

Types of different psoriasis and its treatment

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Abstract

Psoriasis is a chronic inflammatory disease of the skin in which red patches covered with white scales occur on many parts of the body. It starts skin cells to multiply up to 10 times faster than normal. It is an immune-mediated disease which causes inflammation in the body. This happens due to the over activeness of system which accelerates somatic cell growth. Normal skin cells completely grow and fall off during a month. Some people also said that psoriasis plaques itches, burns and stings. Inflammation caused by psoriasis can affect other organs and tissues of the body also. People with psoriasis can also experience another health conditions like rheumatoid arthritis. Symptoms mostly start between ages 15 and 25. The main cause of psoriasis is not well known yet but we do know that the system and genetics play major roles in its development. Psoriasis may be a non-contagious disease. There's no such cure of this disease. Treatment aims to get rid of scales and stop skin cells from growing so quickly. First-line therapy for patients with moderate to severe psoriasis includes application of topical agents followed by phototherapy for more extensive disease. Application of the many herbal plants also leads in minimization of inflammation and red patches. So far, there's no therapy that might give hope for an entire cure of psoriasis. Additionally, look after psoriatic patient requires not only treating skin lesions and joint involvement, but it's also vital to spot and manage common co-occurring that already exists or may develop, including cardiovascular and metabolic diseases also as psychological conditions.

Introduction

Psoriasis is an inflammatory and proliferative disease which occurs in skin. This results a rapid change in the skin. The skin leap to seven times the normal skin. The rising of skin cells leads to the thickening of the superficial layers of the skin (Stevenson et al., 2002). The exact cause of psoriasis is not completely understood, but there are number of possibilities acknowledged, like environmental risk factors [smoking, obesity, stress and alcohol consumption] and family history (Parisi et al., 2013). There are several options available for curing psoriasis. Many marketed products are also available, including methotrexate (MTX), cyclosporine, acitretin and apremilast. Natural plants are also useful in the treatment of this disease. The plants which are being used are *Cantheranthus roseus*, *Indigo naturalis*, *Curcuma longa*, *Lavendula agustifolia*, *Santalum album*, *Glycyrrhiza glabra*, aloe vera etc. This report will be highlighted the available natural products reported against psoriasis and its mechanism of action.

Type of psoriasis

Psoriasis vulgaris is a common chronic skin disease which causes red, itchy scaly patches, most commonly on the knees, elbows, trunk and scalp. It tends to go through cycles, flaring for a few weeks or months, then subsiding for a while or going into remission. This disease is caused by problem in immune system. Typical psoriatic scales are whitish-silver and develop in thick, red patches with Inflammation around the scale. Sometimes, these red patches can crack and bleed (Michalek et al., 2017). Psoriasis is classified as follows:

- 1) Inverse psoriasis
- 2) Guttate psoriasis
- 3) Pustural psoriasis
- 4) Erythrodermic psoriasis

1. Inverse Psoriasis: It is also called as flexural psoriasis (Baker and Ryan 1968) and is a rare form of psoriasis. It affects approx 3-7% of psoriasis patients. It occurs generally in intertriginous areas. Intertriginous areas are those where two skin areas touch and rub each other (like axils of arms, skin folds of breasts, and the anogenital region and between digits). Topical corticosteroids are initially effective but later it may leads to atrophy with chronic use (Mafong et al., 2002).

2. Guttate Psoriasis: It is other form of psoriasis with an acute outset of compact erythematous plaques and mostly affects children or youth. It is triggered by group-A streptococcal infections of tonsils (Baker and Ryan 1968).

3. Pustural psoriasis: Pustural psoriasis may have genetic abnormalities which damages the principle of innate skin immune system (Nestle et al., 2009).

Pustural psoriasis has other two entities namely, generalized pustural psoriasis and localized pustural psoriasis.

Generalized pustural psoriasis is a multisystem disease identified by repeated flares consisting of sudden beginning of an extensive skin rash covered with pustules. It generally shows symptoms such as fever, malaise with asthenia, myalgia and arthralgia (Zelickson and Muller, 1991).

4. Erythrodermic psoriasis: It is uncommon and, severe types of psoriasis. Erythroderma (exfoliative dermatitis) is an inflammatory process that involves most of the body surfaces. Treatment involves intensive topical and supportive systemic therapy. With the use of ant metabolite and systemic retinoid therapy, the prognosis for erythroderma psoriasis has improved. Symptoms include chills, fever, fatigue, malaise, weight loss, nausea (Burton and Rook, 1986).

Pathogenesis of psoriasis

Immunopathogenesis:

Inflammation is the major symptom of psoriasis which alternatively shows uncontrolled keratinocyte proliferation and dysfunctional differentiation. Plaque of psoriasis shows acanthosis. It shows inflammatory skin, composed of dermal dendritic cells, macrophages, T- cells, and neutrophils.

The Psoriasis is triggered by disturbances in innate and adaptive cutaneous immune responses which cause psoriatic inflammation (Melgio et al., 2014).The activation of the innate immune system which is

characteristically handled by endogenous cytokines and T-cells driven autoimmune response to exist together with an autoimmunity prolongation in some patients. Thus, psoriasis shows autoimmunity with inflammatory responses (Liang et al., 2017).

Autoimmunity in psoriasis:

Psoriasis clearly shows autoimmune-related path mechanisms. Autoantigen-specific T cells plays an important role in the development and overall track of the disease. LL37 is one of the well- studied T cell autoantigens in the disease psoriasis. CD4+ and CD8+ T cells are specific for LL37, which is found in two-thirds of patients. They had moderate to severe plaque psoriasis

(Lande et al., 2014). LL37-specific T cells produce IFN- γ and CD4+ T cells, which build up IL- 17, IL-21, and IL-22. There is presence of LL37-specific T cells in skin lesion also. They correlate with disease activity there. CD8+ T cells activated through LL37 and get engaged in epidermotropism, auto antigen recognition, and the further secretion of Th17 cytokines. ADAMTSL5 (melanocytic protein) is an HLA-C -restricted autoantigen recognized by an autoreactive CD8+ T cell TCR. This finding confirmed melanocytes as an autoimmune target cells. Other autoantigen candidates comprise lipid antigens generated by phospholipase A2 (PLA2) group IVD (PLA2G4D) and hair follicle-derived keratin (Arakawa et al., 2015).

Genetics:

Psoriasis is also introduced genetically. First and second degree relatives of psoriatic patients are at increase prevalence of developing psoriasis. Monozygotic twins are at triple multiple increased risks as compared to zygotic twins (Farber et al., 1974). Effect of genetics on innate and adaptive immune responses is problematical for psoriasis (Hayter and Cook, 2012).

Co morbidities in Psoriasis:

Psoriasis skin disease generally affects the skin but it may also affect different organs of body and can be associated with a number of diseases too. Patients with hyperlipidemia, hypertension, coronary artery disease, type 2 diabetes, and obese people are at increased risk of psoriasis disease. The metabolic syndrome is double perennial in psoriasis patients. Coronary plaques are also twofold as common in psoriasis patients when it is compared to control subjects. Patients having diseases like diabetes and cardiovascular diseases are more likely prone to psoriasis. There are collective evidences which supports that psoriasis alone increases the possibility of myocardial infarction, stroke, and demise due to cardiovascular disease. It was approved that the increased effects of low-grade chronic inflammation may accelerate vascular disease evolution. People suffering from any liver diseases are also more likely to be affected by psoriasis.

Psoriasis related inflammation in joints may lead to psoriatic arthritis (PsA). Psoriatic arthritis is found to be developed in 40% of psoriasis patients. All over 15% of psoriasis patients are believed to have undiagnosed PsA. Nails are specialized dermal postscript, which can also be pretentious by psoriatic inflammation. Half of the psoriasis patients are affected with nail psoriasis. Nail matrix dispenses pitting, leukonychia, and onychodystrophy and inflammation of the nail bed confer oil-drop discoloration, splinter hemorrhages and onycholysis.

Psoriasis has been also associated with a higher generality of gastrointestinal and chronic kidney disease. There can be probability of chronic kidney disease and end-stage renal disease also.

So, psoriasis disease affects the lives of the patients in many ways. This disease shows their harmful impact in many other parts of the body. The load of disease is thought to show the symptoms of the disease that incorporates pain, pruritus, and bleeding, in addition to the previously mentioned diseases. Psoriasis also impact on the social wellbeing of the people. It affects the people mentally also. They are at increased risk of depression and anxiety. Psoriatic patients may also have suicidal thoughts. Treatment of psoriasis improves anxiety and suicidal thoughts also (Christophers, 2007)

Diagnosis of psoriasis:

1. **Physical examination:** Doctors usually detect this disease by physically examine only. It has plaque around scalp, hands, knees, elbow, belly button, ears.
2. **Lab test:** The doctor might do a biopsy which means remove a small piece of skin and test it to make sure that the person has a skin infection. There's no other test to confirm psoriasis (Raychaudhuri et al., 2014).

Treatment available in the market for psoriasis:

There are many treatments that cure psoriasis. Some treatment target on inflammation and some aims to stop the development of skin cells & to remove the scars.

1. Marketed medicine:

1. **Methotrexate:** Methotrexate is a structural analogue of folic acid. It inhibits the activity of dihydrofolate reductase, which preventing DNA synthesis and reduces the rate of epidermal proliferation in psoriasis disease. Low dose is sufficient and effective in the treatment. This medicine is contradicted in pregnancy (Stern et al., 1982).
2. **Cyclosporine:** CsA, a calcineurin inhibitor blocks production of interleukin 2 by activated CD4-positive T cells which reduces the inflammation in psoriasis. There are serious side effects of cyclosporine with transplant patients like risk of lymphoma, internal malignancies, skin cancers and infections. The patient with severe psoriasis receives 8 months of treatment with CsA (Kavita and Charlene, 2018)
3. **Mycophenolate mofetil:** After ingesting this medicine, it undergoes ester hydrolysis to form mycophenolic acid (Gomez et al., 1979). Mycophenolic acid is antifungal, antibacterial, and antiviral properties. It can also act as an immunosuppressant by inhibiting purine biosynthesis. MMF was found to be less effective than CsA in management of psoriasis (Allison and Eugui, 2000).

Conclusions

Psoriasis can be treated by natural products with least side effects. This report focuses on many plants like *Indigo naturalis*, *Cantheranthus glabra*, *Lavendula agustifolia*, *Santalum album*, *Glycyrrhiza glabra*, *Curcuma longa*, *Thespesia populnea*, *Angelica sinensis*, Aloe vera and many more. They have anti-inflammatory, anti-oxidative, anti-proliferative and other welfare to psoriatic lesions. Many of these plants

having well described pharmacological actions but some of them have not also. There are scientifically proven benefits to help in the management of psoriasis with natural products.

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