing is a well-described cause of physical trauma causing KP, though other triggering factors have been reported, including iatrogenic or chemical stimulation, mechanical stress, or secondary to viral infections. Superficial injury alone is typically not sufficient to induce development of new lesions<sup>1</sup>. Although new lesions are usually seen days to weeks after cutaneous injury, this case illustrates a delayed response with psoriasiform plaques occurring roughly five years after receiving a tattoo. The rapid clearance of the patient's rash after resuming guselkumab supports the clinical diagnosis.

KP should be differentiated from other inflammatory and infectious complications of

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**Figure 1.** A. Numerous 1-2 mm skin colored papules confined to a segment overlying a left-arm tattoo. B. Close up photograph of the 1-2 mm skin-colored scaly papules.

tattoos. Granulomatous reactions can be observed as a foreign body reaction or sarcoidal type reaction. Foreign body granuloma commonly occurs as a foreign body-type reaction to pigment, most often red ink, with numerous pigment-containing giant cells or as a hypersensitivity reaction with few giant cells<sup>2</sup>. Cutaneous sarcoidosis may present as a wide spectrum of morphologies, including maculopapular lesions, plaques, nodules, and lupus pernio, among others, making clinical diagnosis alone difficult<sup>3</sup>. On skin biopsy, the presence of noncaseating granulomas would be seen<sup>4</sup>.

Atypical mycobacterial infections can present with skin-colored to erythematous pruritic papules confined to tattoos, often within gray-wash ink, within days to weeks of tattooing.

Several outbreaks of *mycobacterium chelonae* infections linked to contaminated water used to make gray-wash ink have been reported<sup>5</sup>. Histopathology may reveal granulomatous and lymphoplasmacytic inflammation. Empiric treatment should be initiated if this is suspected as culturing mycobacterial species can be difficult, and therefore, may not confirm diagnosis.

Here, we report a case of psoriasis that presented as a delayed KP. Our case demonstrates an uncommon phenomenon of delayed KP triggered by permanent tattooing and highlights the importance of considering this diagnosis in patients with a history of dermatosis presenting with new lesions in unusual locations.

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**References:**

1. Zhang X, Lei L, Jiang L, et al. Characteristics and pathogenesis of Koebner phenomenon. *Exp Dermatol* 2022 doi: 10.1111/exd.14709 [published Online First: 20221117]
2. Incel Uysal P, Gurel MS, Behzatoglu K. A Tattoo-Associated Complication: Foreign Body Granulomatous Reaction. *Am J Dermatopathol* 2016;38(12):936-37. doi: 10.1097/dad.0000000000000570
3. Antonovich DD, Callen JP. Development of Sarcoidosis in Cosmetic Tattoos. *Archives of Dermatology* 2005;141(7):869-72. doi: 10.1001/archderm.141.7.869
4. Yanardag H, Tetikkurt C, Bilir M, et al. Diagnosis of cutaneous sarcoidosis; clinical and the prognostic significance of skin lesions. *Multidiscip Respir Med* 2013;8(1):26. doi: 10.1186/2049-6958-8-26 [published Online First: 20130322]
5. Sergeant A, Conaglen P, Laurenson IF, et al. Mycobacterium chelonae infection: a complication of tattooing. *Clin Exp Dermatol* 2013;38(2):140-2. doi: 10.1111/j.1365-2230.2012.04421.x [published Online First: 20120725]