JAMA Dermatology Clinicopathological Challenge

Atrophic Annular Plaques on the Breasts Following Augmentation Surgery

Jessica G. Labadie, MD; Samantha Conrad, MD; Joaquin C. Brieva, MD

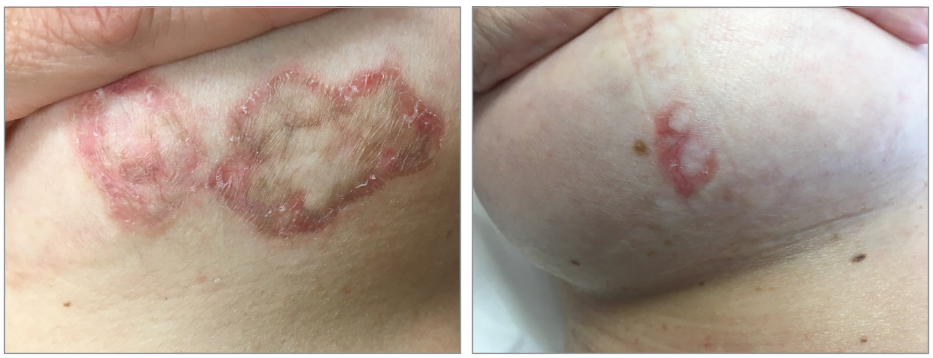

Figure 1. Clinical images of the inferior medial bilateral breasts with 1- to 2-cm erythematous annular atrophic plaques with more involvement of the left breast (A) than the right (B).

A white woman in her 50s without significant medical history underwent breast augmentation surgery with saline implants without postoperative complications. Five years later, she underwent a bilateral augmentation mammoplasty with removal and replacement of silicone gel implants and major mastopexy with capsulotomy. Although the patient's surgical course was uncomplicated, several months postoperatively she noted persistent asymptomatic rough areas that she assumed were scars. Seven years after the second surgery, she was referred to dermatology for improvement of the areas for cosmetic reasons.

On physical examination, the patient had well-healed, barely identifiable scars on the inframammary creases and lower breast areas. Separate from the scars and located on the inferior medial bilateral breasts were 1- to 2-cm slightly erythematous annular atrophic plaques with more involvement of the left breast than the right. The rims of the lesions were raised with slight white scale and the centers slightly depressed and wrinkled in appearance (Figure 1).

WHAT IS YOUR DIAGNOSIS?

A. Erythema annulare centrifugum

B. Annular atrophic lichen planus

C. Porokeratosis

D. Granuloma annulare

Diagnosis

B. Annular atrophic lichen planus

Microscopic Findings

A skin biopsy taken from the rim of the left breast lesion showed focal epidermal atrophy, marked hypergranulosis with reactive keratinocytes, and an interface lichenoid reaction (Figure 2A). The upper dermis in the skin biopsy revealed a partial bandlike lymphoid infiltrate and numerous melanin-laden macrophages (Figure 2B). A periodic acid–Schiff with diastase (DPAS) test result was negative for fungi, and an elastic von Gieson stain showed preserved dermal elastic fibers. In view of the clinical presentation and atrophic lichenoid reaction, the skin biopsy specimens were classified as consistent with annular atrophic lichen planus (AALP).

Discussion

Annular atrophic lichen planus is a rare variant of lichen planus, first described by Friedman and Hashimoto[1] in 1991. Diagnostically, AALP appears to be largely a clinicopathologic diagnosis based on histopathological characteristics and biopsy results. The histological morphology of AALP is characterized by features of annular lichen planus with an atrophic center. To our knowledge, all cases thus far have been described as brown to violaceous annular plaques with a raised outer rim and atrophic centers.[1-9] The lesions occur most com-

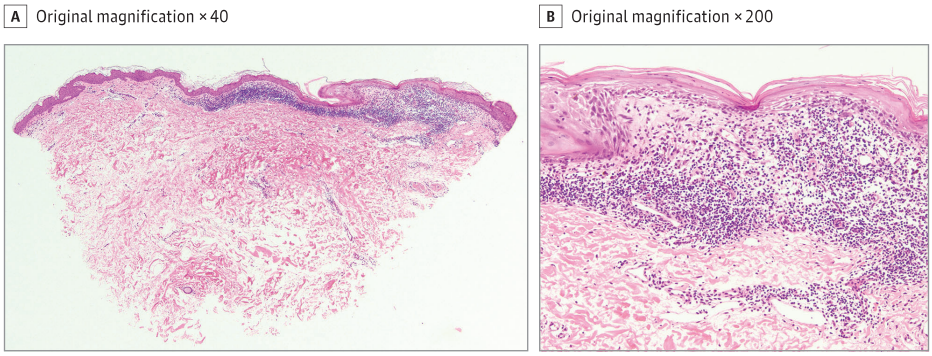

Figure 2. Hematoxylin-eosin staining of a biopsy taken at the advancing rim of the lesion demonstrated classic features of lichen planus, including squamatization of the basal layer with reactive keratinocytes, a dense bandlike lichenoid infiltrate with epidermal atrophy, hypergranulosis, and melanin-laden macrophages in the upper dermis.

monly on distal body regions vs proximal and can be pruritic or asymptomatic. On histopathological examination, the atrophic center of the lesion typically corresponds with a sparse lichenoid process, epidermal atrophy, and upper dermis anetoderma, while the rim of the lesion demonstrates classic features of lichen planus including hyperkeratosis, hypergranulosis, and a dense lichenoid infiltrate.[1-9] In the present case the biopsy was taken from an area of the rim at the advancing border and demonstrated marked inflammation with clear squamatization of the basal cell layer, hypergranulosis, and reactive keratinocytes representing a lichenoid reaction.

Entities on the differential diagnosis include erythema annulare centrifugum, porokeratosis, and granuloma annulare. Erythema annulare centrifugum is a gyrate erythema and is characterized by a dense perivascular lymphocytic infiltrate that is well demarcated and adjacent to vessels, which was not seen in this patient. A cornoid lamella was also not seen, thus ruling out a porokeratosis. Finally, dermal necrobiotic collagen, palisading histiocytes, vasculitis, and mucin deposition was not found, ruling out granuloma annulare.

It is impossible to confirm whether the patient's surgical history played a role in lesion induction, but we postulate that the patient's lesions could be related to her recent breast surgery. The lichenoid infiltrate could represent a reaction to silicone or another foreign antigen. Cutaneous ulcerative lichen planus forming due to pathergy has been described previously in the literature.[10]

We present this case of AALP in the setting of prior breast surgery to further characterize the clinical presentation and pathology of this rare entity; however, future reports are needed to better understand the condition's pathogenesis, prevalence, and cause.

ARTICLE INFORMATION

Author Affiliations: Department of Dermatology, Northwestern University Feinberg School of Medicine, Chicago, Illinois.

Corresponding Author: Jessica G. Labadie, MD, Department of Dermatology, Northwestern University Feinberg School of Medicine, 676 N St Clair Street, Ste 1600, Chicago, IL 60611 (jessica.labadie@northwestern.edu).

Published Online: August 28, 2019. doi:10.1001/jamadermatol.2019.2245

Conflict of Interest Disclosures: Dr Conrad reported nonfinancial support from Allergan Medical Institute. No other disclosures were reported.

Additional Contributions: We thank the patient for granting permission to publish this information. We sincerely thank Joan Guitart, MD, for his clinical expertise and assistance in the histological analysis and diagnosis of this case. Dr Guitart received no compensation for his assistance.

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REFERENCES

1. Friedman DB, Hashimoto K. Annular atrophic lichen planus. *J Am Acad Dermatol*. 1991;25(2 Pt 2):392-394. doi:10.1016/0190-9622(91)70212-K

2. Requena L, Olivares M, Piqué E, Fariña MC, Martín L. Annular atrophic lichen planus. *Dermatology*. 1994;189(1):95-98. doi:10.1159/000246797

3. Lipsker D, Piette JC, Laporte JL, Maunoury L, Francès C. Annular atrophic lichen planus and Sneddon's syndrome. *Dermatology*. 1997;195(4):402-403. doi:10.1159/000245999

4. Mseddi M, Bouassida S, Marrakchi S, Khemakhem M, Turki H, Zahaf A. Annular atrophic lichen planus. *Dermatology*. 2003;207(2):208-209. doi:10.1159/000071801

5. Dahlbäck K, Sakai LY. Elastolysis in lichen ruber planus. *Acta Derm Venereol*. 1991;71(4):364-366.

6. Kim BS, Seo SH, Jang BS, et al. A case of annular atrophic lichen planus. *J Eur Acad Dermatol Venereol*. 2007;21(7):989-990. doi:10.1111/j.1468-3083.2006.02064.x

7. Morales-Callaghan A Jr, Martínez G, Aragoneses H, Miranda-Romero A. Annular atrophic lichen planus. *J Am Acad Dermatol*. 2005;52(5):906-908. doi:10.1016/j.jaad.2004.12.027

8. Ponce-Olivera RM, Tirado-Sánchez A, Montes-de-Oca-Sánchez G, León-Dorantes G, Mercadillo-Pérez P. Annular atrophic lichen planus. *Int J Dermatol*. 2007;46(5):490-491. doi:10.1111/j.1365-4632.2007.02964.x

9. Eyler JT, Garib G, Thompson KR, Dahiya M, Swan JW. Annular atrophic lichen planus responds to hydroxychloroquine and acitretin. *Cutis*. 2017;100(2):119-122.

10. Henderson RL Jr, Williford PM, Molnar JA. Cutaneous ulcerative lichen planus exhibiting pathergy, response to acitretin. *J Drugs Dermatol*. 2004;3(2):191-192.