Asian Journal of Pharmaceutical Education and Research
Vol -13, Issue-3, July- September 2024
ISSN:2278 7496

REVIEW ARTICLE Impact Factor: 7.014

OVERVIEW ON MANAGEMENT AND TREATMENT OF PSORIASIS

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Received 12 June. 2024; Revised 15 June. 2024; Accepted 21 June. 2024, Available online 10 July. 2024

Cite this article as: Mahdi H, Lawan S, Lawan A, and Tiwari S. Overview on management and treatment of psoriasis. 2024; 13(3): 89-98.

https://dx.doi.org/10.38164/AJPER/13.3.2024.89-98

ABSTRACT

Psoriasis is a chronic, inflammatory skin disorder characterized by erythematous plaques with silvery scales, affecting approximately 2-3% of the global population. The management and treatment of psoriasis are multifaceted, involving both pharmacological and non-pharmacological approaches tailored to disease severity, patient comorbidities, and quality of life. First-line treatments for mild to moderate psoriasis typically include topical agents such as corticosteroids, vitamin D analogs, and calcineurin inhibitors. Phototherapy, particularly narrowband UVB, is effective for widespread or resistant disease. For moderate to severe psoriasis, systemic therapies are employed, including traditional agents like methotrexate, cyclosporine, and acitretin, which have well-documented efficacy but also notable side effects. In recent years, biologic therapies have revolutionized the treatment landscape, targeting specific immune pathways involved in psoriasis pathogenesis. Tumor necrosis factor (TNF) inhibitors, interleukin-12/23 inhibitors, interleukin-17 inhibitors, and interleukin-23 inhibitors have shown remarkable efficacy and safety profiles in clinical trials and real-world settings. Janus kinase (JAK) inhibitors represent a newer class of oral medications offering another therapeutic option. Adjunctive lifestyle modifications, including weight management, smoking cessation, and stress reduction, are crucial components of comprehensive care. Patient education and psychosocial support are essential to address the significant psychological burden associated with psoriasis. Regular monitoring and a personalized, patient-centered approach are vital to optimizing treatment outcomes and minimizing adverse effects.

Keywords: Psoriasis, Autoimmune, Topical treatments, Phototherapy.

INTRODUCTION

A persistent skin condition is psoriasis that affects 2% of adults in the United States. It is equally common in men and women and can develop at any age, with the onset usually occurring between the ages of 15 and 30 [1]. About 2-3% of people have psoriasis, a common inflammatory dermatosis that is disfiguring, recurrent, and chronic [2]. The skin condition psoriasis is a genetic disease mediated by the Immune system that may be impacted the joints, the skin, or both. In order to cure the illness a multidisciplinary team of clinicians with varying specialties is frequently required. Numerous difficulties are presented by

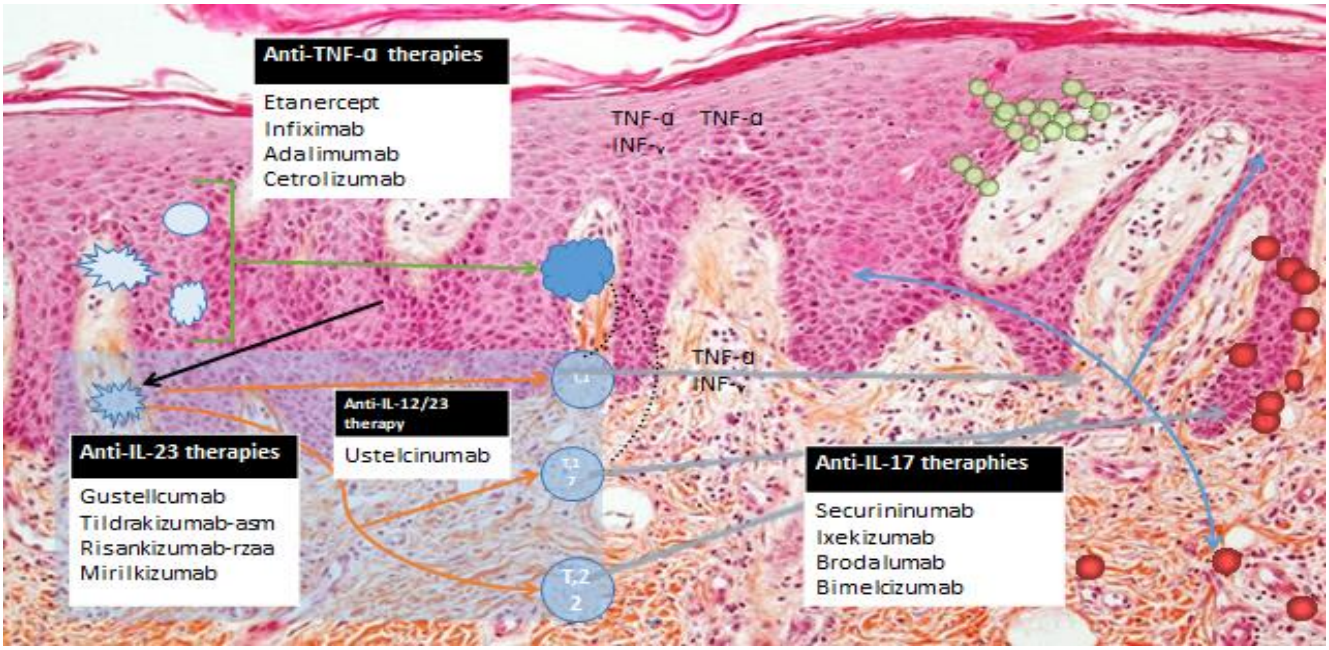
psoriasis, such as its high frequency, chronicity, deformity, incapacity, and related comorbidities. The skin condition psoriasis is a complicated disease it has an impact on individuals' bodies that goes much beyond their skin. Managing the condition has been made easier by an understanding of immune function in psoriasis as well as the way the innate and adaptive immune systems interact [3]. Psoriasis is a prevalent, long-lasting squamous Skin disease that can impact any individual at any age and significantly burden both individuals and society. It is connected to several significant medical disorders, such as psoriatic arthritis, depression, and cardiometabolic syndrome. Psoriasis vulgaris, or chronic plaque, the most prevalent type of the disease. The reason behind it is a combination of environmental factors, including stress, smoking, obesity, alcohol consumption, streptococcal infection, and genetic susceptibility, especially when the HLA-C*06:02 risk allele is present. Numerous phenotypes exist, and studies have distinguished between postular and chronic forms of plaque [4]. Psoriasis is a type of inflammatory skin condition that mainly depends on genetic predisposition and ageing. But there are certain environmental risk factors, such as trauma (e.g., Koebner phenomenon), infection, and drugs, that been put out to influence the progress of this inflammatory skin disease. This pathology affects around 2% of the population worldwide, but it shows some variability, according to the skin type no such thing exists proven treatment for psoriasis, a skin condition that is inflammatory, papulosquamous, and persistent. Earlier observational analyses have found a link between medication use and a higher chance of developing psoriasis, but These results are prone to bias [5].

EPIDEMIOLOGY OF PSORIASIS

Limited research has been conducted in Australia on the epidemiology of psoriasis, despite studies being done elsewhere. The intensity, morbidity, and frequency of psoriasis are the primary research areas. Also, research has been done on how variety of factors, such as genetic predispositions, infectious agents, cigarette smoking, and anxiety or worry-inducing thoughts, may cause psoriasis or cause periods of exacerbation or remission [6]. Collaborative studies, case-control studies, cross-sectional research, and attendance surveys from hospitals and private practices are some of the methods for gathering data that have been employed. The lack of established diagnostic criteria, methods for rating how serious the condition, quality of life indicators are among the challenges impeding the epidemiological research on psoriasis. The possibility of bias in research is increased because dermatologists diagnose psoriasis, which is believed that psoriasis affects 2-3% of people worldwide [7]. It is widely understood that the disease is more common in the world's polar areas, but the impact it has on a tropical or subtropical nation like India cannot be understated. Due to varying environmental and genetic factors, the prevalence

of psoriasis can differ from region to region in a country as diverse as India. Only six studies from North India that estimated the prevalence of illness among adult dermatologic patients were available, majority of them were conducted in hospital settings. There have been reports of a higher prevalence in men, with a peak age at onset in the third and fourth decades of life. The estimated point prevalence of pediatric psoriasis in one of the major studies conducted in Northern India was 0.0002% [8].

PATHOPHYSIOLOGY OF PSORIASIS



Excessive feed-forward stimulation of the adaptive immune system has a role in the pathogenesis of psoriasis. IL-12 and IL-23 are secreted in excess by activated myeloid dendritic cells. Naive T cells undergo differentiation into T-helper cells type 1 (TH1) upon exposure to IL-12. TH17 and TH22 cell survival and proliferation depend heavily on IL-23. TNF-α is secreted by TH1 cells, IL-22 is secreted by TH22 cells, and IL-17 is secreted by TH17 cells along with a host of other inflammatory cells. In order to cause the transcription of cytokine and chemokine genes in keratinocytes, these released cytokines trigger intracellular signal transduction. This sets off a chain reaction of inflammation that eventually manifests as psoriatic illness. IFN stands for interferon NK for natural killer and DC for dendritic cell. and TNF-a." The T,17 pathway is one of these routes that is believed to be activated by IL-23 [9]. Genes linked to psoriasis susceptibility, including HLA-C*06, LCE3B/LCE3C-del, or defensin genes, are affected when exposed to PAMP because it increases the expression of keratins 6 and 17, the LCE3 family, and triggers an inflammatory response that impairs skin barrier repair. Langerhan cells and

dendritic cells absorb PAMPs, and aberrant skin healing permits a prolonged exposure to these substances.T-cell activation occurs when naïve T-cells are interacting with APCs in the local lymph nodes after they have absorbed the triggering antigen. Major Histocompatibility Complex antigens on APCs and T-cell receptor contact are necessary for this process. APC and TCR receptor-ligand costimulatory interactions are also significant. These comprise the interactions between intercellular adhesion molecule-1 and lymphocyte function antigen (LFA)-3, between CD2 and LFA-1 [10].

TYPES OF PSORIASIS

TYPES OF PSORIASIS	ITS CHARACTERISTICS
Nail Psoriasis	Abnormal grown nails and discoloration, seen on toenails and fingernails, starts as numerous pits, at times progresses to yellowing, crumbly, and thickened nail; may slough.
Plaque Psoriasis	Dry scaling patches, itchy, dry, covered with scales.
Guttate Psoriasis	Scaling spots all over the trunk, arm, drop-like dots, occurs after streptococcal or viral infections.
Pustular Psoriasis	Blisters with pus, pus-like blisters, noninfectious fluid contains white blood cells.
Psoriasis Arthritis	Inflammation, swelling, and joint destruction, arthritis associated.
Inverse Psoriasis	Inflamed skin in smooth patwork, smooth, inflamed lesions, mostly of flexural surfaces (e.g., the armpits).
Erythrodermic Psoriasis	Exfoliation of fine scales, widespread, often accompanied by severe itching and pain,Peeling form of rash

TREATMENT OF PSORIASIS

Treatment for psoriasis includes a variety of medical procedures intended to control the inflammatory skin disease that is characterized by red, scaly plaques. Genuine citations from respected medical

literature support this definition and summary of therapeutic philosophies. Psoriasis currently has no known treatment other than suppressive measures. Patients with mild disease, when given this knowledge, frequently conclude that there is no need for treatment beyond avoiding circumstances that aggravate the condition. Treatment indications can result from cosmetic issues (prominent lesions on the hand, leg, or face), local symptoms (pain, itching, decreased manual dexterity due to hand involvement, or flexural inter-Trigo), or both [11].

TOPICAL TREATMENT

Corticosteroids

Since its anti-inflammatory effects, It is normal practice to use topical corticosteroids as the first-line treatment for mild to moderate psoriasis. They aid to alleviate erythema, scaling, and itching. Topical corticosteroids come in a variety of strengths, and their potencies are ranked in the Stoughton Cornell classification, which was originally based on an assay assessing each corticosteroid's potential to produce vasoconstriction [12].

Vitamin D Analogues

These substances are vitamin D synthesized forms. They aid in lowering inflammation and restoring normal skin cell growth. Psoriasis is frequently treated with the following methods calcitriol and calccipotriene. Synthetic versions for vitamin D that support normal skin cell proliferation include calcitriol and Calccipotriene. Together, they are commonly utilised with corticosteroids to maximize effectiveness and reduce possible negative consequences because they are useful in reducing scaling and plaque development. For the treatment of psoriasis, at least four application of vitamin D analogs—(calcipotriol (calciotriene), calcitriol, tacalcitol, and maxacalcitol have been licensed.Research on the effectiveness of Vitamin D applied topically substitutes for treating psoriasis of the scalp [13].

SYSTEMIC TREATMENTS

Systemic medications Frequently used for moderate to severe psoriasis, or when topical treatments fail. These drugs function throughout the body to inhibit the immune system and reduce inflammation. The key systemic medicines are Methotrexate, acitretin, and cyclosporine are the three Most often given systemic therapy for psoriasis. Although these are the only widely accessible oral treatments approved by the The FDA for Psoriasis in the US, a number of additional Medications for treating a variety of conditions have shown useful in the treatment of psoriasis. They are also briefly discussed [14].

Methotrexate:

This medication inhibits the defence mechanism and is classified as a treatment-modifying anti-rheumatic medication (DMARD). In addition to psoriatic arthritis severe psoriasis are treated with it. Patients require to be closely monitored since Metatrexate side effects can be rather severe effects, such as liver damage. Psoriasis has long been thought to be treated with methotrexone, a disease-modifying anti-rheumatic medication (DMARD). It functions by preventing the metabolism of folic acid, which is required for the creation of DNA.

Acitretin:

As a retinoid, acitretin promotes normal skin cell proliferation. Its main application is in the treatment of severe psoriasis that has not improved with previous treatments. It may have negative consequences effects, such include damage to the liver and teratogenicity, thus Pregnancy should not occur during therapy and for several years thereafter. Acitretin, a systemic retinoid derived from vitamin A, is primarily used to treat severe psoriasis, particularly pustular and erythrodermic psoriasis.

LIFE STYLE TREATMENT OF PSORIASIS

Diet and Nutrition

Anti-Inflammatory Diet:

Psoriasis is linked to inflammation, so adopting an anti-inflammatory diet can be beneficial. This includes consuming plenty of fruits, vegetables, lean proteins, and whole grains. Foods rich in omega-3 fatty acids, such as salmon, flaxseeds, and walnuts, can help reduce inflammation.

Skin care routine

Moisturizing:

Regularly applying moisturizers can prevent dryness and reduce scaling. Opt for thick creams or ointments rather than lotions, and apply them immediately after bathing to lock in moisture.

Gentle Cleansing:

Use mild, fragrance-free cleansers to avoid irritating the skin. Hot water can strip natural oils, so lukewarm water is preferable.

Avoiding Harsh Products:

Products containing alcohol, fragrances, or dyes can irritate the skin and should be avoided. Look for products specifically formulated for sensitive skin.

Sun Exposure:

Moderate sun exposure can help improve psoriasis for some individuals. However, it's essential to avoid sunburn, which can worsen the condition. Use sunscreen with at least SPF 30 when spending extended periods outdoors.

PHOTOTHERAPY

Phototherapy has been used for many years to treat skin disorders [15]. Phototherapy is the therapeutic use of ultraviolet (UV) radiation. It can be done under sunshine, UVA, or UVB radiation. The wavelengths and UV radiation dosages vary depending on the desired indication [16]. UV radiation or visible light can be used in phototherapy, which is the application of light to cure various ailments. Hindus used photosensitizing plant extracts and subsequent sun exposure to cure vitiligo, an autoimmune skin condition, around 1500 BC. This is when phototherapy first emerged. The treatment of various skin conditions was limited for a long time to natural sunshine (heliotherapy); but, in many parts of the world today, particularly the Dead Sea, it is still widely used to treat psoriasis and atopic dermatitis [17]. A common kind of treatment for psoriasis is phototherapy, which is typically used when topical therapies are ineffective, inappropriate, or impractical, as in the case of severe guttate psoriasis. When compared to other treatment methods, phototherapy has one of the highest treatment satisfaction rates and can result in the clearing of psoriasis in 5 to 8 weeks [18]. Phototherapy, or natural sunshine, has been used for thousands of years to treat a variety of skin disorders. Although a vast body of evidence supports the usefulness of phototherapy in the treatment of psoriasis, there is significant diversity in its administration around the world. The role of phototherapy in the overall treatment of psoriasis, with other traditional modalities such as topical and systemic medicines, is only now being understood. However, many contemporary guidelines do not prefer one modality (biologics, systemic medicines, or phototherapy) over another; all are equally recommended [19]. UV radiation causes local immunosuppression. It directly affects Langerhans' cells, suppresses epidermal hyperproliferation and angiogenesis, and selectively reduces cutaneous T cells by death. Phototherapy modalities include narrowband (311-313 nm) UVB radiation, broadband (280-320 nm) UVB radiation, targeted phototherapy, and oral psoralen ultraviolet (photochemotherapy), which is less commonly used in some parts of the world due to the risk of skin cancer. Among these, narrowband ultraviolet B radiation is the most regularly used phototherapy method,

administered two or three times per week, with home devices becoming more popular in some countries. Narrowband ultraviolet B radiation is beneficial for plaque psoriasis, although side effects include burning and a minor risk of photo-carcinogenesis that is far.

CONCLUSION

Psoriasis is a chronic, immune-mediated skin disorder with substantial genetic, immunological, and environmental underpinnings. Affecting about 2-3% of the global population, it manifests predominantly as erythematous plaques covered with silvery scales. The disease's impact extends beyond the skin, with significant associations with psoriatic arthritis, cardiovascular disease, metabolic syndrome, and mental health disorders. This comprehensive burden underscores the necessity for a multidisciplinary approach to management. Advancements in understanding the genetic and immunological mechanisms have revolutionized the treatment landscape of psoriasis. Genome-wide association studies have highlighted several susceptibility loci, especially within the MHC region. Immunologically, the role of Th17 and Th1 cells and cytokines like IL-17, IL-22, and TNF-α is central to the disease's pathogenesis. These insights have led to the development of targeted biologic therapies, including TNF inhibitors and IL-17 and IL-23 inhibitors, offering patients significant relief and improved quality of life.Despite these advances, psoriasis remains a complex condition requiring individualized treatment plans. Topical agents and phototherapy are typically first-line treatments for mild to moderate cases, while systemic agents and biologics are reserved for more severe or refractory cases. The choice of therapy depends on disease severity, comorbidities, and patient preferences, necessitating a personalized approach. Future research should focus on further elucidating the pathogenesis of psoriasis, optimizing existing treatments, and exploring new therapeutic targets. Holistic management, addressing both the dermatological and systemic aspects of the disease, is crucial for improving patient outcomes. With ongoing advancements, the outlook for individuals with psoriasis continues to improve, promising better disease control and enhanced quality of life.

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