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Squamous cell carcinoma in lichen planopilaris

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Abstract

Background: Lichen planopilaris (LPP) is a rare variant of cutaneous lichen planus that preferentially involves hair follicles.

Observation: We describe the case of an 87-year-old woman with cicatricial alopecia due to lichen planopilaris. The diagnosis was based on clinical evaluation, histopathology and trichoscopy. Squamous cell carcinoma developed within the hairless area after 18 years of evolution.

Conclusion: It is necessary to consider the association between lichen planopilaris and squamous cell carcinoma and to ensure a close follow-up of LPP patients, especially when there is a long history of the disease or new a lesion develops, which does not correspond clinically or in trichoscopy to lichen planopilaris. (*J Dermatol Case Rep*. 2013; 7(3): 84-87)

Introduction

Lichen planopilaris (LPP) is a rare variant of cutaneous lichen planus (LP) with a preferential involvement of hair follicles and a tendency to form cicatricial alopecia. LPP is more frequent in adult women.[1,2,3,4] LPP lesions can be asymptomatic or can cause discomfort or itching.[4,5]

Some studies suggest that the risk of SCC is observed in 1.13 — 3.5% of oral LP cases and is even less frequent in cutaneous LP.[6] We could find no published cases of squamous cell carcinoma (SCC) associated with LPP. We present a case of three SCCs arising on LPP and discuss the relationship between the two diseases.

Case Report

We describe the case of an 87-year-old woman with 18 years LPP evolution with the development of generalized cicatricial alopecia (Fig. 1), whose diagnosis is based on clinical, histopathological and trichoscopic findings. In trichoscopy, the loss of orifices were observed (Fig. 2). Histology studies revealed a band-like subepidermal lymphocytic infiltrate involving the follicular infundibulum and isthmus and basal vacuolization (Fig. 3). There was no history of skin cancer in the family. The patient had no lichen planus in other parts of body. She was using a hat and throughout her life she had had little exposure to sunlight. Since 1997 the patient has been followed in our department and has received treatment with topical and intralesional corticosteroids, and hydroxychloroquine. She showed minor improvement after treatment. During the four year period from 2008 through 2012, three SCCs arose on areas affected by LPP (Fig. 4). Histology confirmed well-differentiated squamous cell carcinoma with hyperkeratosis and horn pearls. Solar elastosis was not present (Fig. 5). Dermatoscopy of these lesions showed white circles, keratin, and blood spots.

Discussion

The etiology of LPP is unknown,[3] but it is considered an autoimmune disorder in which T lymphocytes attack and destroy keratinocytes expressing unknown target antigens.[7,8] Drugs, contact allergens, and infectious agents can be triggering factors in susceptible subjects.[3]

The association between oral LP and SCC is widely accepted, and a higher incidence of vulvar SCC was recently reported in patients with vulvar erosive LP.[9] Nevertheless, the association between cutaneous LP and SCC remains controversial.[10] Mignona *et al*.[11] discussed the degree to which the chronic inflammation in LP and consequent activation

of the immune system can generate an inflammation that induces malignant transformation, similar to the role of ulcerous colitis in colon cancer or of chronic esophagitis in esophageal adenocarcinoma.[8] Chronic inflammation and cicatrization has been associated with an increased risk of developing malignant lesions,[10] as in the case of chronic cutaneous[12] ulcers and cutaneous lupus.[13]

The precise mechanism underlying the malignant degeneration of LP to SCC is not known.[14] In around half of LPP cases, degeneration of basal keratinocytes and destruction

Figure 1. *Clinical appearance of the lesion. Extensive plaque of cicatricial alopecia caused by lichen planus.*

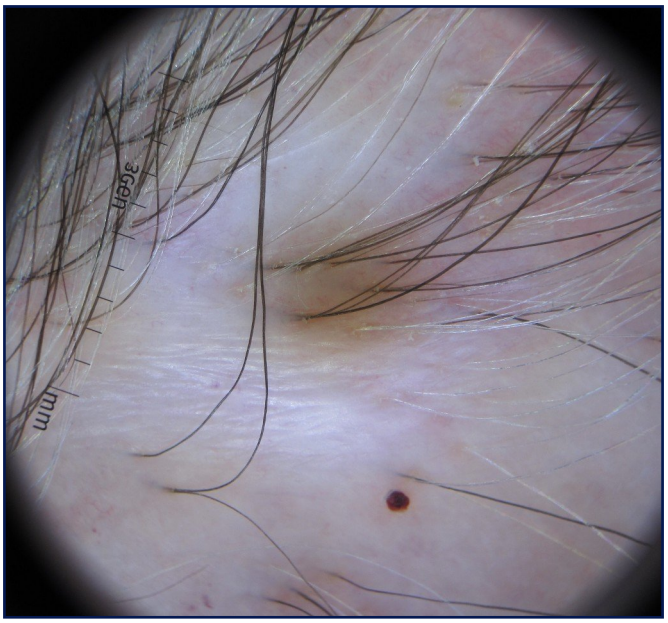

Figure 2. *Trichoscopy findings showed loss of orifices, consistent with cicatricial alopecia.*

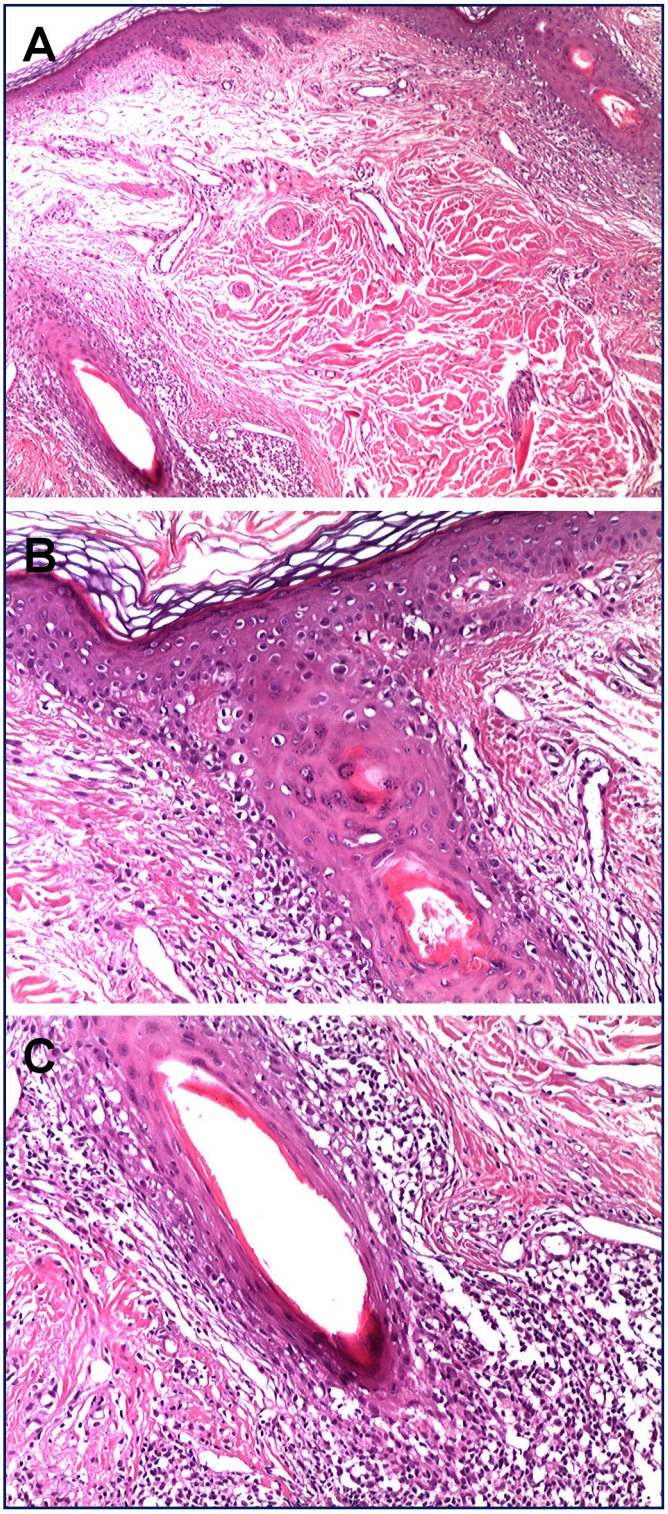

Figure 3. *(A) Panoramic image showing band-like perifollicular and intrafollicular lymphoid infiltrate involving the follicular isthmus and infundibulum, HE x 40.*
(B) and (C) Details of this image showing basal layer vacuolization and follicular obstruction; HE x 200.

Figure 4. *An ulcerated dome-shaped hyperkeratotic tumor can be seen in the center of the alopecic plaque.*

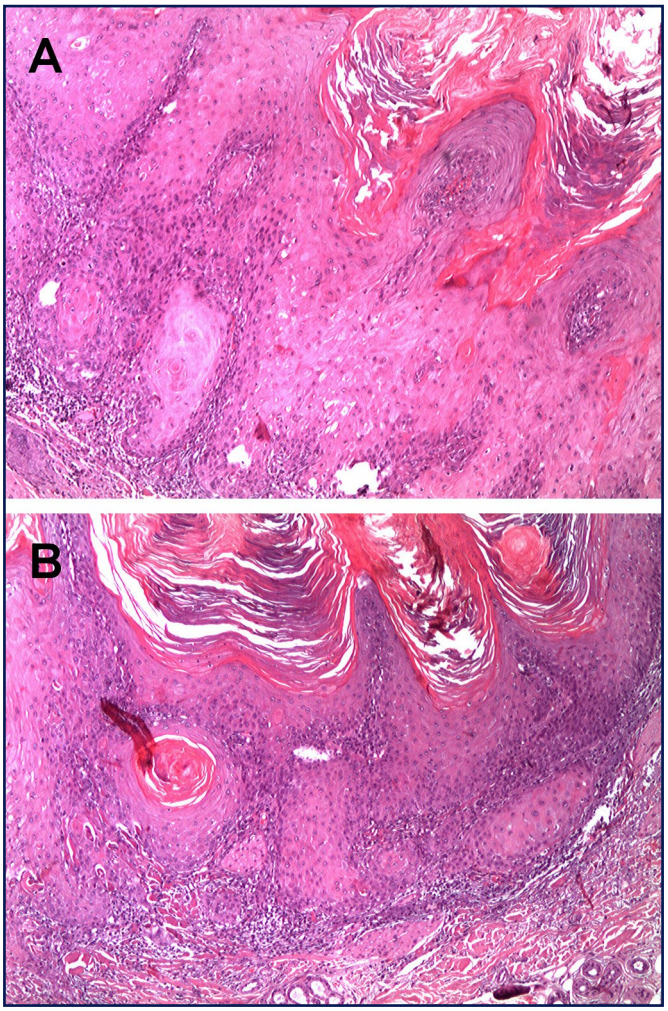

Figure 5. *(A) and (B). Skin biopsy with hyperkeratosis and horn pearls, indicating a well-differentiated squamous cell carcinoma. No solar elastosis is present; HE x 100.*

of the basal layer are observed during initial stages of the disease. The basal membrane has important stabilizing and growth factor storage functions and is essential in various growth factor signaling pathways.[15] Moreover, interactions of tumor cells with their extracellular matrix and basal membrane area are known to play a role in carcinogenesis, including SCC development.[16] In patients with cicatricial alopecia, epidermal stem cells[17] damaged by chronic inflammation and cicatrization, localized in the hair follicle bulb and basal layer of the interfollicular epidermis have been proposed as precursors of SCCs.[16,18]

Cutaneous LP-associated SCC is typically well-differentiated and has a very good prognosis, although metastases have been observed in some patients.[8,19]

Trichoscopy is essential for the study of diseases of the scalp. Characteristic trichoscopic features of alopecia areata are black dots, tapering hairs (exclamation mark hairs), broken hairs, yellow dots and short vellus hairs. In androgenetic alopecia (AGA), hair diameter diversity (HDD), perifollicular pigmentation / peripilar sign and yellow dots are trichoscopically observed. In all cases of AGA and female AGA, HDD more than 20%, which corresponds to vellus transformation, can be seen. In cicatricial alopecia (CA), the loss of orifices, a hallmark of CA, and the associated changes including perifollicular erythema or scale and hair tufting were observed. Hair tufting can be seen in CA such as folliculitis decarvans / tufted folliculitis, acne keloidalis, dissecting cellulitis of the scalp, kerion celsi and lichen planopilaris.[20]

Conclusion

This is the first reported case of SCC associated with LPP. It is necessary to consider this association and to ensure a close follow-up of LP patients, especially when there is a long history of the disease or the lesions.

References

1. Berker DAR, Messenger AG, Sinclair RD. Disorders of hair. In Rook A, Dawber R, Textbook of Dermatology. Seventh edition. Oxford: Blackwell Scientific Publications; 2004; p. 63.48-51.
2. Kanwar AJ, Dogra S, Handa S, Parsad D, Radotra BD. A study of 124 Indian patients with lichen planus pigmentosus. *Clin Exp Dermatol*. 2003; 28: 481-485. PMID: 12950331.
3. Assouly P, Reygagne P. Lichen planopilaris: update on diagnosis and treatment. *Semin Cutan Med Surg*. 2009; 28: 3-10. PMID: 19341936.
4. Chieregato C, Zini A, Barba A, Magnanini M, Rosina P. Lichen planopilaris: report of 30 cases and review of the literature. *Int J Dermatol*. 2003; 42: 342-345. PMID: 12755968.
5. Cevasco NC, Bergfeld WF, Remzi BK, de Knott HR. A case-series of 29 patients with lichen planopilaris: the Cleveland Clinic foundation experience on evaluation, diagnosis, and treatment. *J Am Acad Dermatol*. 2007; 57: 47-53. PMID: 17467854.

6. van der Meij EH, Mast H, van der Waal I. The possible premalignant character of oral lichen planus and oral lichenoid lesions: a prospective five-year follow-up study of 192 patients. *Oral Oncol*. 2007; 43: 742-748. PMID: 17112770.

7. Bovenschen HJ, Seyger MM, Van de Kerkhof PC. Plaque psoriasis vs. atopic dermatitis and lichen planus: a comparison for lesional T-cell subsets, epidermal proliferation and differentiation. *Br J Dermatol*. 2005; 153: 72-78. PMID: 16029329.

8. Hodzic-Avdagic N, Kuhn A, Megahed M, Neumann NJ. Verrucous squamous cell carcinoma developing in hypertrophic lichen planus. *Hautarzt*. 2004; 55: 385-387. PMID: 15021935.

9. Simpson RC, Murphy R. Is vulval erosive lichen planus a premalignant condition? *Arch Dermatol*. 2012; 148: 1314-1316. PMID: 23165838.

10. Castaño E, López-Riós F, Alvarez-Fernandez JG, Rodríguez-Peralto JL, Iglesias L. Verrucous carcinoma in association with hypertrophic lichen planus. *Clin Exp Dermatol*. 1997; 22: 23-25. PMID: 9330048.

11. Mignogna MD, Fedele S, Lo Russo L, Lo Muzio L, Bucci E. Immune activation and chronic inflammation as the cause of malignancy in oral lichen planus: is there any evidence? *Oral Oncol*. 2004; 40: 120-130. PMID: 14693234.

12. Enoch S, Miller DR, Price PE, Harding KG. Early diagnosis is vital in the management of squamous cell carcinomas associated with chronic non healinulcers: a case series and review of the literature. *Int Wound J*. 2004; 1: 165-175. PMID: 16722875.

13. Alsanafi S, Werth VP. Squamous cell carcinomas arising in discoid lupus erythematosus scars: unusual occurrence in an African-American and in a sun-protected area. *J Clin Rheumatol*. 2011; 17: 35-36. PMID: 21169850.

14. Fox LP, Lightdale CJ, Grossman ME. Lichen planus of the esophagus: what dermatologists need to know. *J Am Acad Dermatol*. 2011; 65: 175-183. PMID: 21536343.

15. Boehnke K, Falkowska-Hansen B, Stark HJ, Boukamp P. Stem cells of the human epidermis and their niche:composition and function in epidermal regeneration and carcinogenesis. *Carcinogenesis*. 2012; 33: 1247-1258. PMID: 22461521.

16. Ratushny V, Gober MD, Hick R, Ridky TW, Seykora JT. From keratinocyte to cancer: the pathogenesis and modeling of cutaneous squamous cell carcinoma. *J Clin Invest*. 2012; 122: 464-472. PMID: 22293185.

17. Ohyama M. Primary cicatricial alopecia: recent advances in understanding and management. *J Dermatol*. 2012; 39: 18-26. PMID: 22097924.

18. Kamstrup MR, Gniadecki R, Skovgaard GL. Putative cancer stem cells in cutaneous malignancies. *Exp Dermatol*. 2007; 16: 297-301. PMID: 17359335.

19. Ardabili M, Gambichler T, Rotterdam S, Altmeyer P, Hoffmann K, Stücker M. Metastatic cutaneous squamous cell carcinoma arising from a previous area of chronic hypertrophic lichen planus. *Dermatol Online J*. 2003; 9: 10. PMID: 12639468.

20. Inui S. Trichoscopy for common hair loss diseases: algorithmic method for diagnosis. *J Dermatol*. 2011; 38: 71-75. PMID: 21175759.