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Lichen striatus following COVID-19

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Lichen striatus following COVID-19

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To the Editor,

Numerous cutaneous manifestations have been reported in association with COVID-19 infections, and some insight into their pathogenesis has been gained.¹⁻² Among COVID-19 linked immune dermatologic conditions, lichen striatus (LS) was described following COVID-19 vaccination, but never after COVID-19 infection.³⁻⁴

Four Patients

We encountered four case of LS post COVID-19 in children. All of them were diagnosed clinically, and the diagnoses were histopathologically verified. COVID-19 was confirmed by molecular testing of viral RNA on nasopharyngeal swab. None of patients was vaccinated against COVID-19. Three out of four were girls, with a mean age 12.5 years, in line with published data, reporting LS especially in girls (75%) five to 15 years of age.⁵

Two patients were seen during the Summer of 2022 with acute LS, shortly after COVID-19. We observed characteristic lichenoid, erythematous, flat-topped papules, forming a thin unilateral band along Blaschko lines of lower extremities. These were chronic, hypopigmented lesions in linear distribution. There also longitudinal nail ridging in one patient (Figure 1). Such characteristic clinical suggested the diagnosis of LS. Histologic study confirmed the diagnosis by revealing lymphocytes surrounding subpapillary vessels, as well as hyperkeratosis and parakeratosis, a few necrotic keratinocytes, intercellular edema, and spongiosis (Figure 2). We prescribed topical corticosteroids and emollients for three months after which the the inflammation subsided with the lesions becoming flatter and hypopigmented..

The other two patients contracted COVID-19 during Spring 2022, more than three months prior to presentation at the Dermatological Unit. At the time of the dermatologic examination, there were

only only chronic lesions and no erythematous acute lesions. Lesions were hypochromic, with blaschkoid distribution, on both the arms and legs (Figure 3).

Histology confirmed the clinically established diagnosis, showing a lichenoid infiltrate, focal hyper- and-parakeratosis and periadnexial inflammatory lympho-plasmacytic infiltrate (Figure 4).

The eruption in the fourth case was prevalently hypopigmented from the beginning, suggesting lichen striatus albus (LSA). LSA has been described in literature as a possible initial LS manifestation.⁵ It may begin with a hypopigmented maculo-papular eruption and presents only a few characteristic red-lichenoid papules. In both LS and LSA, the eruption spontaneously regresses after 6-24 months, but recurrences may occur, mainly in the form of hypopigmented macules.⁵

Discussion

Characteristically, LS is usually unilateral and is typically located on the extremities and less frequently on the trunk or face. Rarely, the nails are involved, with thinning, onychodystrophy, onycholysis and longitudinal ridging.⁵ The present series is in line with the available literature where arms and legs were involved in 100% of patients and nails only in 25%.

The differential diagnoses of LS include linear lichen planus (LLP), which is characterized by intensely pruritic, violaceous, hyperkeratotic papules, arranged in thick bands; and inflammatory linear verrucous epidermal nevus (ILVEN), which is characterized by markedly pruritic congenital lesions. In contrast with LLP and ILVEN, the present lesions were acquired, being almost asymptomatic, flat-topped, and just slightly erythematous in the acute phase, with a hypopigmented evolution, forming a quite thin band of maximum 1.5 cm width along the lines of Blaschko.⁶

LS has an unknown etiology. In the literature, the occurrence of LS has been reported after such viral stimuli as influenza, varicella; and vaccinations: against hepatitis B, yellow fever, and COVID-19.⁴ It is assumed that an acquired stimulus, such as a viral infection or vaccination, may induce a loss of immunotolerance towards mosaic keratinocyte clones, that undergo cytotoxic T-cells' attack

inducing LS.⁴ Notably, in this series, COVID-19 was temporally close to the development of LS, suggesting a possible role of the infection in triggering autoimmunity.

The same process is supposed to take place after COVID-19 vaccination, which has been with LS. Cross-reactivity to viral antigens, inducing a pathogen-specific immune response that targets also mosaic host's keratinocytes, has been suggested as the pathogenic mechanism.⁴

Conclusions

COVID-19 infection has been widely documented in the past, allowing the possibility of identifying associations with immune-mediated cutaneous manifestations.¹⁻⁴ Possibly, lichen striatus, as well as other COVID-19 associated autoimmune phenomena, may actually be virally triggered. An increased awareness towards this particular infection may suggest an otherwise underestimated association.

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Figure 1: Flat-topped erythematous papules forming a continuous thick band along Blaschko lines on the patient's shin, dorsum of the foot and first three toes, involving also the nail of the third toe, causing longitudinal ridging.

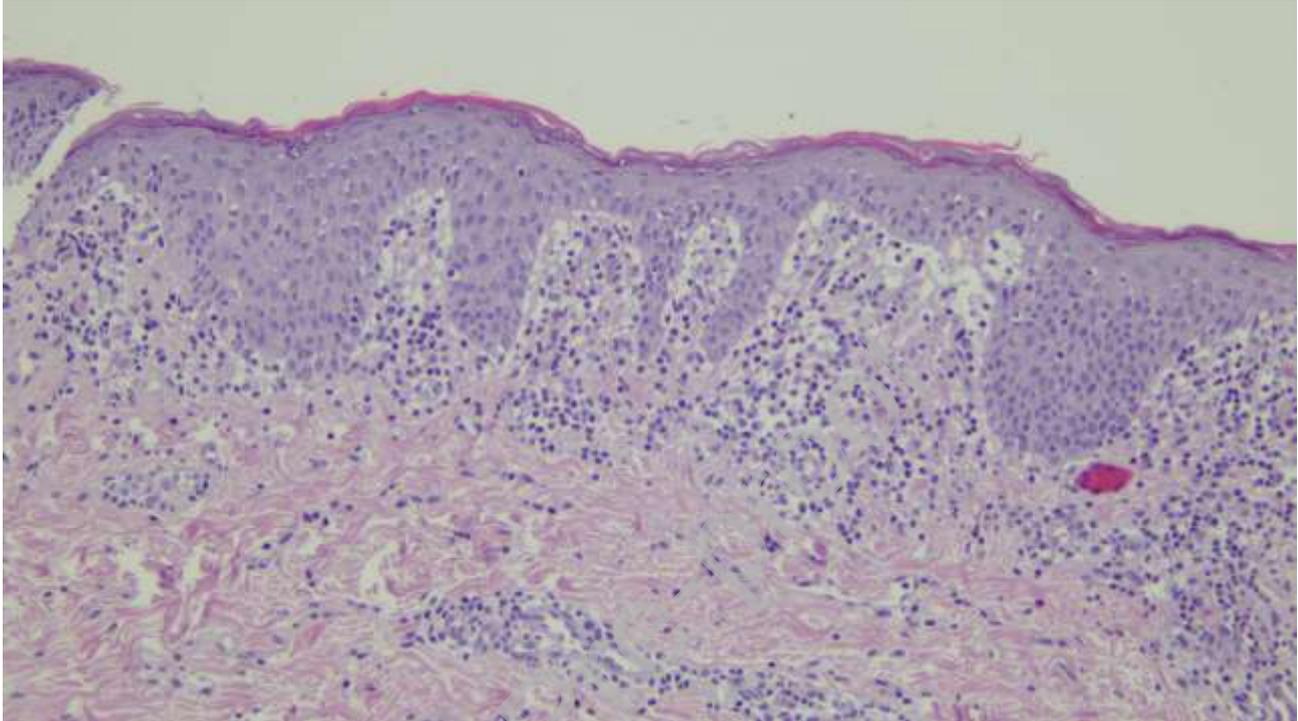


Figure 2: Biopsy showed a pattern of interface dermatitis with basal layer vacuolization, superficial lympho-plasmacytic inflammatory infiltrate, mainly around subpapillary vessels and intra-epidermal exocytosis and edema (histological section in hematoxylin-eosin).



Figure 3: Hypopigmented, small, monomorphic, flat-topped papules, forming a band with blaschkoid distribution on the lower limb.

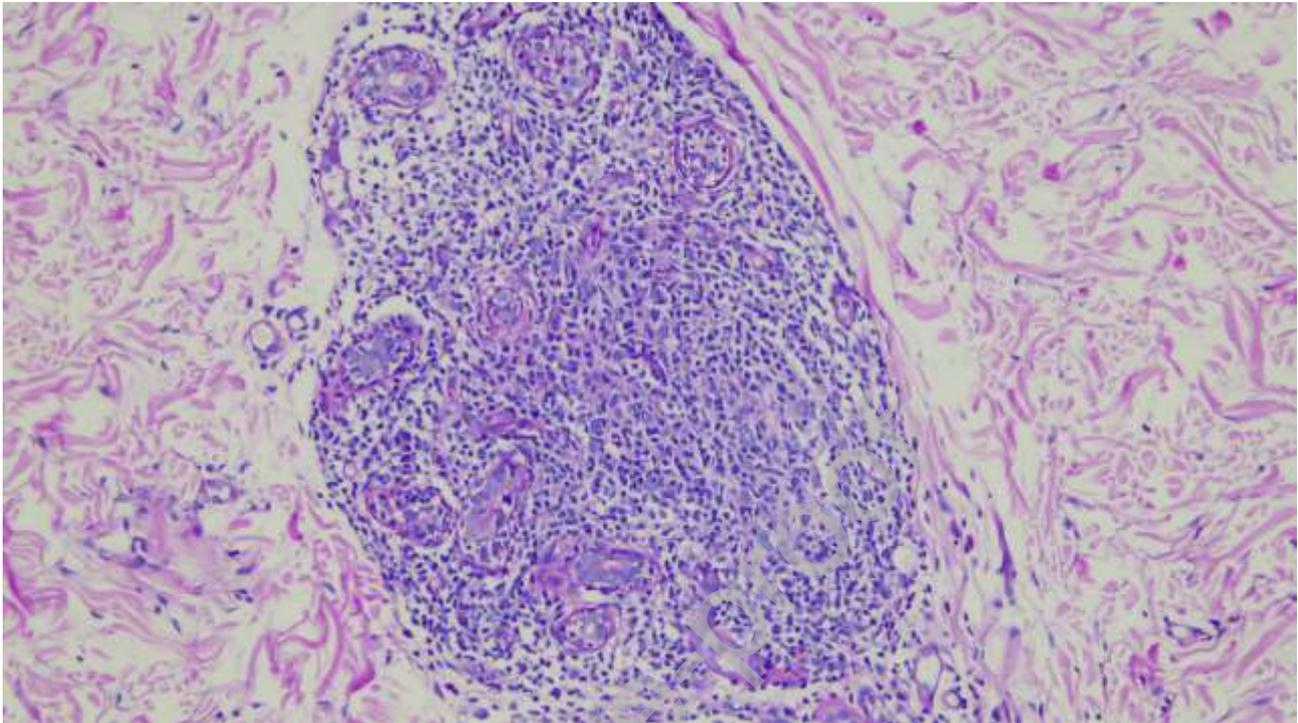


Figure 4: A periadnexial inflammatory lympho-plasmacytic infiltrate can be observed (histological section stained by PAS histochemical technique).