



# Concise Review of Lichen Planus and Lichenoid Dermatoses

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Lichenoid dermatoses are named after lichen, a composite organism consisting of a fungus and photosynthetic partner engaged in a symbiotic relationship. In Latin, the word *leichen* means tree moss and the word *planus* means flat. Lichenoid dermatoses are a heterogeneous group of diseases with varying clinical presentations. Immune-mediated basal cell keratinocyte damage is a key finding on histology. Herein, I will give a basic overview of lichenoid dermatoses with a focus on classic lichen planus (LP) and its variants. Residents should be familiar with this disease and its variants and should be able to recognize these sometimes overlooked dermatoses that can pose a diagnostic challenge. I will not be discussing oral (erosive) LP, lichen planopilaris, and nail LP, as these are broad topics.

## Pathophysiology of Lichen Planus

The pathophysiology of LP and LP variants is unclear. However, LP is classified as a cell-mediated immune reaction perpetuated by activated CD8<sup>+</sup> cytotoxic T lymphocytes (CTLs) and natural killer cells.<sup>1</sup> Although the antigen has yet to be identified, basal keratinocyte presentation of an unspecified agent (eg, autoreactive peptide, altered protein, drug reaction, contact allergen, hapten, and viral or infectious agents) on a class I major histocompatibility complex molecule is believed to activate a CTL-inciting disease.<sup>2</sup> The subsequent immune cascade causes effector CTLs and natural killer cells to accumulate at the dermoepidermal junction and keratinocyte apoptosis (Civatte bodies).<sup>3</sup> The immune system can cause keratinocyte apoptosis via several mechanisms: (1) the caspase cascade, which requires the binding of

surface CD95L (FasL) on the CTLs to keratinocyte CD95 (Fas) to activate apoptosis; (2) CTL and natural killer cell secretion of granzyme B, which enters keratinocytes via cell membrane pores from perforin, leading to apoptosis; and (3) lymphocyte secretion of tumor necrosis factor  $\alpha$ -inducing matrix metalloproteinase 9, which can disrupt the basement membrane zone and promote keratinocyte apoptosis through deprivation of basement membrane zone-derived cell survival signals. Although lichenoid dermatoses have repeatedly been proposed as contributory, there has been no conclusive evidence linking LP and LP variants to syphilis, human herpesvirus 2, human immunodeficiency virus, chronic bladder infections, hepatitis C virus, *Helicobacter pylori*, or human papillomavirus.<sup>4</sup> However, screening for hepatitis C virus infection is recommended, as case-control studies have shown an association of hepatitis C virus and LP.<sup>5</sup>

## Lichen Planus

The prototypic lichenoid dermatosis of LP often is described by the 4 p's: purple, polygonal, pruritic papules. Papules are grouped and tend to coalesce. Thin, transparent, adherent scales known as Wickham striae give lesions a reticulated appearance. The visualization of Wickham striae can be enhanced with oil or water and use of a contact dermatoscope, which is a helpful clinical pearl. Wickham striae are thought to correlate with the focal thickening of the stratum granulosum epidermidis, which is appreciated on histology.<sup>6</sup> Spots usually start as erythematous macules that evolve to the characteristic purplish papules over several weeks' duration. Initial lesions are symmetric; more commonly present on the lower extremities than the upper extremities; and favor the flexural areas of the wrists, arms, and legs. In approximately one-third of cases, generalization can occur within a

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few months of the initial outbreak.<sup>6</sup> Spots usually heal with hyperpigmentation. The duration of LP is variable but oral (erosive), hypertrophic, and nail variants of LP tend to be more recalcitrant. Ulcerative lesions usually present on the mucous membranes, glans penis, and vulva. Oral (erosive) LP, anogenital LP, and vulvovaginal LP are special forms of LP. Atrophic LP is common on the lower extremities and may represent a resolving phase of LP.

### **Familial LP**

There are fewer than 200 cases of familial LP reported in the literature.<sup>7-9</sup> Oftentimes this disease is more severe and protracted and presents with erosive, linear, or ulcerative patterns, usually affecting several family members. Familial LP has been associated with HLA-B7, HLA-A3, HLA-B18, and HLA-Cw8, though there have been mixed results.<sup>7-9</sup> The existence of familial LP has purported to support the hypothesis that genetic factors are of etiologic importance in LP.

### **Lichen Nitidus**

Lichen nitidus has a predilection for children and usually presents in the upper extremities, chest, abdomen, and male genitalia.<sup>6</sup> Lichen nitidus has its own unique picturesque histology, often described as ball-and-claw pattern. Generalized lichen nitidus is rare and has been reported in association with genetic syndromes, such as Down syndrome.<sup>10</sup>

### **Lichen Striatus**

Lichen striatus is described as a benign self-limited dermatosis, primarily affecting adolescent children. Classically, it arises suddenly as crops of pink-tan papules often on the extremities and along the lines of Blaschko.<sup>6</sup> Digital involvement may be associated with a nail dystrophy. A deep perivascular and periecrine infiltrate with granulomatous inflammation on histology is not uncommon.

### **Annular LP**

Annular LP is a rarely reported variant of LP seen in approximately 10% of cases.<sup>6</sup> There often is an arcuate grouping of papules or rings with central clearing and hyperpigmentation. This dermatosis more commonly presents in darker skin types and on the penis and/or scrotum. I have seen several pediatric patients with generalized dramatic disease. Postinflammatory hyperpigmentation can be notable and is difficult to treat.

### **Inverse LP**

Inverse LP is a clinical variant of LP with lesions appearing in the axillae, groin, and inframammary

regions. Patients also may have classic LP at other anatomic locations. Hyperpigmented macules and patches usually are present on clinical presentation. Histopathology can show evidence of epidermal atrophy and pigment incontinence.

### **Hypertrophic LP**

Hypertrophic LP most commonly presents on the extremities (eg, shins). The disease is extremely pruritic and is associated with chronic venous insufficiency. Hypertrophic LP often is confused both clinically and histologically with squamous cell carcinoma. The clinical course of hypertrophic LP is more chronic than other LP variants.

### **Vesiculobullous LP**

Vesiculobullous LP is a rare variant of LP. It presents with vesicles or bullae within lesions caused by intense inflammation, and it is the clinical equivalent of Max-Joseph spaces, which is a subepidermal cleft formed by acantholysis or hydropic degeneration of basal keratinocytes on histology.<sup>6</sup> Vesiculobullous LP should not arise from healthy-appearing skin and must be differentiated from LP pemphigoides, an LP-pemphigoid overlap syndrome.

### **Lichen Planus Pigmentosus**

Lichen planus pigmentosus most commonly occurs in individuals with Fitzpatrick skin types III and IV. Usual presentation includes brown to gray macules in sun-exposed areas of the face and neck with subsequent generalization and potential involvement of intertriginous areas. Both histologically and clinically, LP pigmentosus often appears similar to erythema dyschromicum perstans (ashy dermatosis); however, the former may be differentiated by its predilection for sun-exposed skin, intertriginous areas, and older age of onset (40–50 years).<sup>6</sup>

### **Actinic LP**

Actinic LP also is referred to as LP subtropicus, LP tropicus, summertime actinic lichenoid eruption, LP actinicus, LP atrophicus annularis, and lichenoid melanodermatitis. This variant of LP is more common in the Middle East and most commonly occurs in young adults in the spring and summer months. It presents as hyperpigmented to red-brown papules with an annular configuration and develops on sun-exposed surfaces including the face, dorsal hands, and arms.<sup>6</sup> The clinical differential diagnosis may be similar to melasma. I have never seen a case of actinic LP.

### **Lichenoid Drug Eruptions**

There can be a long latency between drug initiation and drug eruption involving the onset of a lichenoid

drug eruption. Halevy and Shai<sup>11</sup> reported an average latency period of up to 12 months. Additionally, the eruption may appear similar to LP; however, there are key differences between the 2 variants. In classic LP, generalized or photodistributed sites are spared. In lichenoid drug eruptions, Wickham striae are not present, there are larger monomorphic lesions with a psoriasiform appearance, and desquamation with crusting is present. The presence of eosinophils, plasma cells, or parakeratosis on histology is supportive of a drug-induced eruption.<sup>11-14</sup> Medications that can cause lichenoid drug eruptions include gold, penicillamine (latency period, 2–3 years), antimalarial agents, angiotensin-converting enzyme inhibitors (latency period, 3–6 months), angiotensin II receptor blockers, nonsteroidal anti-inflammatory drugs, benzothiadiazides, beta-blockers (latency period, 1 year), statins, tumor necrosis factor  $\alpha$  inhibitors, and more.<sup>6,11-14</sup> When lichenoid drug eruptions are suspected, the most important step is to discontinue the medication; however, resolution is slow and may take several months to up to 1 year. I have seen 2 unpublished cases of lichenoid drug eruptions due to the use of statins. In both cases, the eruption was generalized and the statins had been initiated more than 5 months prior to presentation. It is a crafty entity, as there is a loss of temporality and slow improvement.

### Conclusion

When I first started in dermatology, I had no idea there were so many variants of LP, and the information provided here is not an exhaustive list. When faced with a patient with an unknown eruption, it is helpful to determine if the eruption is lichenoid. If so, you must identify the type of dermatosis. Having knowledge of the many types and faces of lichenoid dermatoses enables recognition of atypical versus usual presentations. If you do not know about a disease, you will not diagnose it.

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