

**A SYSTEMATIC REVIEW OF PATHOPHYSIOLOGY, CLINICAL PRESENTATION, TYPES AND TREATMENT OF PSORIASIS**

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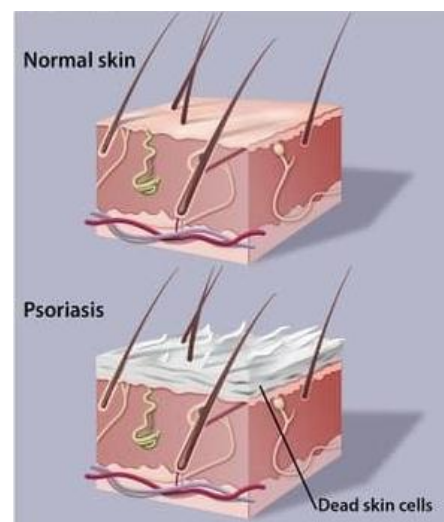
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**ABSTRACT**

Psoriasis is a chronic, multisystem inflammatory disease with predominantly skin and joint involvement. It has a bimodal age of onset (16 to 22 and 57 to 60 years)<sup>2</sup> and affects both sexes equally. Beyond the physical dimensions of disease, psoriasis has an extensive emotional and psychosocial effect on patients, affecting social functioning and interpersonal relationships. As a disease of systemic inflammation, psoriasis is associated with multiple comorbidities, including cardiovascular disease and malignancy. The diagnosis is primarily clinical and a skin biopsy is seldom required. Depending on the severity of disease, appropriate treatment can be initiated. For mild to moderate disease, first-line treatment involves topical therapies including corticosteroids, vitamin D3 analogues, and combination products. In this review we have discussed about, etiology, pathophysiology, types, diagnostic methods and available treatment strategies for Psoriasis.

**KEYWORDS:** Psoriasis, Skin disorders, Chronic skin disease.**INTRODUCTION**

Psoriasis is a chronic proliferative and inflammatory condition of the skin. Inflammation is a part of the body's immune response and is the end result of oxidative stress in any body part. Among the various inflammatory diseases psoriasis is found to be more severe in form, though it is not infectious. The most affected parts in psoriasis are the skin, nails and joints. It comes under papulo-squamous disorders. Here, the outer layer of skin i.e. the epidermis moves towards the surface and then continually sheds from skin. The skin formation touches a dramatically higher turnover rate. The name psoriasis is from the Greek language, meaning "roughly itching condition" (psora: "itch", sis: "action"). Psoriasis is an immune mediated disorder, where a normal skin cell mistakes for a pathogen, and sends a faulty signal that causes over production of new skin cell. It is also a hereditary condition but the way it inherits is still not predictable. It is a typically lifelong condition, which is not having a permanent cure, but various treatments can be implemented for controlling the severity of symptoms produced by it.<sup>[1]</sup> The eye is involved in about 10% of patients, mostly women. In general, the eye is rarely involved alone; it is almost always associated with skin features.

**Figure 01: Psoriasis Skin.****Etiology of Psoriasis**

Psoriasis has a prevalence ranging from 0.2% to 4.8%. The exact etiology is unknown, but it is considered to be an autoimmune disease mediated by T lymphocytes. There is an association of HLA antigens seen in many psoriatic patients, particularly in various racial and ethnic groups. Familial occurrence suggests its genetic predisposition. Injury in the form of mechanical, chemical, and radiational trauma induces lesions of psoriasis. Certain drugs like chloroquine, lithium, beta-blockers, steroids, and NSAIDs can worsen psoriasis. Generally, summer improves psoriasis while winter

aggravates it. Apart from the above factors infections, psychological stress, alcohol, smoking, obesity, and hypocalcemia are other triggering factors for psoriasis. Psoriasis occurs worldwide, and its prevalence varies. In the United States, about 2% of the population is affected. High rates of psoriasis have been reported in the Faroe Islands. The prevalence of psoriasis is low in Japan and may be absent in Aboriginal Australians and Indians from South America.<sup>[2]</sup>

Disease initiation of complex diseases, such as psoriasis, takes place in genetically predisposed individuals in which adysregulated immune response occurs following exposure to certain environmental triggers. Although mechanistic associations linking distinct environmental factors with specific genetic determinants and dysregulated have been identified (Fig. 2).<sup>[3]</sup>

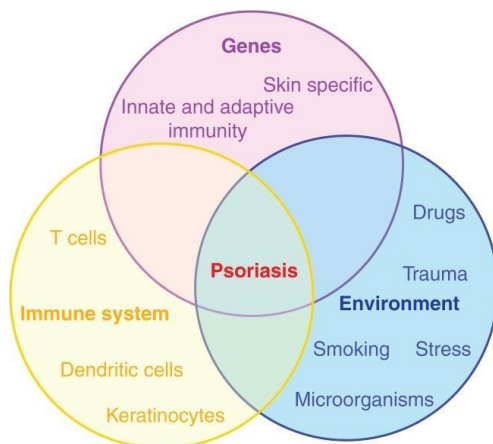


Figure 02: Etiology of Psoriasis.

Psoriasis can present at any age. A bimodal age of onset has been recognized. The mean age of onset for the first presentation of psoriasis can range from 15 to 20 years of age, with a second peak occurring at 55 to 60 years.

**Pathophysiology of Psoriasis**

The pathophysiology of psoriasis involves infiltration of the skin by activated T cells which stimulate the proliferation of keratinocytes. This dysregulation in keratinocyte turnover results in the formation of thick plaques. Other associated features include epidermal hyperplasia and parakeratosis. In addition, the epidermal cells fail to secrete lipids which results in flaky and scaly skin, which is typical of psoriasis.<sup>[4]</sup>

The pathophysiology of psoriasis is multifactorial and involves epidermal hyperproliferation, abnormal differentiation of epidermal keratinocytes, and inflammation with immunologic alterations in the skin. The hyperproliferation is characterized by increased DNA synthesis and a markedly decreased turnover rate for the epidermis. Abnormal keratinocyte differentiation involves increased expression of certain keratins (6 and 16) and a delay in expression of other keratins (1 and 10) that are expressed in normally differentiating skin.<sup>[5]</sup>

Inflammation results from an infiltrate of neutrophils in the epidermis and superficial dermis and an infiltrate of T lymphocytes in the dermis with a predominance of CD8+ cells.

NK cells and NKT cells in cutaneous disorders:-

**NKT cells**

There is considerable interest in NKT cells and their role in the pathophysiology of psoriasis. Increased NKT cells were consistently observed in psoriasis lesions by different groups, although the exact role played by these cells is yet to be defined precisely.<sup>[7-10]</sup> Nickoloff and co-workers demonstrated that psoriatic keratinocytes (KCs) overexpressed CD1d and NKT cells can be activated to elaborate IFN $\gamma$  when cultured with CD1d overexpressing KCs. These results provided a pathogenetic link between psoriatic KCs, which overexpress CD1d and NKT cell infiltrating the lesions. Experiments in severe combined immunodeficient mice have also shown that injection of human cells of NKT characteristics into transplanted psoriatic skin could drive lesion development. Zhao et al. showed increased densities of NKT cells using a set of precise markers for classical NKT cells, anti-V $\alpha$ 24 and anti-V $\beta$ 11 mAbs, in psoriatic lesions, especially in the pidermis, compared with healthy adult skin. These data were confirmed by real-time polymerase chain reaction (PCR) too. Also, CD1d expression was more extensive in psoriasis than in normal skin.

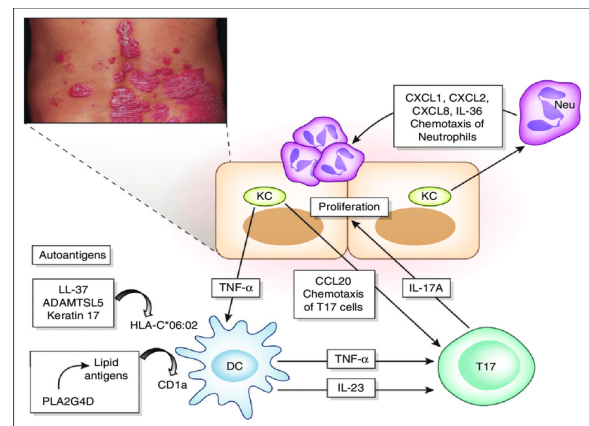


Figure 03: Pathophysiology of Psoriasis.

**Symptoms and triggers of Psoriasis<sup>[11-12]</sup>**

Common signs and symptoms of psoriasis include:-

1. A patchy rash that varies widely in how it looks from person to person, ranging from spots of dandruff-like scaling to major eruptions over much of the body.
2. Rashes that vary in color, tending to be shades of purple with gray scale on brown or Black skin and pink or red with silver scale on white skin.
3. Small scaly spots (commonly seen in children).
4. Dry, cracked skin that may bleed.
5. Itching, burning or soreness.

Psoriasis triggers Many people who are predisposed to

psoriasis may be free of symptoms for years until the disease is triggered by some environmental factor. Common psoriasis triggers include:

- Infections, such as strep throat or skin infections
- Weather, especially cold, dry conditions
- Injury to the skin, such as a cut or scrape, a bug bite, or a severe sunburn
- Smoking and exposure to secondhand smoke
- Heavy alcohol consumption
- Certain medications—including lithium, high blood pressure drugs and antimalarial drugs
- Rapid withdrawal of oral injected corticosteroids

#### Complications<sup>[13-15]</sup>

- Secondary infections
- Poor cosmesis
- Psoriatic arthritis
- Risk of lymphoma
- Increased risk of adverse cardiac events.
- Psoriatic arthritis, which causes pain, stiffness, and swelling in and around the joints.
- Temporary skin color changes (post-inflammatory hypopigmentation or hyperpigmentation) where plaques have healed.
- Eye conditions, such as conjunctivitis, blepharitis and uveitis.
- Obesity.
- Type 2 diabetes.
- Cardiovascular disease.
- Other autoimmune diseases, such as celiac disease, sclerosis and the inflammatory bowel disease called Crohn's disease.
- Mental health conditions, such as low self-esteem and depression.

#### Types of Psoriasis

A) **Plaque psoriasis:** -The most common type of psoriasis, plaque psoriasis causes dry, itchy, raised skin patches (plaques) covered with scales. There may be few or many. They usually appear on the elbows, knees, lower back and scalp. The patches vary in color, depending on skin color. The affected skin might heal with temporary changes in color (post inflammatory hyperpigmentation), particularly on brown or Black skin.<sup>[16]</sup>



Figure 04: Plaque Psoriasis.

#### Symptoms

Plaque psoriasis causes raised, inflamed, red skin covered with silvery, white scales. These patches may itch and burn. It can appear anywhere on your body, but it often pops up in these areas:

- Elbows
- Knees
- Scalp
- Lower back.

#### Treatments

- **Topical treatments:** These go on your skin and are usually the first thing doctors try. Some have steroids; others don't. Prescription products slow skin cell growth and ease inflammation.
- **Phototherapy:** This treatment uses ultraviolet light. You'll get it at your doctor's office or at home with a phototherapy unit.
- **Systemic medications:** These prescription drugs work throughout your body. You'll get them if you have moderate to severe psoriasis that doesn't respond to other treatments. You could take them by mouth or get them as a shot or IV. This category includes drugs called biologics, which target specific parts of your immune system that play a role in the inflammatory process. Learn more about systemic treatments for psoriasis.

B) **Nail psoriasis:** -Psoriasis can affect fingernails and toenails, causing pitting, abnormal nail growth and discoloration. Psoriatic nails might loosen and separate from the nail bed (onycholysis). Severe disease may cause the nail to crumble. When psoriasis affects the nails, you may notice:<sup>[17]</sup>

- Tiny dents in your nails (called "nail pits")
- White, yellow, or brown discoloration under one or more nails
- Crumbling, rough nails
- A nail lifting up so that it's no longer attached
- Buildup of skin cells beneath one or more nails, which lifts up the nail. Treatment and proper nail care can help you control nail psoriasis.



Figure 05: Nail psoriasis.

C) **Guttate psoriasis:** -Guttate psoriasis primarily affects young adults and children. It's usually triggered by a bacterial infection such as strep

throat. It's marked by small, drop-shaped, scaling spots on the trunk, arms or legs. Classically, guttate psoriasis occurs shortly after an acute group B haemolytic streptococcal infection of the pharynx or tonsils and can be the presenting episode of psoriasis in children or, occasionally, adults. The number of lesions may range from five or 10 to over 100. Guttate psoriasis accounts for 2% of the total cases of psoriasis. In children, an acute episode of guttate psoriasis is usually self-limiting; in adults, guttate flares may complicate chronic plaque disease. Although few studies have assessed the long-term prognosis of children with acute guttate psoriasis, one small study revealed that 33% of patients with acute guttate psoriasis eventually developed chronic plaque disease.<sup>[18]</sup>



Figure: 06 Guttate Psoriasis.

Guttate psoriasis happens after certain triggers. These triggers include:

- Strep throat
- Stress
- Skin injury
- Infection
- Medication

**Treatments** To treat guttate psoriasis, a doctor may prescribe steroid creams, light therapy, and oral medications. Determining the underlying cause of the infection can also help clear guttate psoriasis. If a bacterial infection caused the condition, antibiotics may help.

- D) Inverse psoriasis:** Inverse psoriasis mainly affects the skin folds of the groin, buttocks and breasts. It causes smooth patches of inflamed skin that worsen with friction and sweating. Fungal infections may trigger this type of psoriasis. Where the inverse psoriasis appears, you're likely to notice:<sup>[19]</sup>
- Smooth, red patches of skin that look raw
  - Little, if any, silvery-white coating

**Symptoms:** Patches of skin that are bright red, smooth, and shiny, but don't have scales

Getting worse with sweating and rubbing Common triggers

are:

- Friction
- Sweating
- Fungal infections
- Sore or painful skin.



Figure 07: Inverse Psoriasis.

**E) Pustular psoriasis.** Pustular psoriasis, a rare type, causes clearly defined pus-filled blisters. It can occur in widespread patches or on small areas of the palms or soles. Where pustular psoriasis appears, you tend to notice:<sup>[20]</sup>

- Red, swollen skin that is dotted with pus-filled bumps
- Extremely sore or painful skin
- Brown dots (and sometimes scale) appear as the pus-filled bumps dry

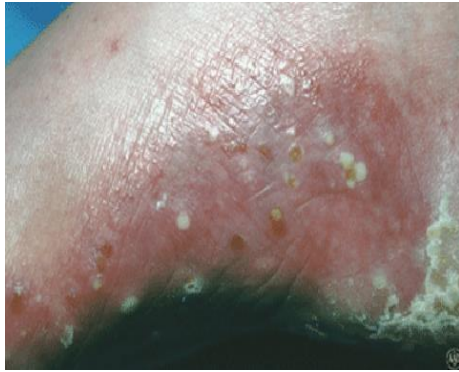
Pustular psoriasis can make just about any activity that requires your hands or feet, such as typing or walking, unbearably painful.

**Symptoms include**

- Fever
- Chills
- Nausea
- Fast heart rate
- Muscle weakness

**Triggers include**

- Topical medicine (ointments you put on your skin) or systemic medicine (drugs that treat your whole body), especially steroids
- Suddenly stopping systemic drugs or strong topical steroids that you used over a large area of your body
- Getting too much ultraviolet (UV) light without using sunscreen
- Pregnancy
- Infection
- Stress
- Exposure to certain chemicals



**Figure: 08 Pustular psoriasis.**

**F) Erythrodermic psoriasis.** The least common type of psoriasis, erythrodermic psoriasis can cover the entire **body** with a peeling rash that can itch or burn intensely. It can be short-lived (acute) or long-term (chronic).<sup>[21]</sup>

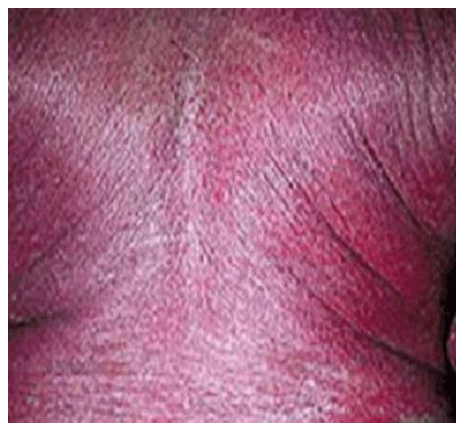
**Symptoms include**

- Severe itching, burning, or peeling
- A faster heart rate
- Changes in body temperature

If you have the symptoms, see your doctor right away. You may need to get treated in a hospital. This type of psoriasis can cause severe illness from protein and fluid loss. You may also get an infection, pneumonia, or congestive heart failure.

**Triggers include**

- Suddenly stopping your systemic psoriasis treatment
- An allergic drug reaction
- Severe sunburn
- Infection
- Medications such as lithium, antimalarial drugs, cortisone, or strong coal tar products



**Figure 09: Erythrodermic psoriasis.**

**G) Scalp Psoriasis**

Scalp psoriasis is a common skin disorder that makes raised, reddish, often scaly patches. It can pop up as a single patch or several, and can even affect your entire scalp. It can also spread to your forehead,

the back of your neck, or the hind and inside of your ears. For some people, it may cause severe dandruff. For others, it can be painful, itchy, and very noticeable at the hairline. Scalp psoriasis can extend to your neck, face, and ears in one large patch or many smaller patches. In some cases, scalp psoriasis can complicate regular hair hygiene. Excessive scratching can cause hair loss and scalp infections. The condition may also cause feelings of social stress.<sup>[22]</sup>

**Symptoms**

- Scaly, red, bumpy patches
- Silvery-white scales
- Dandruff-like flaking
- Dry scalp
- Itching
- Burning or soreness



**Figure: 10 Scalp Psoriasis.**

**Treatments** Topical treatments are most commonly used for scalp psoriasis. They may require an initial 2 months of intensive applications, plus permanent, regular maintenance. Treatment options include:

- Medicated shampoos
- Tar preparations
- Topical application of vitamin D, known as calcipotriene (Dovonex)

Light therapy, oral medications, and biologics also may be recommended depending on the responsiveness to treatment.

**H) Psoriatic arthritis** Psoriatic arthritis (PsA) is a painful and physically limiting condition that affects between 30% and 33% of people with psoriasis. There are five types of PsA with varying symptoms. There's also no cure for this condition.

Psoriasis is an autoimmune disease, so it can trigger your body to attack your joints and skin. It can affect many joints and often becomes quite severe in the hands and affect the nails.

Skin symptoms usually appear before joint symptoms.<sup>[23]</sup>



**Figure 11: Psoriatic arthritis.**

### Treatments

Treatments for psoriatic arthritis can include non steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Advil) and naproxen sodium (Aleve). NSAID can help reduce the incidences of swelling and pain associated with psoriatic arthritis.

Prescription medications, such as an oral corticosteroid, may also help reduce inflammation that leads to psoriatic arthritis. Prescription topical medications used to treat psoriatic arthritis include salicylic acid, calcipotriene, and tazarotene.

A unique category of medications known as disease-modifying antirheumatic drugs (DMARDs) can help reduce inflammation and joint damage. Biologics, which are a sub category of DMARDs, maybe prescribed to reduce inflammation at a cellular level.

**Causes:** Psoriasis is thought to be an immune system problem that causes skin cells to grow faster than usual. In the most common type of psoriasis, known as plaque psoriasis, this rapid turnover of cells results in dry, scaly patches.

The cause of psoriasis isn't fully understood. It's thought to be an immune system problem where infection-fighting cells attack healthy skin cells by mistake.

### Diagnosis

Your health care provider will ask questions about your health and examine your skin, scalp and nails. Your health care provider then might take a small sample of skin (biopsy) for examination under a microscope. This helps determine the type of psoriasis and rule out other disorders. The diagnosis of psoriasis is primarily clinical. There are different clinical types of psoriasis, the most common of which is chronic plaque psoriasis, affecting 80% to 90% of patients with psoriasis. The hallmark of classic plaque psoriasis is well-demarcated, symmetric, and erythematous plaques with overlying silvery scale. Plaques are typically located on the scalp, trunk, buttocks, and extremities but can occur anywhere on the body.

Patients might demonstrate nail involvement, which can present without concomitant plaques. Active lesions might be itchy or painful. Psoriasis can also present as an isomorphic response, where new lesions develop on previously normal skin that has sustained trauma or injury. The severity of disease can be helpful in guiding management and is classified as mild, moderate, and severe.

### Treatment of Psoriasis

Psoriasis treatments aim to stop skin cells from growing so quickly and to remove scales. Options include creams and ointments (topical therapy), light therapy (phototherapy), and oral or injected medications. Which treatments you use depends on how severe the psoriasis is and how responsive it has been to previous treatment and self-care measures. You might need to try different drugs or a combination of treatments before you find an approach that works. Even with successful treatment, usually the disease returns. Researchers believe that both genetics and environmental factors play a role.<sup>[24-27]</sup>

### Topical therapy

- **Corticosteroids.** These drugs are the most frequently prescribed medications for treating mild to moderate psoriasis. They are available as oils, ointments, creams, lotions, gels, foams, sprays and shampoos. Mild corticosteroid ointments (hydrocortisone) are usually recommended for sensitive areas, such as the face or skin folds, and for treating widespread patches. Topical corticosteroids might be applied once a day during flares, and on alternate days or weekends during remission.
- **Vitamin D analogues.** Synthetic forms of vitamin D- such as calcipotriene (Dovonex, Sorilux) and calcitriol (Vectical) - slow skin cell growth. This type of drug may be used alone or with topical corticosteroids. Calcitriol may cause less irritation in sensitive areas. Calcipotriene and calcitriol are usually more expensive than topical corticosteroids.
- **Retinoids.** Tazarotene (Tazorac, Avage, others) is available as a gel or cream. It's applied once or twice daily. The most common side effects are skin irritation and increased sensitivity to light. Tazarotene isn't recommended when you're pregnant or breastfeeding or if you intend to become pregnant.
- **Calcineurin inhibitors.** Calcineurin inhibitors — such as tacrolimus (Protopic) and pimecrolimus (Elidel) — calm the rash and reduce scaly buildup. They can be especially helpful in areas of thin skin, such as around the eyes, where steroid creams or retinoids are irritating or harmful.
- **Salicylic acid.** Salicylic acid shampoos and scalp solutions reduce the scaling of scalp psoriasis. They are available in nonprescription or prescription strengths. This type of product may be used alone or with other topical therapy, as it prepares the scalp to absorb the medication more easily.

- **Coal tar.** Coal tar reduces scaling, itching and inflammation. It's available in nonprescription and prescription strengths. It comes in various forms, such as shampoo, cream and oil. These products can irritate the skin. They're also messy, stain clothing and bedding, and can have a strong odor. Coal tar treatment isn't recommended when you're pregnant or breastfeeding.
- **Anthralin.** Anthralin is a tar cream that slows skin cell growth. It can also remove scales and make skin smoother. It's not intended for use on the face or genitals. Anthralin can irritate skin, and it stains almost anything it touches. It's usually applied for a short time and then washed off.
- **Light therapy** -Light therapy is a first line treatment for moderate to severe psoriasis, either alone or in combination with medications. It involves exposing the skin to controlled amounts of natural or artificial light. Repeated treatments are necessary.
- **Sunlight**-Brief, daily exposures to sunlight (heliotherapy) might improve psoriasis. Before beginning a sunlight regimen, ask your health care provider about the safest way to use natural light for psoriasis treatment.
- **Goeckerman therapy.** An approach that combines coal tar treatment with light therapy is called the Goeckerman therapy. This can be more effective because coal tar makes skin more responsive to ultraviolet B (UVB) light.
- **UVB broadband.** Controlled doses of UVB broadband light from an artificial light source can treat single psoriasis patches, widespread psoriasis and psoriasis that doesn't improve with topical treatments. Short-term side effects might include inflamed, itchy, dry skin.
- **UVB narrowband.** UVB narrowband light therapy might be more effective than UVB broadband treatment. In many places it has replaced broadband therapy. It's usually administered two or three times a week until the skin improves and then less frequently for maintenance therapy.
- **Psoralen plus ultraviolet A (PUVA).** This treatment involves taking a light-sensitizing medication (psoralen) before exposing the affected skin to UVA light. UVA light penetrates deeper into the skin than does UVB light, and psoralen makes the skin more responsive to UVA exposure.
- **Excimer laser.** With this form of light therapy, a strong UVB light targets only the affected skin. Excimer laser therapy requires fewer sessions than does traditional phototherapy because more-powerful UVB light is used. Side effects might include inflammation and blistering.

#### Drugs for treatment of psoriasis

During 18th & 19th centuries some flower solutions containing poisonous and carcinogenic arsenic compound was used by dermatologist as a treatment for psoriasis. Grenz ray (ultra soft x-ray) was popular

treatment for psoriasis during middle age of 20th century. Undecylenic acid was investigated and used for psoriasis some 40 year ago.<sup>[28]</sup>

- **Antibiotics:**-Tetracycline and Penicillin Use of systemic antibiotics and induction of gh reduction of intracellular cAMP and by the interaction with arachidonic acid and its metabolites.
- **$\beta$ -blockers:**-It is a very popular class of drug to treat cardiovascular diseases like Arrhythmias, hypertension, ischemic heart disease, heart failure, hyperthyroidism, glaucoma and anxiety. Their action is exerted by blocking the beta receptor or non selective  $\beta_2$  receptor, mainly found in the keratinocyte and on the surface of the macrophages. It is theorized that tetracyclines accumulate in higher concentrations in psoriatic lesions compared to uninvolved skin.
- **Lithium:**-Lithium is used for the treatment of manic depressive disorder. In 1972, the first lithium induced psoriasis was reported. There are several theories purported to explain the pathogenesis of lithium provoked psoriasis.
- **Antimalarial Drug:**-The most commonly used anti-malarial drugs are chloroquine and hydroxychloroquine. The mechanism of causing psoriasis is through inhibition of transglutaminase enzyme in skin.

#### Oral or injected medications

If you have moderate to severe psoriasis, and if other treatments haven't worked, your health care provider may prescribe oral or injected (systemic) drugs. Some of these drugs are used for only brief periods and might be alternated with other treatments because they have potential for severe side effects.<sup>[29-30]</sup>

- **Steroids.** If you have a few small, persistent psoriasis patches, your health care provider might suggest an injection of triamcinolone right into them.
- **Retinoids.** Acitretin and other retinoids are pills used to reduce the production of skin cells. Side effects might include dry skin and muscle soreness. These drugs are not recommended when you're pregnant or breastfeeding or if you intend to become pregnant.
- **Biologics.** These drugs, usually administered by injection, alter the immune system in a way that disrupts the disease cycle and improves symptoms and signs of disease within weeks. Several of these drugs are approved for the treatment of moderate to severe psoriasis in people who haven't responded to first line therapies. Options include apremilast (Otezla), etanercept (Enbrel), infliximab (Remicade), adalimumab (Humira), ustekinumab (Stelara), secukinumab (Cosentyx), ixekizumab (Taltz), guselkumab (Tremfya), tildrakizumab (Ilumya) and certolizumab (Cimzia). Three of them — etanercept, ixekizumab and ustekinumab — are approved for children. These types of drugs are expensive and

may or may not be covered by health insurance plans.

Biologics must be used with caution because they carry the risk of suppressing the immune system in ways that increase the risk of serious infections. People taking these treatments must be screened for tuberculosis.

- **Methotrexate.** Usually administered weekly as a single oral dose, methotrexate (Trexall) decreases the production of skin cells and suppresses inflammation. It's less effective than adalimumab and infliximab. It might cause upset stomach, loss of appetite and fatigue. People taking methotrexate long-term need ongoing testing to monitor their blood counts and liver function. People need to stop taking methotrexate at least three months before attempting to conceive. This drug is not recommended for those who are breastfeeding.
- **Cyclosporine.** Taken orally for severe psoriasis, cyclosporine (Gengraf, Neoral, Sandimmune) suppresses the immune system. It's similar to methotrexate in effectiveness but cannot be used continuously for more than a year. Like other immune suppressant drugs, cyclosporine increases the risk of infection and other health problems, including cancer. People taking cyclosporine long-term need ongoing testing to monitor their blood pressure and kidney function. These drugs aren't recommended when you're pregnant or breast feeding or if you intend to become pregnant.
- **Other medications.** Thioguanine (Tabloid) and hydroxyurea (Droxia, Hydrea) are medications that can be used when you can't take other drugs. Talk with your health care provider about possible side effects of these drugs.

### Treatment considerations

You and your health care provider will choose a treatment approach based on your needs and the type and severity of your psoriasis. You'll likely start with the mildest treatments - topical creams and ultraviolet light therapy (phototherapy). Then, if your condition doesn't improve, you might move on to stronger treatments.

People with pustular or erythrodermic psoriasis usually need to start with stronger (systemic) medications.

In any situation, the goal is to find the most effective way to slow cell turn over with the fewest possible side effects.

### Lifestyle and home remedies

Try these self-care measures to better manage your psoriasis:

- **Take daily baths.** Wash gently rather than scrubbing your skin in the shower or bath. Use lukewarm water and mild soaps that have added oils or fats. It might help to add bath oil, Epsom salts or oatmeal to bathwater and soak for at least 15 minutes.
- **Keep your skin moist.** Apply moisturizer daily. If you're moisturizing after bathing, gently pat

dry and apply your preferred product while your skin is still moist. For very dry skin, oils or heavy ointment-based moisturizers may be preferable — they stay on the skin longer than creams or lotions do. If moisturizing seems to improve your skin, apply the product more than once a day. If the area where you live is very dry, use a humidifier to add moisture to the air.

- **Cover the affected areas overnight.** Before going to bed, apply an ointment-based moisturizer to the affected skin and wrap with plastic wrap. When you wake, remove the plastic and wash away scales.
- **Expose your skin to a small amount of sunlight.** Ask your health care provider about the best way to use natural sunlight to treat your skin. A controlled amount of sunlight can improve psoriasis, but too much sun can trigger or worsen outbreaks and increase the risk of skin cancer. Log your time in the sun, and protect skin that isn't affected by psoriasis with a hat, clothing or sunscreen with a sun protection factor (SPF) of at least 30.
- **Avoid scratching.** It might help to apply a nonprescription anti-itch cream or ointment containing hydrocortisone or salicylic acid. If you have scalp psoriasis, try a medicated shampoo that contains coal tar. Keep your nails trimmed so that they won't hurt your skin if you do scratch. Wear soft fabrics that don't contribute to itchiness.
- **Avoid psoriasis triggers.** Notice what triggers your psoriasis, and take steps to prevent or avoid it. Infections, injuries to your skin, smoking and intense sun exposure can all worsen psoriasis.
- **Stay cool.** Being too hot can make your skin feel itchy. Wear light clothing if you're outside on hot days. If you have air conditioning, use it on hot days to keep cool. Keep cold packs in your freezer and apply them to itchy spots for a few minutes of relief. You might try storing your moisturizing lotion in the refrigerator to add a cooling effect when you apply it.
- **Strive to maintain a healthy life style.** Try practicing other healthy-living habits to help manage psoriasis. These include being active, eating well, limiting or avoiding alcohol consumption, and maintaining a healthy weight.

### Alternative and natural treatments for psoriasis

Some studies claim that alternative therapies (integrative medicine) — products and practices not part of conventional medical care or that developed outside of traditional Western practice — ease the symptoms of psoriasis. Examples of alternative therapies used by people with psoriasis include special diets, vitamins, acupuncture and herbal products applied to the skin. None of these approaches is backed by strong evidence, but they are generally safe and might help reduce itching and scaling in people with mild to moderate psoriasis.<sup>[31-34]</sup>

- **Aloe extract cream.** Taken from the leaves of the



aloe vera plant, aloe extract cream may reduce scaling, itching and inflammation. You might need to use the cream several times a day for a month or more to see any improvement in your skin.

- **Fish oil supplements.** Oral fish oil therapy used in combination with UVB therapy might reduce the extent of the rash. Applying fish oil to the affected skin and covering it with a dressing for six hours a day for four weeks might improve scaling.
- **Oregongrape.** Oregongrape—also known as barberry—is applied to the skin and may reduce the severity of psoriasis.

If you're considering alternative medicine to ease the signs and symptoms of psoriasis, talk with your health care provider about the pros and cons of these approaches.<sup>[35]</sup>

The Herbal Medicines not have more side effects as compared to synthetic drugs. The herbal medicine is easily available and easy to use in treatment. Now a day, herbal resources play a very important role in the management of the skin and inflammatory diseases. Some studies suggest that psoriasis symptoms can be relieved by change in diet and life style. Fasting food period, low energy diet and vegetarian diets have improved psoriasis symptoms. In some treatments supplemented with fish oil shows a beneficial effect due to the presence of omega - 3 Fatty Acids and Vitamin E. Cannabis is also suggested for treating psoriasis due to Anti - inflammatory properties of its cannabinoids and their regulatory effect on immune system.<sup>[36-37]</sup>

- 1) **Capsicum annuum:** -It is commonly known as Cayenne, its chief component being capsaicin. One hypothesis on the pathogenesis of psoriasis suggests a neurogenic inflammatory etiology mediated through substance - P (SP). SP activates inflammatory cells and ultimately perpetuates vasodilatation, angiogenesis and keratinocyte hyperproliferation. In accordance, psoriatic lesions are known to be more densely innervated with higher SP content than control or uninvolved psoriatic skin.
- 2) **Aloe vera:** -Aloe vera is a popular plant used in cosmetic care and first aid products in case of thermal injuries. Aloe contains anthraquinones, steroids, saponins, mucopolysaccharides and salicylic acid. Syed and colleagues (1996) conducted a double - blind, placebo - controlled study on 60 patients with psoriasis with slight to moderate plaque type psoriasis and an average 8.5 year duration of their disease. Patients' self - administered topical Aloe vera extract removed the placebo three times a day without occlusion for 4 weeks to the psoriatic plaques. The aloe group showed significantly higher rates of clearing the psoriatic plaques in almost all patients. Anthraquinone and acemannan, the main active compounds in Aloe vera, have antibacterial activity against *Staphylococcus* and *Streptococcus* species and may provide a rationale for their the

therapeutic efficacy in psoriasis. In addition, salicylic acid, a component of Aloe vera, is a keratolytic and would contribute to its reported efficacy in the desquamation of psoriatic plaques.

- 3) **Matricaria recutita:** -It is commonly known as Chamomile. The chamomile flowers have a long therapeutic tradition in treating gastrointestinal ailments. The rationale for its use in psoriasis is that chamazulene, a by-product of the non - volatile oil extract, matricin, known to have anti-inflammatory activity by inhibition of lipooxygenase and as a result, leukotriene B4 (LTB4) formation. There is evidence supporting the role of increased LTB4 formation in psoriatic plaques; therefore, inhibition results in disease improvement.
- 4) **Curcuma domestica:** -Turmeric has a long history of being used for infections and kidney stones. The use in psoriasis is a relatively new adjunct. The anti-inflammatory components are thought to be contained in the curcuminoids and volatile oils which function through selective inhibition of phosphorylase kinase (PhK). PhK is an enzyme found in the epidermis.
- 5) **Gaultheria procumbens:** -It is commonly known as Wintergreen. Wintergreen is a plant native to the Eastern United States and historically was used by Native Americans as an analgesic. Although used topically for psoriasis, winter green can cause systemic effects like tinnitus, vomiting, tachypnea and acid-based disturbances. Patients using aspirin or prescribed salicylic acid compound in conjunction with a salicylate herbal (for example, winter green, aloe vera, or red clover) are more susceptible for systemic toxicities. Additionally, oil of winter green can increase prothrombin time and international normalized ratio (INR) of clotting, creating problems for patients on warfarin. There are no investigations on its effectiveness in psoriasis, but have potential anti-inflammatory effect and needs further scientific investigations for its use in psoriasis.

## CONCLUSION

Psoriasis is a complex multifactorial disease for which various novel therapies have arisen in the past years. Many patients with psoriasis seek initial evaluation and treatment from their primary care providers. Recognition of psoriasis, as well as its associated medical and psychiatric comorbidities, would facilitate timely diagnosis and appropriate management with effective and safe topical therapies and other medical and psychological. In spite of the refinement of the targeted therapies, psoriasis remains a treatable but so far not curable disease. The targeted therapies show high clinical efficacy for the inhibition of IL-23 and IL-17. Some degree of a persistent anti-psoriatic effect by these therapies could be demonstrated after drug discontinuation, and argue for disease modification concept. This important finding will be followed up in ongoing and future studies.

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