

## Lichen Simplex Chronicus (Neurodermatitis) — Causes and Symptoms

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**Lichen simplex chronicus (LSC), also known as localized neurodermatitis, is a skin disorder characterized by the thickening of the skin (lichenification) due to excessive scratching. This is frequently due to an itch-scratch cycle that can develop due to various skin or psychogenic causes. The common sites are the ends of extremities, genitals, and neck, and the symptoms can vary in severity. Stopping the scratching is crucial, and treatment (often with topical steroid cream/ointment) can be lifelong if the disease is recurrent.**



### Definition and Epidemiology of Lichen Simplex Chronicus (LSC)

Lichen simplex chronicus is defined as **hyperpigmented plaques of lichenification**. It presents as localized well-circumscribed areas of thickened skin resulting from repeated rubbing, itching, and scratching of the skin. It can occur on patients with normal, healthy skin as well as on individuals with atopic, seborrheic, contact dermatitis, or psoriasis.

Lichenification is the process of the skin becoming thick and leathery, with exaggeration of the normal skin markings over any lesions. It is produced by trauma, most commonly scratching and rubbing. Most dermatologists, lichenification means a mosaic thickening

of the skin in patches. In **primary lichenification**, the changes are produced in structurally normal skin. In **secondary lichenification**, the changes are produced in skin with a pre-existing disease (e.g. eczema).

## Epidemiology

The actual incidence of LSC remains unknown. It is seen in adults aged between 30 – 50 years; children are rarely affected. It is estimated that up to 12% of people with aging skin develop some form of lichenification. Although seen in both sexes, it is more frequent in women than in men. **Lichen nuchae** are almost exclusively observed in women. There are no racial differences. There seems to be an association with psychiatric conditions, including **anxiety**, **obsessive-compulsive disorder**, and **depression**.

## Etiology

LSC can begin with any condition that can cause itching, as well as some psychogenic conditions.

- Acne keloidalis nuchae
- Asteatotic eczema
- Atopic dermatitis
- Contact dermatitis from various irritants
- Insect bites
- Long-term exposure to street traffic exhaust
- Psychiatric conditions
- Scars (traumatic, postherpetic/zoster)
- Sensitivity to objects (e.g. jewelry)
- Sleep disturbances may also play a role
- Venous insufficiency
- Xerosis

However, it should be noted that the original cause of itching may not be apparent during evaluation.

## Pathology and Pathophysiology



[Image](#): "Very low magnification micrograph of lichen simplex chronicus (LSC). H&E stain. Skin biopsy." by Nephron – Own work.  
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The exact pathophysiology remains unknown. However, the lesions are distributed in areas accessible to scratching and an underlying cause of pruritus is usually

present. **Chronic rubbing and scratching** in the specific itchy area (regardless of whether the original cause is identified) leads to **lichenification** of the area; i.e., thickening of the skin (**plaque**) due to thickening of the epidermis and **fibrosis** of the dermis, along with the **formation of grayish scales** on the plaque. Eventually, an **itch-scratch cycle** results, which aggravates the problem further.

Underlying histopathological changes in LSC include epidermal **hyperplasia**, **orthokeratosis**, **hypergranulosis** with a regular elongation of the rete ridges, perivascular lymphocyte (or occasionally macrophage) infiltrate.

## Symptoms



**Image:** "Lichen simplex chronicus at the elbow."  
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The most prominent symptom is the itch (**pruritus**), often as a paroxystic event, especially at night. This leads to a strong desire to scratch, which can be very satisfactory. The scratching can be continued for a while, leading to minor abrasions and sores, and eventually **lichenification** of the area. This **itch-scratch cycle** can worsen in times of **psychological stress**; indeed, many studies have identified an association with LSC and psychiatric conditions.

The **characteristic lesion of LSC** is a somewhat **circumscribed, oval**, and **thickened plaque**. It is very itchy. Other local features include dry, scaly or leathery surface, scratch marks, pigmentation, and exaggerated skin markings.

Usually, there is one solitary plaque, especially on the patient's dominant side. However, multiple plaques, with symmetric or asymmetric distribution, may also occur. The most common sites are genitals, back or side of the neck, wrists, and forearms, and dorsum of the foot/lower legs.

## Diagnosis

The diagnosis is usually established by **clinical examination**. A **biopsy** is required only if clinical examination alone is insufficient to establish the diagnosis.

**Underlying causes** must be identified. Among the stimuli that may trigger LSC, **sensitization** must be kept in mind, especially in chronic cases, and a **patch test** can be accordingly administered.

## Differential diagnoses



[Image](#): "Plaque of lichen simplex chronicus." kilbad created this work entirely by myself. License: [CC BY 3.0](#)

- Lichen sclerosis
- Lichen planus
- Contact dermatitis
- [Herpes simplex](#)
- Seborrheic/atopic dermatitis
- [Psoriasis](#)
- Mycosis fungoides
- Lichen amyloidosis

## Management

The goal of treatment is to **stop the itch-scratch cycle** and **heal the affected skin**. To achieve this, the following approaches need to be taken: elimination of all skin irritants, physically stopping the scratching, treating any underlying disease and/or coexisting infections, reducing **inflammation**, and correcting the skin's barrier function.

Avoidance of scratching is necessary. The mainstay of LSC treatment is **topical steroid application usually applied under plastic occlusion**. A low- or mid-potency ointment (e.g. desonide 0.05% or mometasone 0.1%) should be used when the symptoms are not too severe. Mid- or high-potency steroids are not recommended for thin skin such as the scrotum and axilla.

In very severe cases, intramuscular triamcinolone (60 – 80 mg) can be useful for immediate symptom relief. **Older-generation antihistamines** can be administered at night to obtain a sedative effect and avoid scratching during sleep.

**Intralesional triamcinolone** can also be used for plaques that are too thick or when the patient is unable to use topical medications. **Topical tacrolimus** has been reported to be an effective, long-lasting treatment for LSC, especially in sensitive skin areas such as the face.

Signs of **bacterial skin infection** should be looked for (e.g., excoriation); if present, a culture should be obtained and appropriate **antibiotic treatment** be initiated.

In some cases, **nerve endings** are exposed, which aggravates the itching and causes discomfort. Such cases could benefit from the “**soak and seal**” treatment: a lukewarm wet washcloth is applied on the lesion for 5 – 10 minutes, dried, and the moisture is sealed in by application of petroleum jelly. The moisture reduces nerve signaling and the **petroleum jelly** seals in the moisture. This therapy can be discontinued as symptoms improve.

The symptom of LSC is, at least, in part **psychogenic**, and **psychosomatic interventions** can be beneficial in stopping the urge to succumb to scratching. The involvement of a **psychodermatologist** or **psychotherapist** is helpful. **Cognitive-behavioral therapies** have been shown to be effective in LSC, especially given the chronicity of the disease.

## Progression and Prognosis

The prognosis is **often good**. Adherence to treatment often leads to a complete resolution of the symptoms; however, improvement can take time and there can be recurrences. LSC is not a progressive disease, and regular follow-ups are not needed if the patient is asymptomatic.

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