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# The features psoriasis challenges in aesthetic care

## ABSTRACT

Psoriasis can affect many areas of the body, respectively; treatment should be directed to the affected areas according to their localization. The most difficult in treatment and aesthetic care are considered to be psoriasis of the nails, scalp, and palmar-plantar localization. These areas are visible all the time and well-groomed condition is of great importance for women. This article is devoted to the analysis of data on the peculiarities of care and the complexities of the treatment of psoriasis of aesthetic areas. Nail psoriasis is difficult to treat with topical therapy since the remedy must be optimized for penetration into the nail and surrounding tissues. Part of the inflammation in nail disease is located deep in the nail matrix

and, therefore, is difficult to treat locally. Psoriasis of the scalp is difficult to treat with local and phototherapy, due to the need for specific hair and scalp care. Palms and soles often have particularly thick psoriasis plaques, which can interfere with the absorption of topical therapy and resist phototherapy. Patients with predominantly palmar-plantar disease often do not respond to several treatments, and many require combination therapy to control the disease. Collectively, psoriasis of the nails, scalp, and palmar-plantar psoriasis are considered complex conditions and often do not respond to standard treatment protocols and require aesthetic medicine measures.

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**KEY WORDS:** nail psoriasis; head psoriasis; plaque psoriasis; aesthetic medicine; phototherapy

## INTRODUCTION

Nowadays psoriasis is known as a systemic immune-associated disease of a multifactorial nature with a dominant role in the development of genetic factors, characterized by accelerated proliferation of epidermocytes and a violation of their differentiation, immune reactions in the dermis and synovial membranes, an imbalance between pro-inflammatory and anti-inflammatory cytokines, chemokine, which included frequent pathological changes in the musculoskeletal system. Psoriasis is one of the most common skin diseases and occurs in 1–2% of the population of developed countries [1].

Hereditary predisposition, disorders of the immune, endocrine, and nervous systems, and adverse effects of environmental factors are important in the development of psoriasis. A number of genes have been described

in psoriasis etiology and the presence of which predisposes to the development of the disease. In particular, the antigens HLACw6 and HLADR7 are more often detected in patients with psoriasis. The provoking factors include psychoemotional overstrain, chronic infections, more often streptococcal, alcohol abuse, and taking medications, such as lithium salts, beta-blockers, chloroquine, oral contraceptives [2].

Psoriasis is often combined with systemic diseases, including metabolic syndrome, diabetes mellitus type II, coronary heart disease, arterial hypertension, and pathology of the hepatobiliary system.

The diagnosis of psoriasis is established on the basis of the clinical picture of the disease, the detection of symptoms of the psoriatic triad, the presence of the Koebner phenomenon in the progressive stage. In some cases, a histological examination of the biopsy

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of the affected skin is carried out to confirm the diagnosis. Morphological changes are characterized by pronounced acanthosis of the epidermis with a characteristic flask-like expansion of the epidermal outgrowths downwards and thinning of the epidermis above the tips of the elongated papillae of the dermis, violation of keratinization processes in the form of parakeratosis and disappearance of the granular layer. During the progression of the disease, clusters of neutrophilic leukocytes (Munro microabscesses) are found in the stratum corneum and in the parakeratosis zone. Inflammatory infiltrates of varying degrees of intensity from lymphocytes, histiocytes, and single neutrophil leukocytes are detected around the convoluted full-blooded capillaries of the papillary dermis [3].

Psoriasis can affect many areas of the body and treatments should target the areas of involvement. The **main purpose** of the article was to analyse challenged features in nail and scalp psoriasis in thorough aesthetic care.

## DIAGNOSTIC METHODS FOR THE DIFFERENT TYPES OF PSORIASIS

The index of prevalence and severity of psoriasis PASI (Psoriasis Area and Severity Index) is the main tool for determining the severity of psoriasis. The use of the index allows an objective assessment of the effectiveness of the therapy and ideally should be calculated before, during, and after the end of the course of therapy.

The PASI index is represented by an integer from 0 (absence of illness) to 72 (the most severe course) and reflects the area of the lesion, taking into account the intensity of manifestations of clinical signs, such as erythema, the intensity of peeling and infiltration. There are several modifications to the calculation of the PASI index, however, according to most authors, the scale that takes into account the three above clinical signs is considered to be classical.

To determine the PASI index, the patient's body is conditionally divided into four areas [legs — 40% of the total surface of the human skin, trunk (chest, abdomen, back) — 30% of the skin surface, arms — 20% and head — 10%]. Each of these 4 areas is evaluated separately — from 0 to 6 points, depending on the degree of damage. Then, for each area, the intensity of each of the 3 clinical signs is evaluated — erythema, peeling intensity and

infiltration. The intensity is estimated from 0 (absence of a sign) to 4 (maximum degree of manifestation). After that, for each area, its index is determined by the formula: (erythema with peeling and infiltration) × degree of lesion × weight coefficient of the area. The weight coefficient of the area corresponds to the surface area of the skin: 0.4 — legs, 0.3 — trunk, 0.2 — arms, 0.1 — head. Therapeutic tactics of management of patients with psoriasis depending on the value of the calculated PASI:

- intervention is required PASI > 60%;
- intervention is recommended by PASI 30–60%;
- intervention is not recommended by PASI < 30%.

After calculating the index for each of their four areas, the obtained indicators are summarized and a total PASI total index is obtained. There is another system for evaluating the effectiveness of therapy for psoriasis, when a decrease in the PASI index on the background of treatment from the initial 25% is regarded as ineffective, from 25 to 49% is a slight improvement, from 50 to 74% is an improvement, more than 75% is a significant improvement. When analyzing the features of psoriasis of the nails and head, the method described above was used, which also helped in evaluating the treatment effectiveness of different psoriasis types.

## MANAGEMENT OF NAIL PSORIASIS

Our investigation started with nail psoriasis disease because it is difficult to treat with topical therapy, as the vehicle must be optimized to penetrate the nail and surrounding tissues.

Approximately 50% of psoriasis patients have some nail involvement and the lifetime incidence of nail disease is estimated at 80–90%. Nail disease may rarely be the only manifestation of psoriasis. Nail psoriasis is associated with higher overall disease severity and female gender. With psoriatic lesions of the nail matrix, there are: leukonychia, a symptom of a thimble, red spots in the lunula area, and lines are characteristic horizontal furrows that are the result of dystrophic destruction of the nail plates. With psoriasis of the nail, patients often demonstrated such nail changes: spot hemorrhages in the distal third of the nail plate, subungual hyperkeratosis is a deformation of the nail due to keratinization

of the nail bed, while the nail at the edge seems to rise and thicken due to a large number of scales, onycholysis, the symptom of an oil stain is that teardrop-shaped spots of yellow-brown color appear under the nail plate. Moreover, with psoriasis of the periarticular region, paronychia develops — inflammation of the periarticular roller. Importantly, nail psoriasis can cause significant pain, discomfort, and embarrassment, leading to impairment in quality of life and work function [4].

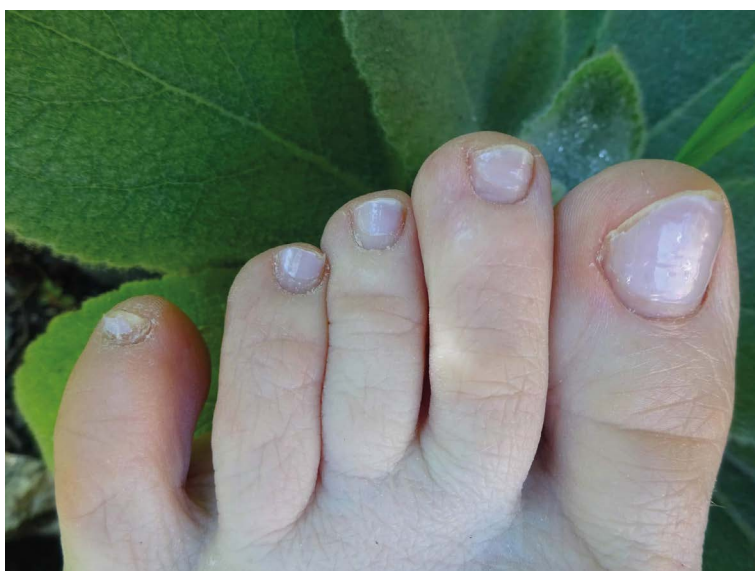
There is a strong correlation of nail psoriasis and psoriatic arthritis (PsA). Psoriatic arthritis patients have rates of nail disease as high as 70% and there is evidence that nail

psoriasis may be a predictor of joint disease developing later in life. PsA may involve the distal interphalangeal joints and the anatomic link between these joints and the nail unit may result in nail changes. Fingernail psoriasis, due to its visibility and impacts on function, is more problematic for many patients compared with toenail disease [5]. The nails with psoriasis without arthritis after treatment are demonstrated on Figure 1 and 2.

Additionally, psoriatic toenails are often secondarily infected with dermatophytes, which may complicate treatment assessment. For these reasons, most studies evaluate fingernail psoriasis alone [6].



**Figure 1.** Fingernail psoriasis



**Figure 2.** Toenail psoriasis

Clinically, nail disease has many different presentations which depend on the location of the inflammatory process. Nail pitting, the most common finding in nail psoriasis, nail dystrophy, and leukonychia is due to nail matrix involvement.

One recent study demonstrated that nail clippings of clinically uninvolved nails from patients with psoriasis may show abnormalities, thus subclinical nail disease exists. The methods of reporting changes in nail disease within clinical trials have not been standardized. The nail psoriasis and severity index (NAPSI) was developed to measure changes in nail disease over time [7].

Some studies utilize a single target nail or an overall nail severity score. Other scales have been used to measure nail involvement but most of the studies reviewed herein utilize some form of the NAPSI. The wide variety of objective measures used in psoriasis studies to measure nail disease and the variety of time points when the measurements are made, make a comparison of treatment outcomes for various interventions difficult. Topical agents are often the first-line option for treating patients with nail disorders. These products are readily available, can be cheaper, and rarely require laboratory monitoring. Strong and very strong glucocorticosteroids are used in combination with keratolytic drugs, vitamin A derivatives such as tazarotene, and a combination of calcipotriol with betamethasone dipropionate [8]. The challenges to treating nail disease are many. The most important issues are poor penetration of topical therapy into the nail and surrounding tissue, side effects and monitoring of systemic therapies, and patient adherence to therapy [9].

Topical preparations, in particular, take several months to show efficacy and adherence to therapy over months is challenging. In a study comparing calcipotriol twice daily with calcipotriol/betamethasone once daily, adherence to the twice-daily regimen was only 26%. Therefore, topical therapy may not only be limited by penetration into the nail unit but also by adherence to lengthy treatment regimens lasting weeks or months. Procedures have also been studied in the treatment of nail psoriasis [10].

Phototherapy, a common treatment for skin disease, in the absence of psoralen or a retinoid, is not likely to improve nail disease and is therefore not a viable option for nail psoriasis. A treatment algorithm for nail psori-

asis, based on published data for the treatment of nail psoriasis and expert opinion where data is lacking, has been previously published by the Medical Board of the National Psoriasis Foundation and is summarized here. All psoriasis patients should be evaluated for nail disease and the extent to which their nail disease contributes to the overall disease burden.

Nail disease should be classified as mild and poses no functional impact on the patient. Significant or extensive nail disease has a real impact on daily activities, may be disfiguring, and may be associated with significant pain. Patients with significant nail disease need therapies to address their nail psoriasis. Patients with moderate to severe psoriasis and significant nail disease should be treated with appropriate therapy which addresses skin and nail disease.

Previous consensus guidelines for the treatment of moderate to severe psoriasis also apply to the patient with nail disease. The options including cyclosporine, methotrexate, acitretin, new low-molecular substances with anti-psoriasis activity and biological drugs. Biological treatment is the most effective therapy, options including inhibitors of TNF- $\alpha$  (adalimumab, etanercept, infliximab), inhibitors of interleukin 12 and 23 (ustekinumab) and new drugs — inhibitors of 17 (secukinumab, ixekizumab) and new inhibitors of interleukin 23 (guselkumab, tildrakizumab) [8]. Clearly, there is a need for more uniform reporting of nail outcomes and the adoption of a valid metric that is specific to nail disease [11].

## MANAGEMENT OF A SCALP PSORIASIS

The second form that needs great dissuasion in aesthetic medicine is scalp psoriasis because it is difficult to treat. Indeed, it may respond faster than other body regions to some biological therapies but it remains a challenge to obtain good results with both topical and phototherapy. While the head and neck represent about 10% of the body surface area, the impact of psoriasis in this region may be disproportionate to the area and may have social and emotional impacts on affected individuals, especially women. Most scalp psoriasis is treated with topical therapies including shampoos, oils, foams, liquids, and gels. Over-the-counter remedies, containing tar, salicylic acid, zinc, and others are relatively inexpensive and widely available. Prescription topical therapy mainly involves the use of mid to

high-potency topical steroids and topical vitamin D analogs [12].

Many larger trials for the biologics have had measures of scalp psoriasis as secondary endpoints. A few trials have been designed specifically to assess scalp disease and these will be highlighted in this chapter. Furthermore, scalp psoriasis provides challenges to both practitioner and patient.

The incidence of scalp psoriasis in patients with psoriasis is estimated between 40 and 90 percent. In up to half of patients, psoriasis may initially present on the scalp. Some patients only have psoriasis on the scalp. The scalp is characterized by the presence of the prominent pilosebaceous unit and has a microbiome that differs from other skin sites. Both yeast and bacteria colonize the scalp. It is important to note that *Malassezia furfur*, *Malassezia globosa*, *Candida*, and other commensal organisms are found on the scalp in significant numbers and may influence scalp diseases such as seborrhea dermatitis and psoriasis. The role of these organisms in psoriasis is not well established but they likely play a role. Treatments targeting these organisms have shown some efficacy in seborrhea dermatitis [13].

Recent studies have shown that the hair in patients with scalp psoriasis be modified by the presence of psoriatic inflammation. Some researchers evidenced that hair shafts evaluated in patients with psoriasis reveal pits, thought to be analogous to the pitting seen in nails. Additionally, recent studies evaluating the transcriptome of both scalp and body psoriasis suggest there may be differences in gene activation between the scalp and body [14].

Scalp lesions may vary from mild, with minimal erythema and scaling, to severe with thick well-defined plaques with silvery scale and an erythematous border. Classic scalp psoriasis lesions are asymmetric, sharply demarcated, covered with silvery-white or grayscale, and may extend beyond scalp margins to affect the forehead, ear, and neck. Most patients with psoriasis of the face also have scalp disease [15].

Multiple surveys have cited itching and scaling as the most disturbing aspects of scalp psoriasis. This itch may be so severe that it can interfere with sleep and lead to actual hair loss due to hair breakage and trauma. Scalp psoriasis is usually not associated with significant hair loss; however, some patients may have alopecia due to the trauma of chronic itching leading to hair breakage. In some cases, the differentiation of scalp psoriasis and seborrhe-

ic dermatitis can be difficult. Seborrheic dermatitis is characterized by a diffuse thin scale that is localized to the hair-bearing scalp and may involve the central face and chest [16].

Management of scalp psoriasis included topical and procedural therapies. Topical therapies are the foundation in the management of scalp psoriasis and are utilized by approximately 60% of patients. These therapies have been formulated into shampoos, gels, foams, oils, and solutions. Some of these products have been evaluated in large clinical trials.

High costs limit the use of many of these proprietary products. Initially, keratolytic drugs such as salicylic acid in an oil base and urea to remove the scale build-up. In the next stage of the therapy, treatment is used that causes the psoriasis foci to disappear. A commonly used and recommended therapy for scalp psoriasis is the combination of calcipotriol with betamethasone dipropion in a gel or foam base. An alternative treatment is the using of topical glucocorticosteroids of medium and high potency in the form of solutions, shampoos and foams. Shampoos with tar act as a supportive treatment for psoriasis of the scalp. Biological drugs and new low-molecular substances (apremilast and dimethyl ester of fumaric acid) effectively reduce changes in psoriasis of the scalp [8].

Additionally, phototherapy for scalp psoriasis is limited due to hair blocking the penetration of the light. With widespread rashes, the entire skin is irradiated (general phototherapy), with limited rashes — the affected area of the body (local phototherapy). In a number of patients, lesions on the scalp and extremities regress more slowly than in other parts of the body. Devices have been designed and are available to help deliver phototherapy to the scalp. These devices use fiber optics that penetrate through the hair and deliver the phototherapy, broadband or narrow-band UVB, directly to the scalp [17–19].

Another method of aesthetic medicine is carboxytherapy. It is helpful in the treatment of some psoriatic lesions. It involves the use of purified carbon dioxide in the form of a subcutaneous injection. Injections are made using mesotherapy needles. Repeatability of treatments is important to obtain the desired results [20].

Bearing in mind the appearance of Koebner's symptom during the active form of the disease (formation after 8–14 days of psoriatic lesions at the site of epidermal injury), aesthet-

ic medicine treatments should be selected with great care [21, 22].

There are few studies that specifically address the efficacy of methotrexate, cyclosporine, and acitretin in scalp psoriasis. Nonetheless, these therapies may be effective in treating scalp disease. Appropriate monitoring of liver function, creatinine, complete blood counts, triglycerides (acitretin), blood glucose should be maintained during treatment with these agents.

Before prescribing treatment to identify contraindications, a clinical examination of the patient and a complex of laboratory tests are carried out, including a general blood test, a general urine test, a biochemical blood test (including the determination of liver and kidney function indicators), a consultation with a therapist, an ophthalmologist, an endocrinologist, a gynecologist. According to the indications, it is recommended to be examined by other specialists [23].

Many factors influence a patient's decision to not adhere to the treatment plan or discontinue a drug, some of which include therapeutic inefficacy, loss of response over time, poor socioeconomic status, and costs. An individualized plan shaped to the patient's goals, preferences, and disease condition can augment adherence and improve clinical

outcomes. This result can only be achieved through a strong patient–physician relationship, with both parties committed to establishing trust, gaining a mutual understanding of beliefs and expectations, and addressing challenges early [24, 25].

## CONCLUSIONS

1. Psoriasis affects many areas of patients' lives. It limits their personal, social and professional life.
2. Biological treatment is more effective than classical anti-psoriasis treatment of patients.
3. Adherence is the cornerstone of disease management, influencing disease improvement, flaring, and stagnancy in dermatology and across medical specialties.
4. Efforts to improve adherence may indirectly reduce the overall disease burden of psoriasis and other chronic conditions.
5. Phototherapy and carboxytherapy are most commonly used methods of aesthetic medicine, which are helpful in the treatment of psoriasis symptoms.

## CONFLICT OF INTEREST

None declared.

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