# Photodermatoses

*Synonyms: photosensitive eruptions*

## What are photodermatoses?[1]

Photodermatoses are skin disorders that are precipitated by exposure to sunlight. They can be broadly classified into four groups based on aetiology:

- Idiopathic photodermatoses.
- Genetic photodermatoses.
- Metabolic photodermatoses.
- Exogenous photodermatoses.

Other underlying skin disorders can also be exacerbated by sunlight in exposed areas of skin. Examples include:

- Darier's disease (a rare, autosomally dominant inherited condition where dark, warty-like papules appear on the skin).
- Herpes simplex.
- Systemic lupus erythematosus (SLE).
- Rosacea.
- Vitiligo.

## Assessment[1]

### History

When assessing someone with a possible photodermatosis, take a full history, noting particularly:

- The timing of the rash after sun exposure.

- Any seasonal differences.
- Type of discomfort or pain (eg, itching or severe burning compared with a typical case of sunburn).
- How much exposure is required to trigger symptoms.
- Whether it still occurs in spite of protection with sun cream and/or whether it is blocked by glass (which blocks ultraviolet B (UVB)).
- Take a full medication history, including topical skin applications and drugs such as quinine (a known photosensitiser) which are not always considered as drugs by patients.
- Whether there has been use of perfumes, or contact with airborne sensitisers or plants.
- Any past history or significant family history.

### Examination

- Establish which areas of skin are affected and which spared. Sparing of facial skin creases, behind the ears, lower eyelids and beneath the nose strongly suggests photosensitivity, although, chronic photosensitivity can extend to shielded areas.[2]
- Consider the type of rash:
    - Wheals suggest solar urticaria.
    - Sheet-like erythema suggests drug phototoxicity.
    - Blisters can occur in any severe photosensitivity but suggest porphyria cutanea tarda or reactions to plants.

## Investigations

- Phototesting with ultraviolet (UV) and sometimes visible light, patch tests and the combination (photopatch) are occasionally helpful when there is diagnostic difficulty. In photopatch testing, suspected photoallergens are applied in two sets. One set is removed after 24 hours and UV irradiation follows.
- Serological tests may help to exclude connective tissue disease.

- Testing to exclude metabolic causes may be helpful - eg, plasma porphyrin levels.

# Idiopathic photodermatoses

### Polymorphic light eruption (PALE)

This is the most common photodermatosis. Females are affected twice as frequently as males. About 15% of adolescents and young adults will suffer to some degree at some time.

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#### Symptoms

- Itchy papules, eczematous plaques and vesicles, often with some urticaria initially. Variable severity. These develop about 24 hours after exposure to sunlight.
- In the UK, this can start in the spring and continue through to autumn, although many people will have progressively fewer problems as spring turns to summer - their skin seems to 'harden' with continued exposure.

#### Treatment and management

- Simple avoidance measures may be enough - shade, clothing, sunscreens.
- An acute eruption can be treated with emollients and mild-to-moderate potency topical steroids. Oral steroids are sometimes needed. Antihistamines may help pruritus.
- Severe cases may benefit from short courses of psoralen and UVA (PUVA) treatment in the spring to 'harden' the skin artificially.[3] See separate article PUVA.
- One study reported beneficial effects from a nutritional supplement containing lycopene, beta-carotene and Lactobacillus johnsonii.[4]

See also separate article Polymorphic Light Eruption.

### Chronic actinic dermatitis (actinic reticuloid)

Actinic dermatitis is a rare condition affecting mainly middle-aged and elderly men. It often follows years of chronic contact dermatitis.

### Symptoms

- Lichenified plaques on light-exposed skin.
- It is initially worse in the summer but can become perennial.
- There is usually little doubt about the diagnosis; however, consider the possibility of a drug-induced photodermatosis or airborne contact dermatitis.

### Treatment and management

- Light avoidance, sunscreens and topical steroids.
- Chronic cases may require systemic steroids and/or azathioprine.

## Solar urticaria [5]

This is a rare condition. See also Urticaria.

### Symptoms

- Wheals appear minutes after exposure to sunlight.
- There is associated pruritus, stinging and erythema.
- It usually affects exposed skin but may also appear on unexposed areas if thin clothing is worn.
- There may be mucosal involvement with tongue and lip swelling.
- The rash disappears after sun exposure ceases and this is key to diagnosis.
- An immune-mediated reaction has been proposed. [6]
- May be confused with erythropoietic protoporphyria (especially in children) and polymorphous light eruption. The latter is more common but it takes longer for the lesions to subside. It tends to be a chronic disease. [7]

### Treatment and management

- Sun avoidance, sunscreens, antihistamines.

- Omalizumab, an anti-immunoglobulin E antibody, has been found to be effective.[8] One study reported good results after a single course of intravenous immunoglobulins.[9] Some patients respond to UVA rush hardening treatment (multiple UVA irradiations at one-hour intervals per day).[10]

### Actinic prurigo[11]

Another rare condition. Tends to be familial, although aetiology is unclear. It rarely occurs in Europe and Asia but is seen more commonly in Central and South America.[12]

#### Symptoms

- It often presents in childhood, with papules and excoriation on sun-exposed skin.
- Conjunctivae and lips can be affected.

#### Treatment and management

- Sunscreens, topical steroids, systemic steroids and psoralen combined with UVA (PUVA). Antimalarials and thalidomide may also be used.[13] [14]

### Hydroa vacciniforme[15]

This is a rare childhood photodermatosis with recurrent papules, vesicles and crusts occurring on sun exposure and healing with scarring. It generally resolves in adolescence.

## Genetic photodermatoses

### Chromosomal abnormalities

These include:

- Cutaneous porphyrias.
- **Bloom's syndrome** - a rare chromosome breakage syndrome, primarily affecting Ashkenazi Jews. It presents with failure to thrive, stunted growth, small and narrow facies, sun-sensitive facial telangiectasias, immunodeficiency and increased risk of malignancies.[16]

### Defective DNA repair

This includes:

- Xeroderma pigmentosum - a collection of several genetic variants which present in childhood with severe redness and swelling up to 72 hours after sun exposure, resulting in scarring. Very rare.

### Other

These include:

- Subacute cutaneous lupus erythematosus:[17]
  - Can occur in people with SLE, Sjögren's syndrome and complement deficiency, or it may be drug-induced. It is a photosensitive dermatitis that affects those who are genetically predisposed (HLA-B8, HLA-DR3, HLA-DRw52, HLA-DQ1).[18]
  - Females are more commonly affected.
  - Papules occur in sun-exposed areas and tend to develop into annular erythema or produce a psoriasis-like rash. Scarring is not typical. There may be associated arthralgia, arthritis and fatigue. Other symptoms of SLE and Sjögren's syndrome may be present.
  - Management includes sunscreens, protective clothing, corticosteroids and antimalarials. Other potential treatments include thalidomide, retinoids, interferon and immunosuppressants.

## Metabolic photodermatoses

- **Porphyrias** - see separate article Porphyrias which provides more detail.
- **Pellagra** - a rare disease caused by niacin deficiency or a disruption of its metabolism. Its manifestations include dermatitis with pronounced photosensitivity, with gastrointestinal and neuropsychiatric symptoms.[19]

## Exogenous photodermatoses

### Drug-induced photosensitivity[20]

- Photosensitivity reactions can occur as adverse effects of some commonly prescribed topical or systemic medications.
- Reactions can be phototoxic (where the damage to the tissues is direct), or photo-allergic (where the damage is immunologically mediated).
- Lichenoid reactions, subacute cutaneous lupus erythematosus or pseudoporphyria can also occur. Commonly implicated medications include:[21]
    - Antibiotics - tetracyclines, fluoroquinolones, sulfonamides.
    - Non-steroidal anti-inflammatory drugs (NSAIDs).
    - Diuretics - eg, furosemide, bumetanide.
    - Sulfonylureas.
    - Neuroleptics - eg, phenothiazines.
    - Antifungals - eg, terbinafine, itraconazole, voriconazole.
    - Other drugs - eg, amiodarone, enalapril, oral contraceptives, diltiazem.
    - Sunscreens.
    - Fragrances.

**Symptoms**

- Phototoxic reactions tend to be more common and resemble severe sunburn. Their onset can be rapid.[22]
- Photo-allergic reactions tend to resemble allergic contact dermatitis and they can have delayed onset (24-72 hours).[23]
- Lichenoid reactions appear as erythematous papules and plaques.[24] Cefalexin, cotrimoxazole and phenytoin are examples of drugs implicated.[25]
- Lupus-like reactions resembling subacute cutaneous lupus erythematosus can occur with some drugs - eg, hydrochlorothiazide, calcium-channel blockers, angiotensin-converting enzyme (ACE) inhibitors and some antifungals.[26]

- Pseudoporphyria reactions, where the clinical picture resembles porphyria cutanea tarda but with normal porphyrin levels, can occur in response to drugs including naproxen.[27]

**Treatment and management**

- Topical corticosteroids, systemic if severe.
- Sunscreens (if they are not the cause of the photosensitivity).
- Avoidance of the causative agent.

Complications of repeated phototoxic injury include premature skin ageing and increased risk of skin cancer.[28]

## Phytophotodermatitis[29]

This is a photosensitivity reaction caused by exposure to certain plants (either ingestion or skin contact) followed by exposure to sunlight. Furocoumarins (psoralens) are the plant oils involved. Common plants include:

- Celery and parsnip.
- Giant hogweed.
- Angelica.
- Fennel, dill, parsley, anise.
- Lime, lemon, fig.
- Mustard.
- Chrysanthemums.

Perfume-induced phytophotodermatitis can also occur with perfumes that use oil of bergamot.

**Symptoms**

- Burning erythema and blistering about 24 hours after exposure. Pruritus is not usual.
- Desquamation and hyperpigmentation can occur.

- Usually self-limiting.

**Treatment and management**[30]

- Avoidance of plants/sunlight.
- Topical steroids (systemic if severe) and NSAIDs.
- 4% hydroquinone cream may reduce hyperpigmentation but dermatology guidance is advised.

## Further reading

- Photosensitivity; DermNet.
- Photodermatoses: drug/chemical-induced; Primary Care Dermatology Society (PCDS).
- Photocontact dermatitis; DermNet.




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