

CASE REPORT

# Squamous Cell Carcinomas in Two Cases of Nail Lichen Planus: Is There a Real Association?

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## ABSTRACT

Lichen planus (LP) is a chronic inflammatory disease that affects the skin and oral mucosa. Although its etiology is unknown, its potential for cancerization has been confirmed. We herein report the cases of a brother and sister, both with a 15-year history of nail lichen planus of the fingers and toes, who developed squamous cell carcinomas of the nail bed and matrix. This article shows the potential for malignant transformation in lichen planus disease and highlights the importance of periodic clinical follow-up.

**Keywords:** Chronic inflammation; Lichen planus; Malignant transformation; Nail; Squamous carcinoma

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## INTRODUCTION

Lichen planus is a chronic inflammatory disease that affects the skin and oral mucosa. Although its etiology is unknown [1], its potential for cancerization has been confirmed by many studies, primarily for lichen involving the oral mucosa [2]. We here report the cases of a brother and sister, both with a 15-year history of nail lichen planus of the fingers and toes, histologically confirmed and treated with topical corticosteroids, who developed squamous cell carcinoma (SCC) of the nail bed and matrix. Informed consent was obtained from each individual participant for inclusion in the study. The present article aims to highlight the importance of a correct diagnosis, treatment, and periodic follow-up of precancerous lesions such as lichen planus (LP) and to explain the underlying mechanisms of neoplastic changes involved in both LP and SCC, probably related to chronic inflammatory processes.

### Case 1

A 60-year-old female was admitted to our hospital for two ulcerated exophytic lesions of 1.5 and 2 cm diameter, respectively, affecting the third and fifth finger of the right hand. The two lesions had arisen 4 years before (Fig. 1). The nails were all affected by lichen planus disease, histologically diagnosed with a 3-mm punch

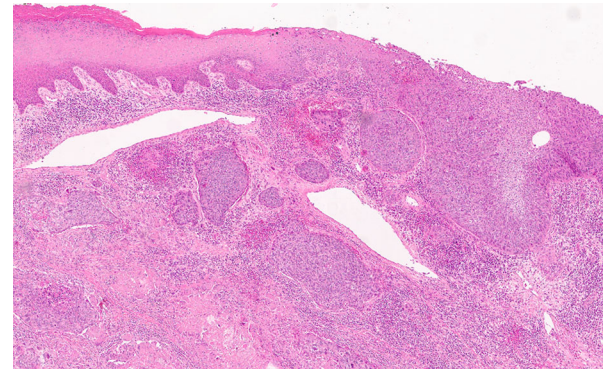


**Fig. 1** Clinical and dermoscopic manifestations. Ulcerative and exophytic lesions of the 3rd and 5th finger of the right hand. Fingernails show atrophy, destruction, or pterygium formation

biopsy 15 years before; no other anatomical sites were involved. Dermoscopic features of the exophytic lesions showed the presence of a polymorphic vascular pattern, surrounded by keratinizing whitish areas. Furthermore, two skin biopsy specimens from the two lesions of the fingers were taken. They showed intra-epidermal and infiltrative proliferation of atypical squamous cells with the presence of horn pearls. Moreover, necrotizing aspects were found (Fig. 2). A diagnosis of ulcerating SCC for both lesions was made. The nail bed and matrix were involved, so both fingers were amputated (Fig. 3).

## Case 2

A 55-year-old male presented to our hospital with a 2-cm-diameter ulcerated nodule affecting the left great toe of 4 years' duration. Nails of the other toes and fingers were all affected by lichen planus disease, histologically diagnosed



**Fig. 2** Histology. Panoramic view of the lesion showing a squamous cell carcinoma, Bowen type, with an intra-epidermal and infiltrative component [two distal phalanges, fifth right hand finger, hematoxylin & eosin stain (H&E), original magnification  $\times 5$ ]



**Fig. 3** Clinical manifestation. A 2-cm-diameter ulcerating nodule affecting the first toe of the left foot

15 years before. No other lichen planus lesions were observed on the skin, oral mucosa, or genital regions. At dermoscopy, a polymorphic vascular pattern, surrounded by keratinizing whitish areas suggestive of SCC, was present. Furthermore, a 3-mm punch biopsy taken from the nodular lesion of the toe revealed an intra-epidermal and infiltrative proliferation of atypical squamous cells with the presence of squamous cells and horn pearls. Necrotizing cells were also reported. A diagnosis of ulcerating

**Table 1** Published reports on squamous cell carcinoma (SCC) in patients affected by nail lichen planus

Author (year)	Sex, age	Clinic	Histology	Treatment
Okiyama et al. (2005)	Male, 51	Ulcerated exophytic lesion of left great toe	SCC	Amputation
Our case 1 (2017)	Female, 60	Two ulcerated and exophytic lesions of the third and fifth finger of the right hand	SCCs	Amputation
Our case 2 (2017)	Male, 55	Ulcerated exophytic lesion of left great toe	SCC	Amputation

squamous cell carcinoma involving the matrix and nail bed was made. The patient underwent the amputation of the toe (Table 1).

## DISCUSSION

Lichen planus is a chronic inflammatory disease with autoimmune etiology. Malignant transformation of lichen planus occurs rarely, mostly for oral lichen planus whose cancerization rate ranges from 0% to 3.5% [3]. According to the literature, this is the second case of SCCs arising on nail lichen planus. In 2005, Okiyama et al. described the case of a 51-year-old male with nail lichen planus who developed an ulcerated SCC of the left great toe [4]. However, other cases of squamous cell carcinomas developed on lichen of the penis, vulva and lower legs have already been reported [5]. The nature of this relationship is unclear; chronic inflammatory processes and oncogenic growth factors may be the underlying mechanisms for the development of neoplastic cells in the epidermis of patients with an immunocompromised cutaneous district [2]. The development of carcinoma in the setting of LP represents a failure of the keratinocytes to adapt to the environment of continuous inflammation and altered structure. The damaged epithelium results from T-cell-mediated attack on basilar keratinocytes, thus resulting in the disruption of the skin architecture, which leads to chronic metabolic or growth activation of keratinocytes, predisposing these cells to neoplastic initiation [4].

Furthermore, the oncogenic role of human papillomavirus (HPV) in squamous cell carcinoma (SCC) has been well established. Outside

the genital region, the majority of digital SCC and SCC in situ occurs on the periungual and/or subungual skin. HPV16, which is traditionally associated with lesions on mucosal surfaces, such as the cervix, is the most frequently involved high-risk HPV subtype [6]. Physicians should be aware that malignant transformation may occur in a patient with lichen planus disease and that these tumors tend to be locally aggressive, necessitating prompt surgical treatment and close follow-up. Indeed, early diagnosis, treatment, and periodic clinical follow-up are important to detect any malignant transformation early and to decrease morbidity.

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**Compliance with Ethics Guidelines.** Informed consent was obtained from all individual participants for being included in the study.

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