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Review Article

A REVIEW ON PSORIASIS AND ITS MANAGEMENT**¹Sakshi Suryakant Tipale, ² Vaishnavi Devidas Jaybhaye, ³ Shubham Santosh Shinde,
⁴ Mr.Swapnil P. Kulthe**¹ Raosaheb Patil Danve College Of Pharmacy, Badnapur.- Sakshi Suryakant Tipale² Raosaheb Patil Danve College Of Pharmacy, Badnapur.- Vaishnavi Devidas Jaybhaye³ Raosaheb Patil Danve College Of Pharmacy, Badnapur.- Shubham Santosh Shinde⁴ Raosaheb Patil Danve College Of Pharmacy, Badnapur.- Assistant professor.**Abstract:**

In this literature review article, several relevant scientific studies and publications will be analyzed to provide an overview of psoriasis treatment. Aspects such as epidemiology, the significance of the disease, the theoretical framework that includes definition, diagnosis, treatment and complications will be addressed, and conclusions based on the available evidence will be presented.

Psoriasis is fundamentally an inflammatory skin condition with reactive abnormal epidermal differentiation and hyperproliferation affecting 2-3 % of world's population. Pathophysiology of the disease includes mainly the activation and migration of T cells to the dermis triggering the release of cytokines (tumor necrosis factor-alpha TNF-alpha, in particular) which lead to the inflammation and the rapid production of skin cells .

Psoriasis is a chronic skin disease that affects millions of people worldwide. Its etiology is not yet fully understood, but it is thought to be related to a combination of genetic, immunological and environmental factors. In this literature review article, several relevant scientific studies and publications will be analyzed to provide an overview of psoriasis treatment. Aspects such as epidemiology, the significance of the disease, the theoretical framework that includes definition, diagnosis, treatment and complications will be addressed, and conclusions based on the available evidence will be presented.

Key-Words: Psoriasis, Plaque psoriasis, Psoriatic arthritis, Phototherapy, Topical steroid, Inflammatory cells, manifestations, patches, psoriasis

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INTRODUCTION:

Psoriasis is regarded as an autoimmune disease in which genetic and environmental factors have a significant role. The name of the disease is derived from Greek word „psora“ which means „itch“.[1] Psoriasis is a chronic immune-mediated inflammatory skin disorder that affects approximately 2–3% of the global population [2]. It is characterized by red, scaly plaques that can appear on various parts of the body, causing significant physical and psychological burden to affected individuals [3]. The pathogenesis of psoriasis involves complex interactions among genetic, immunological, and environmental factors, leading to dysregulated immune responses and excessive proliferation of keratinocytes.

The significance of psoriasis goes beyond its cutaneous impact, since an association with various systemic comorbidities has been demonstrated. Psoriatic arthritis, a form of chronic inflammatory arthritis, affects approximately 30% of psoriasis patients and can lead to joint pain and functional disability[4]. In addition, psoriasis has been linked to an increased risk of developing cardiovascular disease, such as a coronary artery disease,

hypertension, and diabetes. This disease can also have a significant impact on patients' mental health, with an increased risk of depression and anxiety.[5] Psoriasis is a common chronic inflammatory cutaneous disease affecting 0.5% to 2% of children and adolescence. The disease affects 4% of all children younger than 16 years with all type of dermatologic disorders.[6]

Psoriasis does not spread from one person to another by contact but can be transmitted genetically [25%]. Psoriasis occurs most commonly in the third decade of life. It has higher incidence in females than males. Children are rarely affected. Whites suffer more than blacks. Nearly 30% of psoriasis patients have arthritis problems.

Emerging trends and future directions in psoriasis treatment hold promise for improved outcomes. These include the development of novel biologic agents targeting novel pathways, the exploration of combination therapies to enhance efficacy and minimize side effects [7,8], the utilization of biomarkers for treatment selection and monitoring [9], and the advancement of gene- and cell-based therapies. [10]

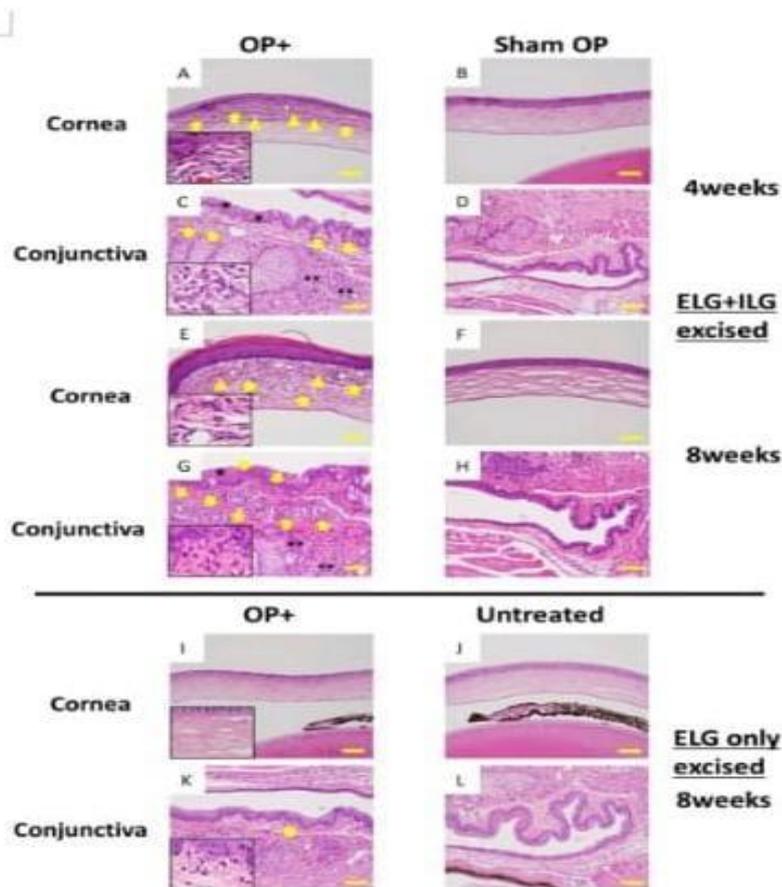


Figure no. 1

1. Genetic factors:

Several of the implicated loci are shared by other autoimmune and inflammatory diseases such as inflammatory bowel disease, type 1 diabetes, multiple sclerosis, and atopic dermatitis, suggesting that similar mechanisms underlie many common genetically complex inflammatory diseases.

1. Immunological and environmental factors:

In this environment key primary cytokines (for example, tumour necrosis factor and interferon) are released, perhaps as a result of environmental triggers, including infection, drugs, trauma, and stress.[11]

• **PSORIASIS** : Psoriasis is a common skin condition that causes skin redness and irritation. Most people with psoriasis have thick, red skin with flaky, silver-white patches called scales.

• Psoriasis is a psychosocially, and at times medically, debilitating disorder that affects 1% to 3% of the population worldwide.

• **PATHOGENESIS** : The phenotypic appearance of psoriasis is due to hyperproliferation and abnormal differentiation of keratinocytes, inflammatory cell infiltration, and vascular changes.

• SYMPTOMS :

Irritated, red, flaky patches of skin.

Most often seen on the elbows, knees, and middle of the body.

Red patches may appear anywhere on the body, including the scalp.

The skin may be: Itchy

Dry and covered with silver, flaky skin (scales)

Pink-red in colour (like the colour of salmon),

Raised and thick

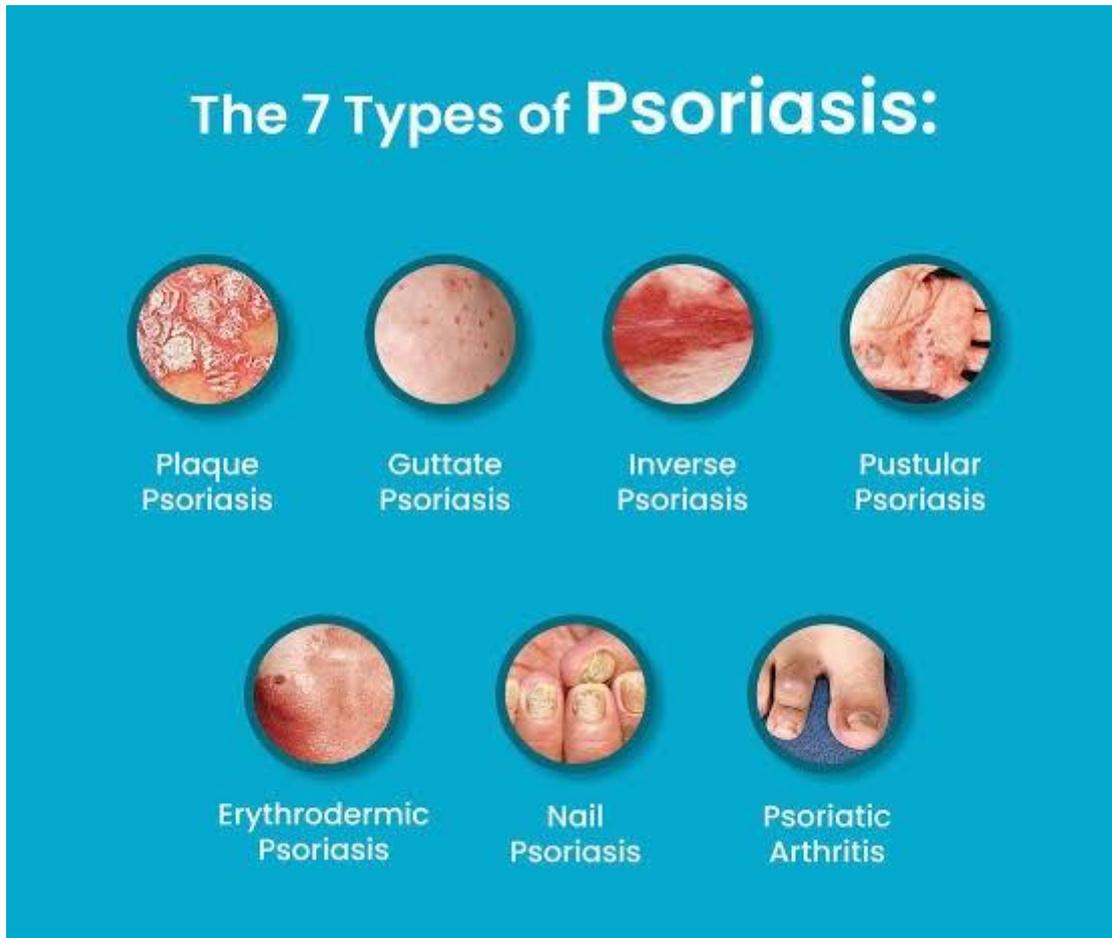


Fig no 1. psoriasis patches.

Fig no. 2



Figure no.2



1)Erythrodermic -- The skin redness is very intense and covers a large area.

2)Guttate -- Small, pink-red spots appear on the skin

3) Inverse -- Skin redness and irritation occurs in the armpits, groin, and in between overlapping skin.

4)Plaque -- Thick, red patches of skin are covered by flaky, silver-white scales. This is the most common type of psoriasis.

5)Pustular—White blisters are surrounded by red, irritated skin filled with pus.

A. Benefits in Dermatology:

1. Anti-inflammatory effects
2. Quick relief
3. Improved skin appearance

B. Benefits in Pediatric and Geriatric Populations:

- a) Pediatric use
- b) Geriatric use

Diagnosis of Psoriasis:

The diagnosis of psoriasis is usually based on the appearance of the skin. There are no special blood tests or diagnostic procedures for psoriasis.

Sometimes a skin biopsy, or scraping may be needed to rule out other disorders and to confirm the diagnosis. Skin from a biopsy will show clubbed Rete pegs if positive for psoriasis. Another sign of psoriasis is that when the plaques are scraped, one can see pinpoint bleeding from the skin below. Diagnosis of psoriasis is made easily by clinical examination. Usually no tests are required to diagnose psoriasis, but to rule out other complications blood tests, urine test and imaging studies are often performed. Sometimes biopsy may be necessary to differentiate it from fungal infection. Blood tests are done for total count, ESR, RA factor, ASO titre, serum uric acid level, T-cells etc. leucocytosis and increased T-cells lymphocytes are often noted. The microscopic examination of the discharges or blister fluid shows only lymphocytes infiltration. Imaging studies like X-ray or bone scan help in diagnosing the case with joint pain.[12]

Pathophysiology of Psoriasis :

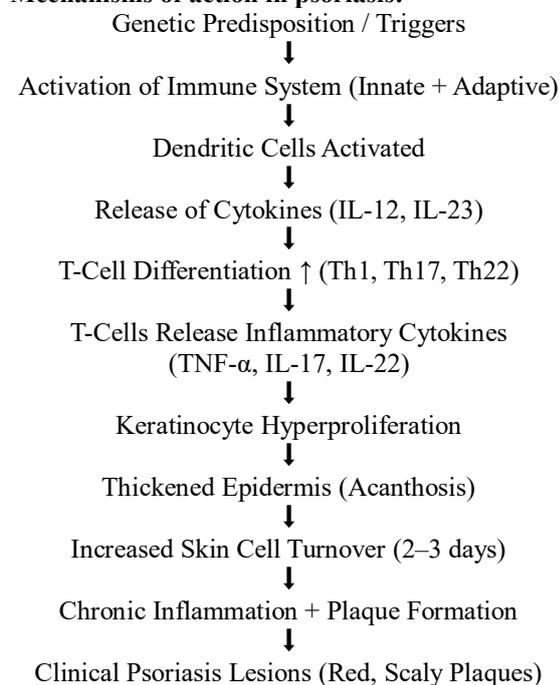
It is also found that genes that cause psoriasis can determine how a person's immune system reacts.

These genes can cause psoriasis or other immunemediated conditions such as rheumatoid arthritis or Type-I Diabetes.[13] The pathophysiology of psoriasis must be understood in terms of the prominent pathologies occurring in both major components of the skin the epidermis and the dermis. There are two main hypotheses about the process that occurs in the development of the disease. The first considers psoriasis as primarily a disorder of excessive growth and reproduction of skin cells.

Psoriasis is an immunologically mediated disease, the activation of T lymphocytes leads to the inflammation in the dermal component and secondary to the inflammatory events there is also that epidermal hyperproliferation.[14] Various mechanisms hypothesized to be involved in the pathogenesis of psoriasis:

- T cell function
- Role of dendritic cell
- Hyperproliferation of keratinocytes
- Angiogenesis
- Cytokine mediators
- Reduced apoptosis
- Genetic factors
- Role of oxidants and antioxidants in psoriasis

Mechanisms of action in psoriasis:



2.1. Treatments for Mild Psoriasis:

There is no consensus on the definitions of mild and moderate-to-severe psoriasis [15]. Mild psoriasis is generally described as affecting less than 3% to 5% of the total body surface area. There are several treatment options available for mild psoriasis, including topical corticosteroids, vitamin D analogs,

calcineurin inhibitors, keratolytics, and targeted phototherapy .[16]

2.2 Treatments for Moderate-to-Severe Psoriasis:

Moderate psoriasis is usually defined as psoriasis affecting from 3~5% to 10% of the body surface area. Severe psoriasis is typically characterized by a body surface area coverage of 10% or more. Systemic treatments are the primary approach for moderate-to-severe psoriasis, and these can also be used for localized disease or when topical therapies are in effective. Biologics have shown higher efficacy compared to oral medications or phototherapy [17]. Topical therapies can be used as supplementary treatments but not as standalone therapy for moderate-to severe psoriasis.

Treatment can be topical (emollients, dithranol, tar, deltanoids, corticoids, tacrolimus), systemic (methotrexate, cyclosporin, acitrecin, hydroxyurea, fumarates) or with ultraviolet light. Phototherapy and systemic agents should be used only when topical treatments are inadequate. Novel systemic treatments for psoriasis include a rapidly expanding range of biological therapies. These are proteins (usually antibodies) with highly specific actions. Severe forms of psoriasis such as erythrodermic and generalized pustular psoriasis can be life-threatening and may require urgent treatment in hospital.[18,19] As a first step, medicated ointments or creams, called topical treatments, are applied to the skin. If topical treatment fails to achieve the desired goal then the next step would be to expose the skin to ultraviolet (UV) radiation. This type of treatment is called phototherapy. The third step involves the use of medications which are taken internally by pill or injection. This approach is called systemic treatment .[20]

Herbal medicines :

Traditional medicines hold a great promise as source of easily available effective therapy for skin diseases to the people, particularly in tropical developing counties, including India. It is in this context that the people use several plant derived preparations to cure skin diseases. Herbal remedies for psoriasis are increasingly popular and mainstream.[21]

- i. **Milk thistle:** Milk thistle is believed to help prevent psoriasis outbreaks by encouraging proper liver function. The liver neutralizes certain toxins associated with psoriasis. Antibiotics are not indicated in routine treatment of psoriasis. However, antibiotics may be employed when an infection, such as that caused by the bacteria *Streptococcus*, triggers an outbreak of psoriasis, as in certain cases of guttate psoriasis.
- ii. **Oregano oil:** Oregano is a commonly used spice for baking and cooking. It possesses antibacterial and antifungal properties,

which may be helpful with some infections associated with psoriasis. Oregano oil can be purchased at most health food stores. [22]

- iii. **Turmeric:** Turmeric is a primary component of curry powders used in cooking. The spice has a long history of being used in traditional Chinese medicine. [23]
- iv. **Aloe vera:** Aloe vera is a stemless, perennial, droughtresisting, succulent plant and has reportedly been used since ancient times for medicinal purposes).
- v. **Almond oil:** Applied after using other herbs for soothing and pleasantly aromatic effect.

1. Topical treatments:

Topical treatments are applied directly to skin lesions and are widely used in mild to moderate cases of psoriasis. Topical corticosteroids are one of the most common and effective treatments, as they reduce inflammation and cell proliferation. Other topical treatments include vitamin D analogues, such as calcipotriol, which help normalize the growth of skin cells, and vitamin A analogues (topical retinoids), which reduce inflammation and scaling.[24]

2. Phototherapeutic therapy:

Phototherapeutic therapy, also known as phototherapy, involves controlled exposure to ultraviolet (UV) light to treat psoriasis. Narrowband UVB radiation and UVA radiation combined with photosensitizers (PUVA therapy) are commonly used. These therapies reduce inflammation and slow cell proliferation in the affected skin.[25]

3. Systemic therapy:

When psoriasis is more severe or does not respond adequately to topical treatments, systemic therapies may be employed. These medications are administered orally or injectably and act systemically to suppress the immune response and reduce inflammation. Some systemic therapy option include:[26,27]

- I. Methotrexate: It is an immunosuppressive drug that reduces inflammation and cell proliferation.
- II. Acitretin: It is an oral retinoid that normalizes the growth of skin cells and reduces flaking.
- III. Cyclosporine: It is an immunosuppressant that inhibits the immune response and inflammation.
- IV. Phosphodiesterase-4 inhibitors: These drugs reduce inflammation and cell proliferation by inhibiting a specific enzyme.

4. Biological therapy:

In recent years, highly effective biological therapies have been developed for the treatment of moderate to severe psoriasis. These biologic drugs target

specific molecules and cells involved inflammation and cell proliferation in psoriasis. Tumor necrosis factor-alpha (TNF- α) inhibitors and interleukin inhibitors (IL) are examples of biologic therapies used in psoriasis. These medications have been shown to be highly effective in controlling symptoms and improving patients' quality of life.(28,29)

Disadvantages of Psoriasis:

1. Visible skin patches
2. Chronic and lifelong condition
3. Affects mental and emotional well-being
4. Risk of psoriatic arthritis
5. Expensive and ongoing treatment

Application of Psoriasis :

- i. Helps in understanding autoimmune and inflammatory disorders.
- ii. Used to develop new treatments like biologics and immune-modulating drugs.
- iii. Guides doctors in improving diagnosis and management of chronic skin diseases.
- iv. Supports research on immune system function and related diseases (e.g., arthritis).
- v. Helps In educating patients about skin care, triggers, and lifestyle management.

CONCLUSIONS:

In conclusions, psoriasis is a complex skin disorder with significant physical and emotional impacts on affected individuals. Despite the progress in understanding its underlying mechanisms and the development of various treatment options, challenges remain In achieving optimal outcomes. The future of psoriasis treatment looks promising with the emergence of novel biologic agents targeting specific pathways, such as IL-23 inhibitors like mirikizumab and ROR γ t inhibitors.

These agents offer the potential for enhanced. Psoriasis is a dreadful disease affecting physical, mental and social status of the victims. A new understanding of this complex disease has catalyzed the development of targeted biological treatments. These revolutionary therapies are not without potential risk, however. A review of alternative natural therapies provides some options for increasing safety and efficacy in the management of psoriasis.

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