

# Diagnosis and management of psoriasis

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**Abstract:** Psoriasis is a serious chronic skin disease characterized by an unusual overgrowth of the upper layer of the skin, and today its systemic effects are also known. It is mainly genetic. Psoriasis occurs in cycles, alternating remissions, i.e., improvements and deteriorations. Plaque psoriasis is the most common form of psoriasis, which occurs in 80% of patients. It usually appears as spots on the skin that merge into red, oval-shaped flat surfaces (plaques). They can be of different sizes, typically red, and easily felt. Therefore, this review focuses on diagnosing and managing psoriasis and has the potential to educational value for the citizens.

**Keywords:** Psoriasis; Redness of the skin; Therapies; Medications.

## 1. Introduction

Early diagnosis and therapy are essential in the treatment of psoriasis. If you notice any changes on the skin, similar to psoriasis, visit a dermatologist as soon as possible, who specializes in treating this skin disease. In rare cases, a biopsy (a diagnostic procedure in which a small portion of the affected skin is taken) is needed to confirm the diagnosis. If you have been diagnosed with psoriasis, ask your doctor about the severity of your psoriasis, which can be determined using one of the most commonly used scales: PASI (Psoriasis Area and Severity Index). It is essential to determine the severity of the disease to choose the best treatment method and to be able to determine whether the treatment is working.

The disease can appear at any age, but it most often occurs between the ages of 15 and 25. This disease can also occur in young children and elderly patients. Initially, psoriasis manifests as usual skin spots that merge to form psoriatic plaques, varying in size and severity. Psoriatic changes on the skin most often affect the head, elbows, knees, lumbar region, hands, and feet. Psoriasis plaques can also appear on the nails. Types of psoriasis are usually recognized by their characteristic appearance [1].

## 2. Psoriasis is not just a skin disease

Psoriasis doesn't just mean dry, scaly "flakes" on the skin. People with psoriasis fear rejection or lack of personal and family life, experience difficulties finding employment and deal with complications that can eventually lead to disability.

Psoriasis patients may face widespread intolerance. Their quality of life is drastically reduced due to the symptoms of psoriasis. The unpleasant symptoms of psoriasis and the overall negative social attitude towards psoriasis can negatively affect the patient's self-confidence; patients feel misunderstood, marginalized, and stigmatized. For all these reasons, patients should carefully monitor their emotional state (Fig. 1).



**Figure 1.** Complexity of psoriasis<sup>1</sup>

Successful treatment of psoriasis largely depends on whether the patient can rely on his family and friends when he/she needs support in difficult times [2].

## 3. Types of psoriasis

*Plaque Psoriasis* is the most common psoriasis, accounting for 80% of cases. Due to inflammation, it appears in red lesions, usually above the skin surface. Also, they can be covered with a layer of silvery or white scaly skin. These lesions are typically found on elbows, scalp, and lower back areas.

*Guttate Psoriasis* is characterized by droplet-shaped lesions, i.e., red dots on the trunk or limbs. They are usually not as raised as psoriatic lesions. Gut psoriasis can develop in childhood or early adulthood and can come on suddenly.

<sup>1</sup> Figure created by modifying the original work of PDPics, available at Pixabay. Please consider supporting this author by visiting the following link <https://pixabay.com/photos/unhappy-mask-man-sad-face-sitting-389944/>

*Inverse Psoriasis* appears as bright red lesions that are not rough but smooth and shiny. They are usually found in skin folds and sensitive areas such as the armpit, groin, or under the breasts or buttocks. These areas can also be irritated by friction and/or perspiration.

*Pustular Psoriasis* mainly occurs in adults and is characterized by white, pus-filled blisters (which are not infected because they are made up of white blood cells). These blisters may be surrounded by reddened skin and localized or scattered.

*Erythrodermic Psoriasis* is mainly inflammatory and often affects a large part of the body surface. Large areas of the skin are red and inflamed, causing large "sheets" of scales to peel off, causing severe pain and discomfort [3].

## 4. Types and methods of treatment

### 4.1. Local (topical) treatment

Dermatologists prescribe local preparations in ointments or creams to patients with mild or moderate psoriasis. Lotions or creams are applied directly to the affected areas of the skin. With local treatment, we want to reduce the manifestations of psoriasis on the skin - inflammation and remove scales. For local treatment to be successful, it must be carried out for several weeks. Ointment or cream is applied only to the part of the skin with psoriatic changes. Always use local preparations according to the instructions given to you by your doctor. Mild psoriasis can be treated with practices that should be applied and massaged into the skin to reduce the symptoms of psoriasis. Among the many ointments and creams used to treat psoriasis, patients are usually advised to choose preparations containing urea, salicylic acid, retinoid, tar, and corticosteroids.

Corticosteroids have anti-inflammatory, immunosuppressive, and anti-allergic effects. Corticosteroids are steroid hormones produced by our bodies. Synthetic corticosteroids have been used since the 1950s. Corticosteroid therapy is usually short-term. Corticosteroids can quickly relieve psoriasis symptoms, but the disease soon returns after treatment is stopped. In addition, psoriasis symptoms can worsen, or new symptoms may appear after stopping with corticosteroids. Corticosteroid therapy should be gradually discontinued (gradually reduce the number of applications to skin changes). Common side effects are skin blemishes, skin atrophy, dilated blood vessels, and bacterial or fungal infections. Corticosteroids are available as ointments. Corticosteroids are often combined with other topical preparations.

Tar has been used in the treatment of psoriasis since ancient times. Tar preparations include creams, ointments, shampoos, or soaps, which are usually black and have an unpleasant smell: tar treats psoriasis, eczema, seborrheic skin, or dandruff.

Retinoids are derivatives of vitamin A used to treat psoriasis. They are produced as gels, creams, or solutions for local applications. Retinoids are agents that reduce the inflammation and epidermal spread of psoriasis. The most common side effect of retinoids is irritation. Retinoids can be harmful to the fetus and are contraindicated during pregnancy and in women planning pregnancy for two years after stopping therapy. Retinoids for the treatment of psoriasis have not been confirmed to have any effect on male offspring. To achieve the best possible result, retinoids are combined with UVB phototherapy or vitamin D3 derivatives [4].

## 4.2. Phototherapy

Phototherapy (light therapy) has been known and used since ancient times. Exposing the skin to light slows down the growth of affected skin cells and improves the condition of skin affected by psoriasis. In most patients, solar radiation positively and visibly reduces skin changes. Interestingly, phototherapy can also be used in patients where exposure to sunlight can cause worse symptoms because the light lamps send out only safe and effective ultraviolet light. Phototherapy must be applied consistently and regularly under constant medical supervision. Like any other medical therapy, phototherapy can cause side effects, such as phototoxicity, accelerated skin aging, acute corneal inflammation, and skin cancer. Phototherapy in psoriasis uses different methods based on UVA and UVB radiation.

PUVA (psoralen + UVA) is a method of treating psoriasis that combines a drug that increases sensitivity to UV rays - psoralen (taken orally) and ultraviolet A radiation (UVA). Psoriasis patients take a dose of psoralen before phototherapy treatment with UVA radiation. The patient is given protective glasses to wear during the procedure. In addition, patients' vision and liver function are checked after a series of treatments (3-4 treatments per week). As a precaution, the skin must not be exposed to sunlight immediately after the treatment. PUVA is usually used in patients with 10%-15% of the skin surface affected by psoriasis. Long-term phototherapy is associated with an increased risk of itching, headaches, nausea, and skin cancer.

Phototherapy with UVB radiation - UVB phototherapy (broad-spectrum or narrow-spectrum ultraviolet light) for psoriasis is safer than PUVA therapy. It may be recommended for patients with psoriasis and other liver or eye problems. Patients usually experience improvement in their symptoms after several therapeutic UVB treatments. Like PUVA, UVB phototherapy should be administered under medical supervision. Exposure to UVB light can

cause immediate healing of skin redness (erythema) and itching. Narrow-spectrum UVB therapy with a wavelength spectrum of 311-312 nm is considered the most effective in treating psoriasis [5].

### 4.3. Conventional systemic therapy

Conventional systemic therapy is, as a rule, used when local (topical) treatment is unsuccessful. Systemic therapy can be administered in the form of injections or tablets. Conventional systemic therapies are very effective, but they also carry a greater risk of side effects. Systemic medications are recommended for patients with moderate to severe psoriasis. Blood analysis and blood pressure measurement must be performed regularly in patients receiving systemic therapy. Conventional systemic therapy includes ciclosporin, methotrexate, and retinoids (acitretin) [6].

### 4.4. Biological drugs

Biological drugs represent a significant advance in the treatment of psoriasis and give hope back to patients. They are used in patients with moderate and severe psoriasis in whom conventional systemic therapy is ineffective or contraindicated, or the patient cannot tolerate it.

How do biological drugs work? Biological drugs are given by subcutaneous injection or intravenous infusion. They are used in Europe and worldwide due to their effectiveness and low risk of side effects (high safety profile). Patients most in need of biologics are those with moderate to severe plaque psoriasis who do not respond well to conventional systemic therapy. Biological drugs are the most important for patients with the most potent forms of psoriasis.

Patients receiving biologics experience rapid improvement in symptoms, including skin manifestations of psoriasis, without needing ointments and treatment in a hospital setting. The effects of biological drug therapy are reflected in the quality of life: patients can be professionally and socially active without feeling ashamed and embarrassed by their illness.

Biological therapies target the immune system. Unlike other immunosuppressive drugs, biological drugs act only in the places where psoriasis occurs and are suitable for long-term use. To receive biological therapy, patients must undergo examinations to determine their general health and rule out tuberculosis. Biological drugs used to treat psoriasis mimic

the functions of natural proteins and suppress the body's immune response. As a result, they prevent the development of inflammatory skin conditions, and patients will be in long periods of symptom-free remission. Patients confirm that biological therapy begins to work quickly and feel relief for longer. Biologics' most common side effects include injection site reactions, fever, fluctuating blood pressure, and joint and muscle pain. The use of biological therapy can increase the risk of infection [7].

## 5. PASI - Psoriasis Area and Severity Index - Psoriasis Index and Severity Index

PASI is the most commonly used tool for measuring the severity of psoriasis. PASI combines the assessment of the severity of skin changes (lesions) and the affected area into a single score ranging from 0 to 72.

The body is divided into four parts:

- Head (10% skin);
- Hands (20% skin);
- Carcass (30% skin);
- Legs (40% skin).

Each of these areas is scored independently, and then the four scores are combined into a final PASI score. For each part, the percentage of the affected skin surface is estimated and then transformed into a score from 0 to 6.

- 0. 0% of the covered area;
- 1. <10% of the covered area;
- 2. 10% - 29% of the covered area;
- 3. 30% - 49% of the covered area;
- 4. 50% - 69% of the covered area;
- 5. 70% - 89% of the covered area;
- 6. 90% - 100% of the covered area.

Within each area, the severity of changes is assessed according to three clinical signs:

- Redness (erythema);
- Hardening (induration);
- Peeling of the skin (desquamation).

Parameters for the severity of changes are expressed on a scale from 0 to 4, from no change to maximum. Then the sum of all three parameters is calculated for the weight of changes for each skin part and multiplied by the weight of the corresponding body part (0.1 = 10% for the head, 0.2 = 20% for the hands, 0.3 = 30% for the body, 0.4 = 40% for the legs) [8].

Example:

Head = 6% = 1 point.

The severity of changes:

- Redness 3;
- Hardening 2;
- Skin peeling 1.

In the sum of 6, multiply by 0.1 = 0.6.

Total:  $1 + 0.6 = 1.6$ .

Hands = 75% = 5 points.

The severity of changes:

- Redness 1;
- Hardening 2;
- Skin peeling: 4.

In the sum of 7, multiply by 0.2 = 1.4.

Total:  $5 + 1.4 = 6.4$ .

Carcass = 35% = 3 points.

The severity of changes:

- Redness: 2;
- Hardening 2;
- Skin peeling: 1.

In the sum of 5, multiply by 0.3 = 1.5.

Total:  $3 + 1.5 = 4.5$ .

Legs = 20% = 2 points.

The severity of changes:

- Redness: 4;
- Hardening 3;
- Skin peeling: 2.

In the sum of 9, multiply by 0.4 = 3.6.

Total:  $2 + 3.6 = 5.6$ .

Final result: Head (1,6) + arms (6,4) + carcass (4,5) + legs (5,6) = 18.1 = PASI

## 6. Psoriasis - what to avoid

If you have psoriasis, you should avoid several factors, in particular:

- **Alcohol:** frequent consumption of alcohol can increase the risk of psoriasis flare-ups and worsen the symptoms of the disease. In addition, alcohol can interact with the active substances in psoriasis medications. As a result, the effects of the therapy may be neutralized, or serious side effects may occur. Ask your doctor about possible interactions with treatment.
- **Smoking:** frequent smoking or cigarette addiction can increase the severity of symptoms, especially in women. In addition, smoking is associated with a higher risk of cardiovascular disease.
- **Stress:** stressful situations in patients with psoriasis can worsen the manifestations of the disease on the skin. Stress, negative emotions, and everyday problems can trigger psoriasis flare-ups and contribute to developing or spreading inflammatory lesions on the skin. If you cannot control or eliminate stress and notice your psoriasis worsening, consult your dermatologist and see a psychologist or psychiatrist.
- **Excess body weight:** Psoriasis patients are more prone to weight gain, which can lead to obesity. Being overweight can significantly complicate the treatment of psoriasis symptoms, especially in skin folds, under the arms, chest, or groin. Overweight patients are also more likely to develop a bacterial or fungal infection. Psoriasis treatment is also less effective in overweight patients. This is because



standard drug doses are insufficient for therapeutic effects in overweight patients. This also applies to biological therapies. Therefore, overweight patients with psoriasis should consult a specialist [9].

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