Psoriasis and Other Erythematous Skin Diseases

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With a morbidity rate of 2-3%, psoriasis is one of the most common skin disorders in the Western world. Psoriasis, along with Reiter's syndrome and pityriasis dermatoses can be classified as inflammatory, erythematous, hyperkeratotic skin diseases. Learn more about psoriasis and its forms, and about the other diseases mentioned above.

Psoriasis

Definition
Psoriasis (psoriasis vulgaris) is a chronic, recurrent, relapsing skin disorder characterized by inflammation and hyperproliferation of skin cells of the epidermis. Patients present with patches of skin covered with silvery scales, which is why this disease is also called plaque psoriasis. This disease has many factors responsible for its manifestations, including environmental, genetic, and immunological.

**Epidemiology**

Although psoriasis is spread over the entire globe, it is mostly fair-skinned people who are affected. The morbidity in Europe and North America is between 2–3%. On the African and Asian continent, on the other hand, the disease is rarely found. For indigenous people, the disease is practically irrelevant.

**Pathogenesis**

The cause of psoriasis has not yet been determined conclusively. However, there is a clear genetic predisposition. The disease probability for a child whose parents both have psoriasis is about 50%. In identical twins, it is even higher at 66%.

The disease is also associated with various HLA antigens. A connection with other immunological factors, such as T lymphocyte activity, is considered likely. Since endogenous antigens stimulate specific groups of T cells, and this ultimately leads to an increased division rate of the keratinocytes through a more complex pathomechanism, psoriasis is also associated with autoimmune diseases.

Based on these defective immunological and autoimmune responses, a huge increase in certain metabolic processes and cell division rates occurs. An average of 0.4% of the cells of the basal cell layer continuously undergoes cell division in healthy skin compared to psoriatic skin, which shows a division rate of 2.5%.

In addition, the time of cell division substantially increases. If cells in healthy skin typically need 20 days to divide, this time is reduced to 1.5 days in psoriatic skin. Also, the transit time of the cell from the basal cell layer to the secretion of lamellar bodies in the horny layer is significantly lower. While it takes 28 days in healthy skin, the cells of psoriatic skin pass through the individual skin layers within 3–4 days.

In addition to these causal factors, other trigger factors that play a crucial role in the etiology of psoriasis. For example, the cross-reactive relationship between previous streptococcal infections and the severity of psoriasis has been proven. The same applies
to staphylococcal skin. Another verified fact is the negative influence of various drugs such as beta-blockers, interferon, or lithium have on psoriasis.

Other trigger factors are stress, alcohol, and strong mechanical stimuli (Koebner phenomenon).

**Histology**

Histologically, psoriasis typically manifests **acanthosis**, **hyperkeratosis**, and **parakeratosis**. The epidermis is enlarged, and the epidermal endplates are thinned. In the dermis, lymphocytic infiltration can be found. The cells of the prickle cell layer (stratum spinosum) are markedly enlarged due to the general increase in metabolic processes. At the same time, the accelerated processes result in an incomplete differentiation of the individual squamous epithelial layers of the epidermis, causing thick, silvery scaling.

**Clinical presentation**

**Main symptoms**

In general, the clinical picture of psoriasis is highly variable. Most common sites showing skin lesions are elbows, scalp, knees, lumbosacral region, natal cleft, and glans penis. The individual psoriatic foci usually do not itch, but at the same time, there are predilection sites such as the head and anal region that do tend to itch.

The typical lesion presents as a sharply defined, usually roundish, erythematous plaques with silvery scaling. Typical predilection sites are the extensor surfaces of the elbows and knees, the hairy areas of the head, the navel, and the sacral region.

However, psoriatic lesions can appear on any part of the integumentary system. The size of the lesions varies widely, ranging from dot-like inflammations to confluent, plate-sized, scaly surfaces.

Also typical of psoriatic lesions are the following 3 phenomena that are present in each psoriatic lesion and thus may be diagnostically indicative:

1. **Candle phenomenon**

   The thick, silver-gray scales scraped off of the inflamed skin resemble the scrapings of candle wax.

2. **The phenomenon of the last epidermal layer**

   Below the thick scales, a cohesive, sheet-like membrane can be found, which corresponds to the deepest layer of the epidermis.

3. **Auspitz’s sign (blood dew)**

   If the last layer is removed, punctate bleeding spots are revealed.
Other symptoms

**Nails:** A rather common symptom (30-50% of all cases) in psoriasis patients is nail changes. Typical signs are dotted or pitted nails, crumbling of the nails, a yellowish discoloration of the nail bed (oil drop), and distal onycholysis.

**Mucous membranes:** Mucous membranes are affected less frequently than the nails. The changes take the form of leukoplakia.

**Joints:** In some cases (about 5-8%), immunological involvement of the joints occurs. Through chronic inflammatory degeneration, the so-called psoriatic arthritis (or psoriasis arthropathica) develops. The central lesion in the joint is synovitis, which in turn causes cartilage destruction and bone erosion. The large joints are frequently affected, but in the course of the inflammatory process, deviation of the fingers may occur as well.
Pustular psoriasis

Skin irritations are often caused by an infection or as a response to a drug. While this may not cause any further problems in an otherwise healthy person, it can result in the massive formation of pustules in a psoriasis patient. These pustules are primarily filled with neutrophilic granulocytes. The generalized form (generalized pustular psoriasis), therefore, leads to a greatly accelerated erythrocyte sedimentation rate (ESR) and leukocytosis with a left shift.

Diagnosis and differential diagnosis

There are no specific lab investigations for psoriasis. In the majority of cases, the clinical picture is enough for an accurate diagnosis, and a biopsy can be taken in uncertain cases. The histological picture corroborates the suspicion.

About differential diagnosis, several investigations such as:

- Blood tests for rheumatoid factor
- ESR: It is normal in psoriasis cases, except in the pustular type where it is elevated
- Uric acid
- Fungal studies
- Dermatological biopsy
- Radiological studies of joints

The investigations are conducted to rule out other possibilities:

1. Scaly fungal infection or seborrheic dermatitis should be considered.
2. Acute exacerbation of neurodermatitis might also be confused with psoriasis.
3. Since psoriasis can affect the joints in some cases, the differential diagnosis has to take into account diseases of the rheumatic type.

**Therapy**

The established treatment approaches only show a morbostatic effect, i.e. they are purely symptomatic. Psoriasis turns out to be a protracted disorder that is difficult to treat except for rare cases of spontaneous healing.

**Local therapy**

- **Dithranol**: The most important drug for topical treatment is dithranol (anthralin). With proper dosage and correct exposure time, it results in a long-lasting remission of the lesions.
- **Vitamin D3**: Vitamin D analogs such as calcipotriol or tacalcitol are very effective in the treatment of psoriatic hyperproliferation.
- **Phototherapy**: Ultraviolet light therapy in combination with oral medications that make the skin more photosensitive is another option (psoralen plus ultraviolet A, also known as PUVA therapy). Alternatively, a combination of UV light with irritating the skin with salt water can be considered (PUVA bath therapy).
- **Corticosteroids**: Treatments with corticosteroids should be short-term and only carried out in special cases. Risks with treatment include rebound phenomenon, atrophy, and the proliferation of vessels. Corticosteroids prove to be especially helpful in the treatment of unfavorably located, itchy places, such as the head and anal area.

**Systemic therapy**

- **Acitretin** is a retinoid usually used for pustular forms of psoriasis. Women of childbearing age and patients with liver damage are excluded from treatment with this medication.
- **Fumaric acid ester** is given in extensive cases of psoriasis vulgaris. Therapy should start with low dosages and increase slowly. Side effects occur mostly in the gastrointestinal area with symptoms such as nausea, vomiting, diarrhea. The medication has a significant immunosuppressive effect due to the lymphocyte depression that can be expected during this therapy.
- **Cyclosporine** is used for all forms of psoriasis. Kidney function and blood pressure should be checked regularly (drug monitoring) because renal functions might be diminished during this type of therapy.

**Note**

Psoriasis is based on defective immunological reactions (autoimmune diseases). Trigger factors include streptococcal infections, medications, stress, alcohol, and mechanical stimuli.

The scaly, inflammatory lesions of psoriasis can be explained by an increased rate of mitosis of the basal layer (stratum basale), an accelerated cell division time and a reduced cell transit time.

**Typical of psoriatic lesions:**

- Candle phenomenon
The phenomenon of the last epidermal layer
- Auspitz’s sign

**The major forms of psoriasis are:**
- Plaque psoriasis
- Psoriatic arthritis
- Pustular psoriasis

Treatments are of local as well as systemic nature.

Psoriasis has 2 peak ages, first from 16–20 years and second from 57–60 years.

**Prognosis**

Psoriasis has a tendency for remissions with phases of improvement. Symptoms flare up mainly because of stress and other infections.

**Dermatoses of the Pityriasis Group**

Pityriasis stands for bran, which is why the term is used for the classification of skin diseases that are associated with the scaling of the skin. The dermatoses of the pityriasis group include *pityriasis rosea*, *pityriasis lichenoides chronica*, and *pityriasis rubra pilaris*.

**Pityriasis rosea**

**Definition and epidemiology**

*Pityriasis rosea* is an acute inflammatory skin disease with a time-limited progression. The usual onset age is between 10 and 40 years. It occurs most frequently in the autumn and winter months.

**Pathogenesis**

Although the cause is not fully understood, it is now believed that the disease probably has infectious origins. The pathogen has not yet been definitively identified, but it could be a virus.

Pityriasis rosea may be associated with allergies, mainly the allergy type IV (delayed-type).

**Histology**

Histologically, edema in the **upper dermis** is typically present. Infiltrations of lymphocytes and a moderately widened epidermis are also apparent. The visibly noticeable scaling of the skin is histologically reflected in a para- or hyperkeratosis.

**Clinical presentation**

Typically, pityriasis rosea starts with a single, sharply defined, oval plaque which is also referred to as **primary plaque**, **primary medallion**, or **herald patch**.

It is pale red with desquamation and scales at the margins. The main location is the torso.

Secondary outbreaks develop within 2 weeks. They exhibit the same clinical picture as the primary efflorescence lesions. However, lesions are smaller, making it possible for the
clinician to diagnose them even weeks later. In general, the secondary outbreaks occur symmetrically on the torso and proximal extremities and usually extend into the main lines of the body. Head, neck, and distal extremities are not affected in the majority of the cases.

Flu-like symptoms may precede the skin manifestation but do not always occur. The patient rarely complains of itching. Cervically, it can sometimes lead to moderate lymphadenopathy.

After 4–6 weeks, pityriasis rosea usually dissipates.

**Diagnosis and differential diagnosis**

The primary outbreak, as well as the exanthematous distribution of secondary outbreaks (main voltage lines), are indicative of Pityriasis rosea. Superficial *tinea corporis*, secondary syphilis, and an *exanthematous psoriasis guttata* should be considered as differential diagnoses.

**Therapy**

Since the lesions regress on their own after at least 6 weeks, there is no need for treatment of pityriasis rosea. Itching is rarely observed and can be treated with antihistamines such as cetirizine or Fenistil if needed. Rehydrating therapy should be avoided as this worsens the disease.

**Pityriasis lichenoides chronica**

**Definition, etiology, and epidemiology**

Pityriasis lichenoides chronica is a subacute inflammatory dermatosis that is characterized by *papular* or *squamous lesions*. It occurs worldwide and is most frequent in young adults. The etiology is unknown. Immune response due to infection and allergy is suspected.

**Clinical presentation**

Brownish-red papules and plaques that can reach the size of a penny and flakes that can be lifted off with a spatula are typical for *pityriasis lichenoides chronica*. It is accompanied by itching (often minor), and complete healing occurs within weeks or months.

**Diagnosis**

The diagnosis is based on the identification of the reddish-brown lesions combined with the corresponding scaling. Other symptoms are generally absent. *Psoriasis, papulosis,* and *syphilis* should be considered as differential diagnoses.

**Therapy**

*Pityriasis lichenoides chronica* usually heals itself after weeks or months. As an accompanying measure—or when complications arise—a carefully dosed ultraviolet B phototherapy and corticosteroids may be used.

**Pityriasis rubra pilaris**

**Definition, etiology, and epidemiology**
**Pityriasis Rubra Pilaris (PRP)** is a type of papulosquamous skin condition. Typical peak age does not exist. Men and women are equally affected. The etiology is unknown. Two forms occur in adults, the **classic** and the **atypical PRP**.

**Clinical presentation**

The **classic adult form (type I)** is characterized by follicular, erythematous, and hyperkeratotic papules. It commonly affects the torso and extensor surfaces of the extremities. It is associated with extensive erythema with flaking, which can escalate up to erythroderma. In its course, the PRP typically exhibits a craniocaudal direction of development. Other symptoms include palmoplantar keratosis and thickened nails with distal splinter hemorrhages.

**Therapy**

In 80% of the cases, a spontaneous remission within 1-3 years is observed. Vitamin D3 analogs and retinoids are medications of choice.

**Reactive arthritis (formerly known as Reiter’s syndrome)**

**Definition and epidemiology**

Reiter’s dermatosis is one of the main symptoms of **Reiter’s disease**. The disease is characterized by the clinical triad urethritis, conjunctivitis, and arthritis. If dermatosis is also observed, this is called **Reiter’s tetrad**.

**Balanitis circinata**, psoriasis-like lesions, and **keratoderma blennorrhagicum** on the palms and soles characterize the cutaneous symptoms of this inflammatory, chronically relapsing disease.

**Pathogenesis**

Genetic predisposition (HLA-B27) is suspected. At the same time, the disease is assumed to have infectious and allergic origins.

**Clinical presentation and diagnosis**
Main symptoms of **Reiter's disease** are:

- Urethritis (urogenital inflammation)
- Conjunctivitis (iritis)
- Arthritis (oligoarthritis)
- Reiter's dermatosis (balanitis, keratoderma)

Possible accompanying symptoms include:

- Fever
- Systemic inflammatory signs
- Iliosacral arthritis
- Internal organ involvement (carditis, pleurisy, etc.)

**Symptoms of the skin**

Dermatosis can be found in about 10% of the cases of patients with **Reiter's disease**. The lesions are exudative. Since the exanthema may be pustular and confluent on the palms and soles of the feet, the so-called **keratoderma blennorrhagicum** develops.

Since the hairy scalp and the nails may be affected as well, the lesions resemble those of psoriasis. Balanitis is found as both inflammatory and erosive efflorescence on the **glans penis**.

**Laboratory**

If a diagnosis cannot be confirmed with the **symptom triad**, various laboratory tests can be used as further indications:

- No rheumatoid factors; No antistreptolysin titer
- Bacteriological or serological indication of past infections; For example, of the bowel or the urogenital tract
- Immunogenetically, frequently associated with HLA-B27

**Therapy**

Truly effective treatment of **Reiter's disease** does not exist. Locally, corticosteroids or vitamin D3 analogs can be used, if possible, in combination with PUVA or PUVA bath therapy. Methotrexate has been proven to be rather effective. For severe pustular lesions, acitretin can be applied. Urethritis is treated with tetracyclines.

**References**


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**Correct answers**: 1A, 2C, 3A

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