A review on psoriasis

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Abstract –

Psoriasis is a skin condition that causes the skin to multiply ten times faster than normal. Plaques of red, itchy, scales-covered skin are some of the most common symptoms. Psoriatic arthritis is a type of arthritis that can affect people who have psoriasis. Guttate psoriasis typically begins in childhood or early adulthood. Key symptoms of guttate psoriasis are patches of smooth, bright red and shiny skin with no scales. Psoriasis of the nails is general in people who have psoriatic arthritis. Approximately 90% of individuals who have it also have nail changes. The pathophysiology of psoriasis involves hyper proliferation, abnormal multiplication of epidermal keratinocyte, and inflammation along with alteration in the immunologic system of skin. Inflammation is caused by a problem with the immune system. Psoriasis usually runs in families, but it can skip generations. As the immune system is affected in the psoriasis triggers like cold, dry weather and stress aggravate the symptoms. In African American population purplish coloured patches with grey scales on very dark skin have been reported. There is no cure for psoriasis, but treatment can significantly reduce symptom, even in severe cases. A treatment regime is curated by the physician keeping in mind the area of the rash, age, overall health and other factors. Retinoid and steroids in the type of creams, ointments, gels etc. are prescribed. Various treatments are also available for patients with modest to severe psoriasis.[1]

KEYWORDS: psoriasis, skin condition, skin cells, redness, scales, inflammation.

INTRODUCTION

Psoriasis is a frequently occurring, autoimmune, and in flammatory disease and is characterized by red, inflamed plaques, and macules, which appear as a result of increased proliferation and poor differentiation of keratin producing epidermal cells. These plaques are often accompanied by silvery scales. The highly inflamed lesions appear as a result of defective signals produced by the immune system to increase the mitosis rate of keratin producing cells by tenfold This, in turn, leads to nuclei retention and incomplete cornification of stratum corneum cells. This disease sets in the early stages of life and slowly progress for the entire life time. Psoriasis is of different types depending on the affected tissues The reported prevalence of psoriasis in different countries ranges between 0.09% and 11.43% Psoriasis on average, affects 2-5% population globally Though it has spread globally, its prevalence differs among different locations and ethnicities. [2]

and African countries are less prone to psoriasis than the counties away from the equator like Europe and Australia Psoriasis affects both men and women unbiased, but in women, the onset of the disease is at a much earlier stage Recent studies have shown that the prevalence of the disease has increased many folds over the past years Despite the enormous treatment options, which currently exist for the reduction of signs and symptoms of the disease, complete cure is still a challenging task. The conventional drug delivery systems like topical therapies present certain limitations such as high dosing frequency, decreased drug penetration, and reduced patient compliance [. The toxicity associated with systemic and phototherapy also imposes limitations on conventional therapies. Therefore, investigation and discovery of new efficient and safe delivery systems for the treatment of psoriasis are of great importance.[3]

Psoriasis is one of the oldest recorded skin diseases. The famous Hippocrates and his school (460–377 B.C.) produced objective and meticulous descriptions of many skin disorders. In their classification, dry scaly eruptions were grouped together under ‘lopoi’ (epidermis). This group probably included psoriasis and leprosy. The confusion between Psoriasis and leprosy remained for many centuries. From 1000 – 1400 A.D. the prevalence of leprosy was very high. Many psoriatic patients, diagnosed as leprosy, received the same brutal treatment as leprosy patients and were isolated from the community. Psoriasis was again mentioned in the first century by Cornelius celsus, a Roman author. Celsus described it as the fourth variant of impetigo, a condition caused by Staphylococcus pyogenes. This condition appears as red patches with watery blisters on the skin. The English dermatologist, Robert Willan (1757 ~ 1812) recognized psoriasis as an independent disease. He identified two categories. “Leprosa Graecorum” was the term he used to describe the condition when the skin had scales. Psora Leprosa described the condition when it became eruptive Galen was the first who used the word ‘Psoriasis’. Under this name he described a skin disorder characterized by a scaliness of the eyelids, corners of the eyes and the scrotum along with the itching and excoriations. Although, this type of clinical presentation was termed psoriasis, is in fact more similar with eczema. In 1841, Ferdinand von Herba.

Psoriasis is a chronic skin disease with severe psychosocial effects. Its chronicity, frequent relapses, the absence of permanent cure and symptoms such as pruritus make it hard to live with. Furthermore, the cosmetic disfigurement has a negative impact on the quality of life due to psychological stress, disruption of relationships and difficulties in daily life.

Figure :1 psoriasis [4]

Etiology:

Exact etiology of psoriasis has yet to be discovered, the immune system and genetics are known to play major roles in its pathogenesis and manifestation. According to most workers, it is a heredo-familial disease brought on by stress. Psoriasis is now considered a multi-factorial disorder that has several factors like genetic predisposition, environmental and immunologically mediated inflammation. Current researches suggest that the inflammatory mechanisms are immune based and most likely initiated and maintained primarily by T cells in the dermis Several risk factors/triggers participated in the etiology of psoriasis are described which is as follows

Trauma: Psoriasis at the site of injury is well known and the phenomenon is termed as Koebner phenomenon. A wide range of injurious local stimuli, including physical, chemical, electrical, surgical, infective and inflammatory insults have been recognized to elicit psoriatic lesion. the Environmental factors: several studies validated that interaction between genes and environment is important in manifestation of psoriasis. Many environmental factors have linked to psoriasis, and have been implicated in the manifestation of disease and exacerbation of pre-existing disease.

Infection: Acute guttate psoriasis is strongly associated with preceeding or concurrent streptococcal infection, particularly of the throat. There is evidence that streptococcal infection may be important in chronic plaque psoriasis, and treatment with rifampicin and peniciline may lead to clearance of skin lesions.[5]

Epidemiology

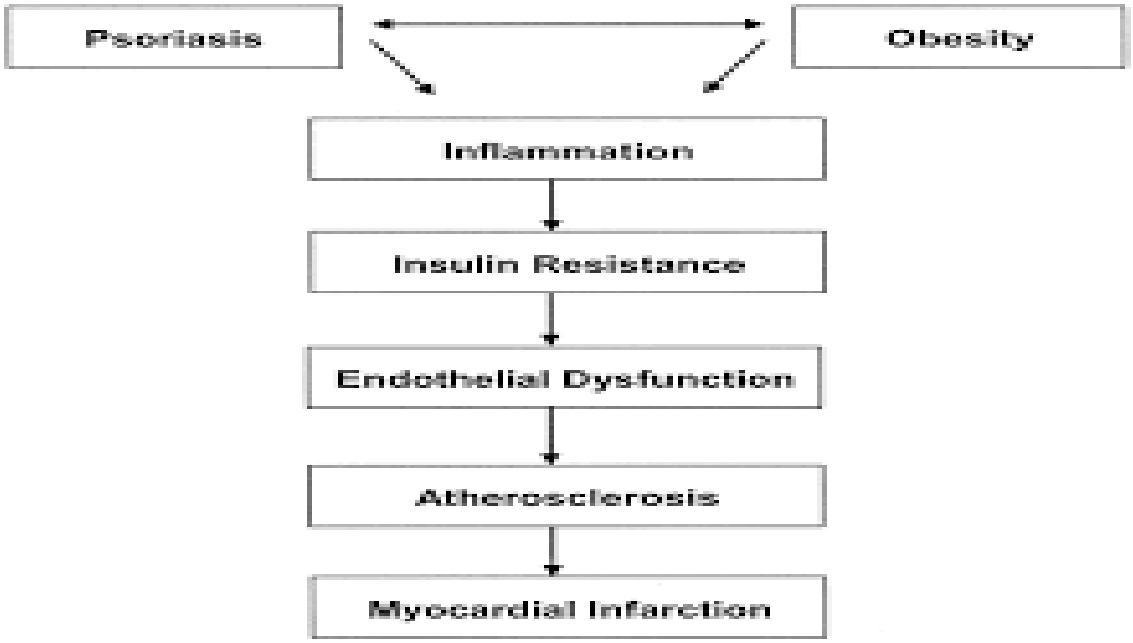
Psoriasis is a chronic, immune-mediated, inflammatory disease which primarily affects the skin and joints. The etiology of psoriasis is multifactorial and involves a complex interplay between genetic and environmental factors. Psoriasis occurs worldwide and has no gender preference; however, its prevalence varies considerably. In the US, psoriasis affects approximately 2% of the population, although rates as high as 4.6% have been reported.1,2 Bell et al showed an age- and sex-adjusted annual incidence of 60.4 in 100,000 for Rochester, MN, between the period of 1980 to 1983.3 More recently, Huerta et al reported an incidence rate of 14 per 10,000 person-years.4 The difference in reported incidence rate can be attributed to the different case definitions used in these studies. Psoriasis is extremely rare to absent in certain ethnic groups, such as Africans, African-Americans, Japanese, Alaskans, Australians, and Norwegian Lapps.2,5,6 The prevalence of psoriasis has not changed with time according to epide miological studies, in contrast to other autoimmune diseases whose prevalence rates have increased.

Psoriasis, an inflammatory and chronic skin condition, has the potential to impact people across all age groups. It exhibits two peak periods of occurrence, with the first peak observed around 16-20 years of age (early onset) and the second peak around 57-60 years (late-onset).[6]

Pathophysiology

The pathophysiology involves hyper-proliferation of epidermis, abnormal differentiation of epidermal keratinocyte, inflammation and alteration in the immune system due to multiple factors. an increase in DNA synthesis is the key character of hyper-proliferation and a significantly lower turnover rate for the epidermis. In psoriasis, there is a lag in appearance of keratins (1 and 10) that are expressed in normal physiology of differentiating skin. Abnormal keratinocyte differentiations involve increased expression of keratins such as six and 16. Neutrophils in filtrate the epidermis and the layers above it. T-cells infiltrate the dermis with a majority of CD8+ cells. IL-17 Increased production of beta – defensins, CXC-chemokines and CCL-20 Tissue Epidermal acanthosis and abnormal keratinocyte proliferation IL-22 “Increased production of proinflammatory (IL–23 and IL–12, IL–17, IFN–γ, TNF, and

IL–22) Th1 cell (TNF, IFN) Cell Activation of T cells by myeloid dendritic cells leading to Th1 and Th17 activation and proliferation.[7]



Risk factors

In addition to genetic susceptibility, environmental risk fa tors are implicated in triggering or exacerbating psoriasis. Data from analytic epidemiologic studies (case-control and nested cohort studies) with appropriate control for confounding variables have identified multiple risk factors: smoking, obesity, alcohol consumption, diet, infections, medications, and stressful life events.1,3,14–20 One of the largest studies investigating the association of smoking and obesity with psoriasis was the Nurses' Health Study II. This study, which included a cohort of over 78,000 nurses from the US, demonstrated a "dose-response" relationship for obesity and smoking on the risk of developing incident psoriasis.21,22 Specifically, the study estimated that 30% of new psoriasis cases were due to being overweight (body mass index .25). European studies have also confirmed that current smoking and obesity are independent risk factors for developing psoriasis.14 A higher prevalence of psoriasis has been demonstrated in current smokers than never- or ex-smokers.23 Compared with patients who had never smoked, the multivariate relative risk of developing psoriasis was 1.78 for current smokers and 1.37 for past smokers (P, 0.05). For both current and past smokers, increased number of pack-years and increased intensity of smoking were both associated with graded increases in [8]

Table 1 Psoriasis risk factors [9]

Risk factor	**References**
Smoking	26
Obesity	21
Alcohol consumption	16,29-31
Infections	36-37
Medications	39-43
Stressful life events	1,36,45-46

Diagnosis

Physical examination:

Especially if plaques turn up on the ears, scalp, knees, belly button, elbow, and nails it is typically simple to diagnose. In order to ensure that the patient does not have a skin infection, the doctor may perform a biopsy, which includes removing a little piece of skin and evaluating it. Other tests cannot be used to confirm or eliminate psoriasis.[10]

Types

Pustular psoriasis is caused by simple, red pustules on the palms and soles of the feet along with red, scaly skin. Psoriasis like this is infrequent but most affects adults. It leads in red, pusfilled globs on the skin called pustules. Although they could seem contagious, these are not. This variant may only manifest on a specific body part, like the hands or feet. Because it affects the majority of the body, it is generally alluded to a s "generalised" pustular psoriasis. When this develops, it might be especially harmful and need forurgent medical care. Symptoms include muscle weakness, a beating heart, nausea, chills, and fever. Steroids in particular, either topical or systemic, can work as triggers. Abruptly stopping the use of severe topical steroids or narcotics that had been administered across a significant part of the body. Excessive exposure to UV rays without protection, pregnancy, sickness, stress, and chemical exposure. In Guttate psoriasis, small red spots are the key sign and they mostly appear in youth and early adulthood on the torso and limbs of the patient. Infections of the respiratory tract like strep throat, tonsillitis, other features like stress, skin wounds, and the use of beta-blockers and anti-malarial drugs are some of the triggers[11]

The armpits, groin, and region under the breasts are characteristics of skin creases where inverse psoriasis can create bright red, shiny lesions. It frequently occurs in the buttocks, under the breasts, groyne, armpits, and skin folds around the genital. Patches of bright red, smooth, and shiny skin without scales are among the symptoms, which get worse with friction and perspiration. Common triggers include friction, perspiration, and fungi. Erythrodermic psoriasis, the least prevalent variety of psoriasis, resulting in a fiery redness and the loss of scales in paper like form. Severe sunburn, infections, specific drugs, and leaving the treatment in the middle are the causes of it. Because it can cause significant illness, it needs to be treated straight away. Psoriatic arthritis, which affects the joints, is mor e likely in persons who have psoriasis of the nails Symptoms include fungal infection, chalk like material under your nails, yellow brown colour changes, severely sensitive nails.[12]

Complication

sometimes confused with osteoarthritis, but nail changes are common. 4. Spondylitis: Inflamation of the spinal column causing a stiff neck and pain in the lower back and sacroiliac area. Peripheral disease may be seen in the hands, arms, hips, legs and feet. 5. Arthritis mutilans: A severe, deforming type of PSA affecting

If patient contain psoriasis, they are at great possibility of contracting other condition as mentioned Ache, stiffness

- Infections
- Eczematization
- Pustulization
- Itching
- Burning and Tightness
- Hypocalcaemia.
- Amyloidosis
- Arthritis
- Hepatic and Renal failure
- Tumour formation Co-morbidities: Traditionally psoriasis has been considered a disease of the skin, but multiple reports attest to the important role of systemic inflammation with ramifications for other organ systems. Many studies suggest that patients of psoriasis tend to have concurrent illnesses (behavioral and systemic), termed as co morbidities, which include psoriatic arthritis, cardiovascular disease, nonalcoholic fatty liver disease, inflammatory bowel disease, lymphoma, skin cancer, anxiety and depression These co morbid conditions may occur concurrently or years after development of psoriasis. Most common co-morbidity is psoriatic arthritis (PSA). [13]

Psoriatic arthritis is of five types which is as follows-

1. Symmetric arthritis: Affects about 15% of PSA patients, involves multiple symmetric pairs of joints in the hands and feet and resembles rheumatoid arthritis.

2. Asymmetric arthritis: The most common type of PSA, found in about 80% of patients. Usually involves only 1-3 joints in an asymmetric pattern and may affect any joint (e .g. knee, hip, ankle, and wrist). Hands and feet may have enlarged “sausage” digits.

3. Distal interphalangeal predominant: This “classic type” occurs in only about 5% of PSA patients. Primarily involves distal joints of the fingers and toes. It is sometimes confused with osteoarthritis, but nail changes are common.

4. Spondylitis: Inflamation of the spinal column causing a stiff neck and pain in the lower back and sacroiliac area. Peripheral disease may be seen in the hands, arms, hips, legs and feet.

Psychosocial impact: Psoriasis has a negative impact on physical, emotional, social, sexual, financial well-being. Psychological occupies a special place among the factors that trigger psoriasis. In general, psychological stress has been frequently described as a variable that triggers skin disease, and has been commonly associated with high levels of sympathetic activation and difficulties in regulating emotions in some studies Million compared the personality with the functioning of immune system and found that the personality can be studied as an interface between the outer and inner world, and between the social and biological levels. Personality would be a complex behavioural system that evolved due to the need to deal with a threatening environment undergoing constant change.

Million also suggested that the different ways of dealing with the environment may be more or less adoptive. These studies are supported by Quiroga et. Psoriasis patients experience reduced quality of life usually due to social rejection as compared to healthy subjects. These patients also experience greater physical discomfort, mood swings, poor body image and self and restricted daily and social activities due to visibility of their lesions.

Therapeutics in psoriasis: Choice of treatment for psoriasis depends on many factors, including the extent of disease, its effect on quality of life, and the patient's perception of their illness. Conventional treatment of psoriasis is based on the degree of severity. There can be substantial variation between individuals in the effectiveness of specific psoriasis treatments. Medications with the least potential for adverse reactions are preferentially employed. If the treatment goal is not achieved then therapies with greater potential toxicity may be used.

Medications with significant toxicity are reserved for severe unresponsive psoriasis. This is termed as 'psoriasis treatment ladder'. As a first step topical treatment is employed. 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 systemic medications. Over time, psoriasis can become resistant to a specific therapy. Therefore, treatments may be periodically changed to prevent resistance and to reduce the chance of adverse reactions, this type of strategy is termed as treatment rotation. Rotational and combination therapies increase efficacy and decrease toxicity of treatment.

The future may bring stem-cell therapy and gene-based therapies, including "antisense" treatments that stress directly inhibit psoriasis specific genes.

However, the adverse effects and toxicity of conventional psoriasis treatments necessitate safer and effective natural treatments that can be used as alternatives or in an integrative fashion. [14]

Treatment

The main objective of psoriasis treatment is to relieve symptoms, control inflammation and improve the quality of life of patients. Treatment options vary depending on the severity of the disease, the extent of the lesions, and the individual response of the patient.

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

danalogues, such as calcipotriol, which help normalize the growth of skin cells, and vitamin A analogues (topical retinoids), which reduce inflammation and scaling.

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.

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 options include

Methotrexate: It is an immunosuppressive drug that reduces inflammation and cell proliferation.

Acitretin: It is an oral retinoid that normalizes the growth of skin cells and reduces flaking.

Cyclosporine: It is an immunosuppressant that inhibits the immune response and inflammation.

Phosphodiesterase-4 inhibitors: These drugs reduce inflammation and cell proliferation by inhibiting a specific enzyme.

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 in 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.[15]

CONCLUSION

Psoriasis is a common, chronic, inflammatory, multifactorial disease with predominantly skin and joint manifestations affecting 2.5 % of world population. Initially it is considered as a disorder of keratinization but recent studies favor the role of immunological, genetic and environmental factors. Several studies suggest a strong relation between skin and mind (psyche). As a result, more than a cosmetic nuisance, psoriasis is associated with psychosocial effects that seriously affect quality of life and social relations. The impact of psoriasis on the physical, social, psychological, and financial aspects of life should not be trivialized and must be considered with the same importance as other chronic conditions. Advances in understanding the cellular immunology and biology of psoriasis, when coupled with the biotechnology revolution and rapid advances derived from human genetic studies of auto-immunity, have enhanced insights into the etio-pathogenesis and treatment of 1738 psoriasis. Treatment of psoriasis remains challenging and no definite treatment is available till date. Ayurvedic system of medicine offers natural and costeffective way of management for a wide range of dermatological disorders including psoriasis which specially includes the use of wholesome diet enriched with Rasayanas and lifestyle modification in daily life. Use of Rasayanas (pharmacological as well as non REpharmacological) and lifestyle modification as described in Ayurveda promote psychosomatic health and thus help in the management of psoriasis. If contemporary advance technologies for understanding the cellular immunology, biology and molecular genetics of disease coupled with natural management strategies available in Ayurveda, then it will open new vistas in the management of psoriasis. If contemporary advance technologies for understanding the cellular immunology, biology and molecular genetics of disease coupled with natural management strategies available in Ayurveda, then it will open new vistas in in the management of psoriasis.

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