The Development of Psoriasis Over a Silicone Granuloma: Case Report and Postulated Mechanism of Pathogenesis

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Abstract
Liquid silicone injections are used for soft tissue augmentation and have the potential to cause adverse effects. A 60-year-old woman who developed a psoriatic lesion over a silicone granuloma is reported. The clinical, dermatoscopic, and histological findings were characteristic of psoriasis. The patient was started on hydroxychloroquine for the treatment of the granuloma without any subsequent development of new psoriatic lesions. The presentation of psoriasis associated with a silicone granuloma in an immunocompetent patient is unique. The sequence of events is another example of a dermatosis occurring in an immunocompromised cutaneous district.

Introduction
Silicone is used for soft tissue enhancement. It can cause various adverse immunologic and local effects, such as cellulitis and granulomas. Indeed, adverse effects from liquid silicone injections have been reported several years after the procedure [1-3]. A woman who developed psoriasis of the skin overlying a granuloma on her gluteal cleft following liquid silicone injection is described and a potential mechanism of pathogenesis is postulated.

Case Presentation
A 60-year-old woman presented for evaluation of a pruritic plaque located on the sacral region that had been present for a year. She had received silicone oil injections into the site two years prior to developing the new skin lesion. Neither she nor her family had psoriasis.

Cutaneous examination revealed yellowish firm verrucous plaques bilaterally located on the skin of her gluteal cleft (Figure 1). The plaques were considered to be a lichenoid granulomatous reaction to the silicone. The patient received four monthly sessions of intralesional triamcinolone acetonide (2 ml of 10 mg/mL); she also used a high-potency topical corticosteroid (clobetasol, 0.05% ointment) once a day for four months, which provided no improvement.
FIGURE 1: Granulomatous reaction on the buttocks at the site of the silicone injections

Yellowish verrucous plaque (arrows) located on the gluteal clefts of both buttocks two years after silicone injection into the areas.

The initial plaques became red and a new 6-mm, erythematous plaque with a silvery scale developed on her right buttock (Figure 2). The morphology of the new right buttock plaque was different than that of her presenting skin lesions; the clinical differential diagnosis of the new plaque included squamous cell carcinoma, psoriasis, and lichen planus. Dermatoscopic evaluation of the new plaque showed a scaly surface with red globules characteristic of the papillary blood vessels observed in psoriasis (Figure 3).
FIGURE 2: Psoriasis plaque on the right gluteal cleft

Distant (A) and closer (B) views six months after the final injection of triamcinolone acetonide. The original plaques appear red (arrows) and a new 6-mm plaque with silvery scale (circle) on the right side of the gluteal cleft has developed.

FIGURE 3: Dermatoscopic image of the psoriasis plaque

The psoriasis plaque (circle) demonstrates a scaly surface with red globules characteristic of the blood vessels in the papillary dermis of psoriasis when the lesion is examined with a dermatoscope.

Six months after her final triamcinolone injection, a punch biopsy of the 6-mm plaque was performed. Microscopic examination of the epidermis demonstrated confluent parakeratosis with neutrophilic microabscesses, regular acanthosis, elongated rete ridges, and a thin or absent granular layer (Figure 4). The upper dermis showed chronic inflammation consisting of lymphocytes, edema, and vascular ectasia with tortuous capillaries. These pathologic findings established the diagnosis of psoriasis.
FIGURE 4: Pathology of psoriasis plaque and underlying silicone granuloma

Distant (A) and closer (B, C, and D) views of the skin biopsy pathology. The epidermis shows confluent parakeratosis, regular acanthosis, elongated rete ridges (asterisk), and a thin or absent granular layer; in addition, neutrophilic microabscesses are present (circle) in the upper layers of the epidermis. The upper dermis shows chronic lymphocyte inflammation, edema, and vascular ectasia. These pathologic changes are diagnostic of psoriasis. Also present within the dermis, there are abundant histiocytes with vacuolated cytoplasm (arrows) and large, well-defined, clear areas consistent with silicone deposits (labeled s); these pathologic changes are characteristic of a silicone granuloma. (Hematoxylin and eosin staining: A, x4; B, x10; C, x20; D, x40)

In addition, there were abundant histiocytes with vacuolated cytoplasm throughout the dermis. Stains for bacteria, fungi, and mycobacteria were negative. Correlation of the patient’s history and these pathologic findings were diagnostic of a silicone granuloma.

Immunohistochemical studies were performed. The dermal mononuclear cells were predominantly positive for CD4 and the epidermal mononuclear cells were predominantly positive for CD8 (Figure 5). These immunohistochemistry findings are characteristic of psoriasis [4].
FIGURE 5: Immunoperoxidase studies of the psoriatic plaque

(A) The psoriatic plaque demonstrates mononuclear cells (arrows) that are predominantly positive for cluster of differentiation 4 (CD4) in the dermis. (B) The psoriatic plaque also demonstrates mononuclear cells (arrows) that are predominantly positive for cluster of differentiation 8 (CD8) in the epidermis. (Diaminobenzidene immunoperoxidase staining: A: CD4, x20; B: CD8, x20)

The entire area of psoriasis was excised in the biopsy specimen; therefore, no treatment of the lesion was required. The patient was started on oral hydroxychloroquine, 200 mg twice a day for two months, to treat the granuloma; there was no improvement. However, at her eight-month follow-up, the patient’s psoriasis lesion had not recurred and she had not developed any additional lesions of psoriasis.

Discussion

Liquid silicone injections can cause local adverse effects at or near the site of injection; these include
Psoriasis developing in an area following a liquid silicone injection in an immunocompetent patient is an unusual adverse effect. Trauma to the skin can create an immunocompromised cutaneous district; psoriasis can develop in these altered areas. Therefore, we postulate that our patient’s lesion of psoriasis resulted from either silicone independently promoting the development of psoriasis or silicone creating an immunocompromised district of this altered area of skin. Subsequently, the psoriatic plaque developed at this site. Indeed, psoriasis has previously been observed to occur in an immunocompromised cutaneous district.

Conclusions

Psoriasis developing in an area following a liquid silicone injection in an immunocompetent patient is an unusual adverse effect. Trauma to the skin can create an immunocompromised cutaneous district; psoriasis can develop in these altered areas. Therefore, we postulate that our patient’s lesion of psoriasis resulted from either silicone independently promoting the development of psoriasis or silicone creating an immunocompromised cutaneous district, or both.

Additional Information

Disclosures

Human subjects: Consent was obtained by all participants in this study. Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following: Payment/services info: All authors have declared that no financial support was received from any organization for the submitted work. Financial relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. Other relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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