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Psoriasis: A Systematic Review of Autoimmune Disorder

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Abstract:- Psoriasis is a persistent, genetically influenced, relapsing, scaly, and inflammatory skin condition. It is an autoimmune, chronic inflammatory disease with a significant genetic component and an unknown etiology that is characterized by inflammation carried on by immune system failure. It is differentiated by continuous inflammation, which causes uncontrollable keratinocyte differentiation and proliferation. Around the world, 125 million people suffer from psoriasis, or between 1% and 3% of people worldwide. Psoriasis is thought to impact 60 million individuals worldwide, with 1.52% of the population in the UK being affected. Psoriasis is a chronic skin condition with a wide range of clinical manifestations, including plaque, flexural, guttate, pustular, and erythrodermic lesions. Plaque psoriasis is the most typical form of psoriasis; however, the illness is clinically heterogeneous in its symptoms and natural history depending on the patient's age, the environment in which they live, and the locations that are afflicted. Psoriatic arthritis, palmoplantar pustulosis, and generalized pustular psoriasis are three distinct but related phenotypes. For the treatment of mild to severe psoriasis, topical treatments such corticosteroids, vitamin D analogues, and tazarotene are effective. Treatment options for psoriasis include topical medications (corticosteroids and vitamin D analogues), phototherapy (psoralen and ultraviolet A radiation), basic systemic medications (methotrexate, cyclosporin, and acitretin), biological agents (TNF tumor necrosis factor, interleukin IL-17 and IL-23 inhibitors), and small molecules inhibitor therapies. Numerous comorbidities, such as depression, lymphoma, and cardiovascular disease, are linked to psoriasis. Although psoriasis cannot presently be cured, care should attempt to minimize physical and psychological suffering by treating patients early in the disease process, recognizing and avoiding related multimorbidity, instilling lifestyle improvements, and adopting a personalized approach to treatment.

Keywords:- *Autoimmune, keratinocyte, Erythrodermic Lesions, Plaque Psoriasis, Palmoplantar Pustulosis, Multimorbidity.*

I. INTRODUCTION

Psoriasis is an autoimmune disorder of skin and joints results from complex, aberrant relationship between the Skin and immune system as well as genetic makeup and factors in environment. Psoriasis is chronic inflammatory skin disease which is characterized by scaly erythematous skin with inflammation, and it involves various systemic organs.

Galen (131-201AD) of pergamon was a Greek physician in the Roman Empire. He was probably the first to have used the term psoriasis. The word psoriasis is derived from Greek meaning "Itching Condition" or "being itchy". "The word psora means" "itch" and iasis" means action, condition. The different types of psoriasis include psoriatic arthritis (PS), pustular psoriasis, Genital psoriasis, erythrodermic psoriasis, plaque psoriasis. Among the psoriatic arthritis is frequently reported which develops into severe arthritis leading to joint dysfunction. At least 2-4% of the adult population have psoriasis, a T-helper (TH) 1/17-mediated inflammatory. Disease of the skin and joints. Factors secreted from their TH cells are also involved in the pathogenesis of various CVS conditions. The increased risk associated with severe psoriasis was greater than that associated with other more.taditional cardiovascular risk factors. The potential causes of psoriasis include genes, PSORSI,PSORS2/CARD14 mutations, IL36RN mutations, SNPs. Environmental triggers of psoriasis include physiological stress, obesity, smoking and alcohol. Treatment of psoriasis include topical therapy and.light-therapy.Topical therapy involves corticosteroids, vitamin D analogues, Retinoids, calcineurin inhibitors, salicylic acid, coaltar. light therapy involves Sunlight, Goecker man therapy, UVB broadband, UVB narrow band, Excimer laser. The value of the psoriasis market is constrained by the Dominance of generic and non-prescription treatments.68% of the $3.5 billion global psoriasis market is captured biologic therapies, topical agents. Conventional agents and systemic drugs account for 25% and 75% respectively. Approval of new biologics could drive market growth(1).

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II. AUTOIMMUNE DISEASES

Autoimmune diseases are conditions in which your immune system mistakenly damages healthy cells in your body. There are different types like Rheumatoid arthritis, Crohn's disease and some thyroid conditions.

❖ *Types*

A. Diabetes

The pancreas produces the hormone called insulin, which helps in the regulation of blood sugar levels. In type-2 diabetes, our own immune system destroys insulin producing cells in pancreas. In type-1 diabetes, due to high levels of blood sugar may damage the blood vessels and organs. This includes organs like heart, kidneys, eyes, nerves.

B. Rheumatoid Arthritis (RA)

Generally in RA, immune system attacks the joints, the common system affecting joints such as Swelling, Warmth, Soreness, and Stiffness. RA commonly affects people as they get older. A condition called juvenile idiopathic arthritis that stacks in childhood. **Psoriasis / psoriatic arthritis** In Psoriasis, skin cells grow, and they shed when they are no longer needed. Psoriasis also multiplies in the skin cells very quickly. The extra cells develop, and form inflamed patches. Psoriasis may appear purplish or dark brown with grey scales on dark skin tones. 30% of people with psoriasis may also develop psoriatic arthritis this can cause symptoms that includes Swelling, Stiffness, pain.

C. Multiple Sclerosis

Multiple Sclerosis the protective surrounding nerve cell in CNS is damaged due to myelin sheath showing the transmission speed of message between brain and spinal cord to and from the rest of the body. This damage can lead to Weakness, numbness, trouble in walking.

D. Systemic Lupus Erythematosus (SLE)

In the 1800's, for the first doctors describe lupus as a skin disease because of the rash of commonly produces the systemic type of lupus, is most common, it affects many organs. This includes kidney, brain, and heart. The most common symptoms include Joint pain, fatigue, rashes.

E. Inflammatory Bowel Disease

The disease describes the condition that causes inflammation in the lining of the intestinal wall. There are two different types: 1. Crohn's disease can cause inflammation of any part of the air tract, from the mouth of the anus. 2. Ulcerative colitis can affect the lines of the large intestine and rectum. Symptoms can include diarrhea, abdominal pain, bleeding uterus.

F. Autoimmune Vasculitis

It occurs when the immune system attacks blood vessels. This inflammation results in the narrowing of arteries and veins, leading to less blood flow through the system.

G. Sjogren's Disease

This condition affects the glands that provide lubrication to the eyes and mouth. The most common symptoms of this disease are dry eyes and mouth, but it can also affect joints or skin.

Psoriasis is a autoimmune disorder caused by the cross communication between Skin and Immune system in which the immune system become over active causing to multiply skin cells very quickly. Pathology of psoriasis was complex and sometimes inherited. Factors Influencing the disorder are like environmental as well as genetic factors. It is a chronic inflammatory disorder of skin and joints identified by the scaly Silverline layers of skin hyper proliferated by the keratinocytes. Erythema's by silver scaly layers typically on elbow, knee, scalp and trunk parts of body(2).

Table 1 Types of Psoriasis

Types of Psoriasis	Signs & Symptoms
Psoriasis Vulgaris (Plaque psoriasis)	● Most common type of psoriasis ● inflammatory red, distinct, elevated, arid, varying in size plaques that are often covered in white or silvery scales. ● Consists of the scalp, the region behind the ears, the face, the trunk, the extensor surfaces of the forearms and shins (particularly the elbows and knees), and the nails.
Intertriginous Psoriasis (Psoriasis in folds and genital areas)	● effects between 12% to 26% of all cases of psoriasis. ● Deep-red or white, flat, sharply demarcated, wet patches or plaques, scales are usually absent. ● affects flexural body areas (such as the axillae, antecubital fossae, umbilicus, groins, genital area, gluteal cleft, popliteal fossae, and other body folds) nearly exclusively.
Guttate Psoriasis (Droplet psoriasis)	● Affects between 0.6% and 20% of individuals diagnosed with psoriasis and usually occurs in childhood and adolescence. ● Reddish, drop-like papules and plaques, mainly involving the trunk, arms and legs. ● Onset is associated with streptococcal infection of the upper respiratory tract and prior skin symptoms.
Pustular psoriasis	● Affects between 1.1% and 12% of all cases of psoriasis. ● Coalescing pustules, filled with non-infectious pus. ● Involves either small areas such as palms of the hands, fingertips, nails and soles of the feet, or the entire body surface can occur as a single episode after a trigger
Erythrodermic Psoriasis	● Affects between 0.4% and 7% of all cases of psoriasis. ● Fiery redness and exfoliation of most of the body surface. ● The most serious type of psoriasis, potentially life-threatening, because it can lead to hypothermia

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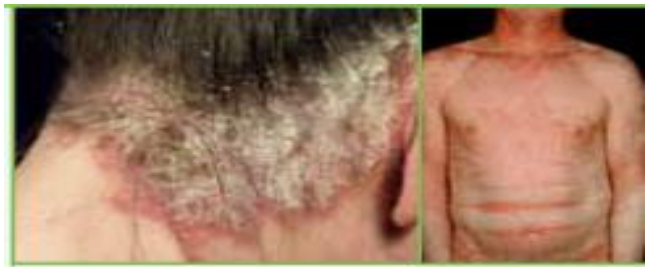

Fig 1 Psoriasis Vulgaris (Plaque psoriasis)

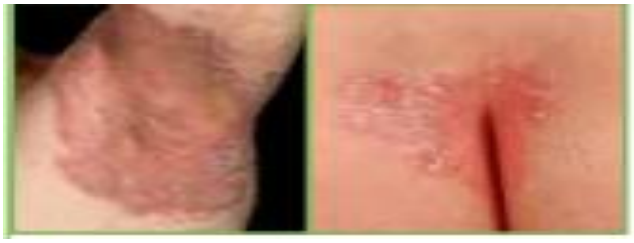

Fig 2 Intertriginous Psoriasis (Psoriasis in folds and genital areas).

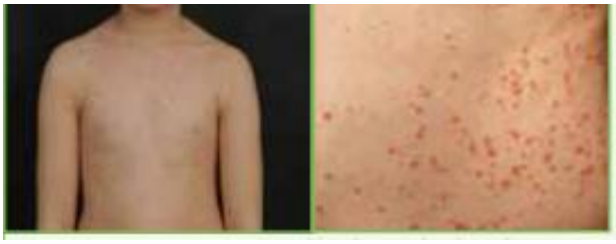

Fig 3Guttate Psoriasis (Droplet psoriasis)

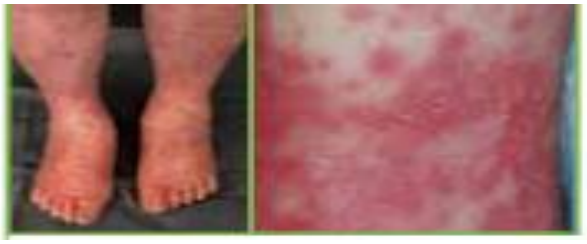

Fig 4 Pustular psoriasis

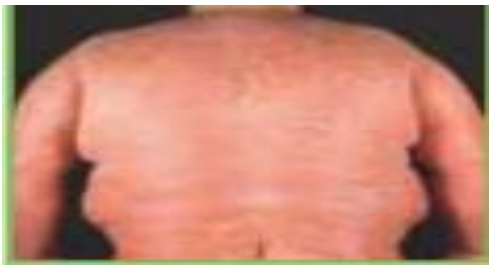

Fig 5 Erythrodermic Psoriasis

III. NOVEL THERAPIES AVAILABLE IN THE TREATMENT OF PSORIASIS

Patients frequently express dissatisfaction with present therapeutic modalities, and treatment adherence may be poor. Therefore, managing psoriasis is difficult and novel. There is a tremendous need for treatment solutions. The therapies which are potent in treatment of moderate to severe chronic plaque psoriasis are anti-IL-17 and anti-IL-23. The novel topical treatments for psoriasis include:

Table 2 Emerging Vitamin D3 Derivatives

Combined therapies which include:	**Vitamin D3 derivatives and corticosteroids** Salicylic acids and corticosteroids Nortriptyline HCL-containing compounds Non-steroidal Anti- inflammatory agents.
	Blockade of neurogenic inflammation
	Phosphodiesterase inhibitors
	Janus-associated kinase inhibitors
Other non-steroidal anti- inflammatory agents which include:	MEK1/MEK1 inhibitor WBI- 1001 PH 10 Pan selectin antagonist BCT 194
	Topical calcineurin inhibitors
	Anti proliferative agents
	New coal tar formulations

❖ *Biological Therapies:*

A. Tumor Necrosis Factor- α (TNF- α)

levels in psoriasis patients' sera are high, according to published research. To capture TNF, inhibit its activity, and thereby lessen interactions between immune cells and keratinocytes, anti-TNF has been produced. There are various compounds used to treat psoriasis that suppress TNF- α. There are three approved TNF-inhibitors at the moment for medical care. Drugs of anti TNF- α includes infliximab, etanercept, adalimumab and certolizumab pegol(cimzia).

B. Anti Cytokines Treatments:

It is understood from the literature that IL-23 and Th17 cells play a crucial role in the emergence of psoriasis. Immune cell survival and growth are encouraged by IL-23 Ustekinumab may decrease the IL-17 production that is believed to be responsible for mobilizing neutrophils to psoriatic lesions. Apilimod not only inhibits the production of IL-12, IL-23, and several downstream cytokines in the lesional skin, but it also concurrently boosts the production of the anti-inflammatory cytokine IL-10. The "Toll-like receptor" (TLR) family of receptors is expressed on the surface of a variety of cell types but is found most abundantly on innate immune system cells. These receptors

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are capable of detecting pathogen-associated molecular patterns (PAMPs), including viral or bacterial DNA or lipopolysaccharides (LPS).

C. Nerve Growth Factor Inhibition:

Research shows that during stress sensory nerve fibers emit high amounts of neuropeptides in heavy quantities. Nerve growth factor (NGF) is present in psoriatic lesional and non-lesional plaques and is involved in keratinocyte proliferation, angiogenesis, expression of adhesion molecules, Tcell activation and proliferation of cutaneous nerves.

D. Small Molecules Inhibitors:

These include phosphodiesterase 4 inhibitors, protein kinase C inhibitors, mitogen activated protein kinase (MAPK), janus kinase inhibitors and lipids. Apremilast is a oral therapeutic drug which inhibits phosphodiesterase 4. The oral immunosuppressant sotrastaurin blocks both classical and new protein kinase C isotypes, which are crucial for T-cell signaling and for the synthesis of INF- and IL-17, which are essential components. Tofacitinib inhibits the isoforms janus kinase 1 and 3, and the clinical trials are already completed.

E. New Therapeutic Approaches:

Natural Treatments-Some of the natural treatments include vitamins, plant products and trace elements. Previous studies showed the presence of many radical hydroxyls and high levels of nitric oxide in psoriasis patients' skin, as well as the anti-inflammatory and antiproliferative effects of natural polyphenols. Studies on the bark extract "Picea mariana" found that it possesses potent anti-inflammatory and antioxidant properties and was nontoxic to keratinocytes.

For individuals with mild to severe inflammatory diseases, topical therapy is the first line of treatment. It contains 8-methoxypsoralen, corticosteroids, dithranol, tars retinoids, Tacrolimus, Vitamin D analog, and other medications. Both biosynthesis and the target organ of vitamin D activity occur in the skin. According to Kragballe and Kang et al., vitamin D prevents keratinocyte differentiation and multiplication by reducing interleukin.

F. Phototherapy:

When the plaques are small and thin and the affected body surface area is large, phototherapy is performed. Psoralen with UVA (PUVA), broadband UVB (BB-UVB), narrowband UVB (NB-UVB), and excimer laser are all forms of phototherapy. Skin cancers like squamous cell carcinoma and malignant melanoma are the principal side effects of long-term usage of PUVA therapy.

G. Natural Treatment / Herbal Therapy

Alkaloids, steroids, terpenoids, polyphenolics, phenylpropanoids, fatty acids, lipids, and other herbal ingredients have anti-inflammatory and immunosuppressive effects on psoriasis. Among the herbal remedies is Eucommia ulmoides Oliv. Yerba mate, Indigo naturalis, Curcuma longa, Zingiber officinalis, Mordica charantia, and Mahonia aquifolium, among other substances, have been shown to be effective against psoriasis.

H. Nano Carriers for Treatment of Psoriasis:

Numerous benefits, including improved drug encapsulation effectiveness, improved biocompatibility, and improved drug concentration at the targeted site, are offered by innovative drug delivery approaches using novel carriers. These characteristics consequently improve effectiveness and patient compliance by lowering dose, frequency of administration, and side effects that are dose dependent.

Nanocarriers provide distinct benefits over other traditional transdermal/topical drug delivery systems, including the following: Depending on their size, shape, surface charges, and hydrophilic-hydrophobic balance, they can fluidize stratum corneum. The carrier's nano size range enables it to make a close connection with the skin's surface, which helps the drug to permeate the skin. Therefore, nanocarriers are able to overcome the skin's natural barrier. Nanocarriers can retain drugs on the skin's surface by enabling controlled release. When modified with ligands specific to cell types, they produce focused activity. Drug-loaded nanocarriers typically assemble in hair follicles to help drugs penetrate the skin's outer layers(2,3)

Table 3 Nanocarrier-Based Formulations for the Administration of Anti Psoriatic Drugs:

S.No	Delivery Carrier	Drug Used	Method/ Technique
1.	Liposomes	capsaicin	Thin film hydration.
2.	Ethosomes	methotrexate	Extrusion method.
3.	Nano emulsion	cyclosporin	Spontaneous emulsification method.
4.	Lipid core nano capsule	Mometasone furoate	Self-assembling method.
5.	Nanostructured lipid carriers	Methotrexate Tretinoin Capsicin	Modified hot homogenization-ultrasonication. Micro emulsification technique. Solvent diffusion method
6.	Solid lipid nanoparticle	Tretinoin Capsicin Mometasone furoate	Micro emulsification technique Solvent diffusion method Solvent-injection.
7.	Polymeric micelle	Tacrolimus	Self-assembly of the triblock copolymer.
8.	Polymeric nano capsules	Tretinoin	Interfacial deposition of preformed polymer.
9.	Dendrimers	8-methoxypsoralene	Divergent insitu branch cell method.

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IV. EFFECT OF THERAPIES IN LONG TERM

Chemical medicines include, among others, alefacept, efalizumab, adalimumab, ustekinumab, and secukinumab. It was shown that these chemical medications can have long-term negative effects that lead to physical problems in patients, such as the emergence of the uncommon but seriously dangerous condition progressive multifocal leukoencephalopathy (PCL). Due to the JC virus infection of the central nervous system and other medications, there is a high risk of infusion reactions such pruritus, flushing, hypertension, headaches, and rashes as well as an increase in the creation of neutralizing anti-drug antibodies (ADA).

A. PUVA (Psoralen with UVA):

PUVA therapy side effects include nausea, itching, and burning. Long-term issues can result in higher chances of sun sensitivity, cataracts, skin aging, skin cancer, and sunburn. To avoid cataracts, safety glasses must be worn both during and after treatment. The use of PUVA therapy in children under the age of 12 is not recommended.

B. Methotrexate:

The majority (61%) of patients suffered adverse effects, most commonly due to aberrant liver function, bone marrow suppression, nausea, gastrointestinal complaints, and hair loss. The effect of MTX treatment was good in 76% of subjects, moderate in 18%, and bad in 6% of subjects. The individuals were required to stop therapy in 20% of cases; 9% refused therapy due to bodily and psychological distress; 2% desired to get pregnant; 16% were lost to follow-up; and 6% died from multimorbidity and old age. Three participants (2%) experienced cancer of the breast, cervix, or lung, presumably as a result of long-term MTX use. (U-F Haustein,M Rytter Methotrexate in psoriasis: 26 years' experience with low-dose long-term treatment).

C. Calcipotriene:

Four patients in the calcipotriene/halobetasol group experienced the onset of irritating contact dermatitis during the 6-month follow-up period. This adverse effect was moderate, transient, and did not occur in any of the patients. (Mark Lebwohl, MD, Ayelet Yoles, BS, Kathleen Lombardi, BS, and Wendy Lou, PhD New York, New York suppress Calcipotriene ointment and halobetasol ointment in the long-term treatment of psoriasis: Effects on the duration of improvement).

D. Phototherapy:

(Light therapy) To provide the proper dosage of light, medical light sources use timers and specific wavelengths of light. Sunlamps and tanning beds cannot be used in place of a medicinal light source. Skin cancer can be caused by ultraviolet light from any source; however, this risk is reduced when the light is used properly in a doctor's office.

E. Anthralin:

This medication slows the growth of skin cells and aids in scaling removal. Skin inflammation is the most typical adverse reaction. Additionally, it can leave stains on your skin, clothing, fabric, and even hard surfaces. It's better to merely apply it briefly on your skin before washing it off(2,3).

F. Corticosteroid:

These potent medications can be quite beneficial and reduce inflammation. However, prolonged usage of these is not advised. In addition to potentially making your skin thinner, ingesting them may also result in stomach ulcers, bone thinning, early cataract development, and other health problems.

G. Coal Tar:

This thick, dark byproduct of coal can improve the appearance of your skin, reduce inflammation, help with itching and scaling, and slow down the growth of skin cells. However, it can also cause skin irritation, dryness, and increased sensitivity to sunlight. (Hope Cristol Side Effects of Psoriasis Treatments).

V. DIAGNOSIS OF PSORIASIS

Psoriasis is generally diagnosed by clinical means. Psoriasis has several clinical subtypes, the most prevalent of which is chronic plaque psoriasis affecting 80–90% of psoriasis patients. The classification of disease severity as mild, moderate, and severe can help in directing management(7,8,9).

Measures of disease severity

Severity-mild

Measures- <3% of the body's surface

Disease having little impact on patient's quality of life; patient can control symptoms to an acceptable extent with topical medication and regular skin care practices.

➢ *Moderate:*

- *Metrics:*

3%–10% BSA • Illness that either severely impairs the patient's quality of life (QoL) because of the disease's severity, physical discomfort (pain or pruritus), or location (e.g., the face, hands, feet, or genitalia), or that is not expected to be controlled to an acceptable degree by standard skin care technique

➢ *Severe*

- *Measures->10% BSA:*

A disease that severely impairs a patient's quality of life and cannot or is not anticipated to be adequately controlled by topical medication.

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Table 4 Differential Diagnosis and Distinguishing Clinical Features(4)

Differential diagnosis	Distinguishing clinical features
Atopic dermatitis	pruritus as the primary symptom, with characteristic form and distribution
Contact dermatitis	Depending on how the irritant or allergen was exposed, patches or plaques with acute edges, geometric shapes, and sharp borders may develop.
Lichenplanus	Violaceous lesions and frequent mucosal involvement.
Secondary syphills	frequent involvement of the palms and soles and lesions that are copper in color.
Mycosis fungoides	Unusual-looking lesions with an asymmetrical distribution, an odd color, and wrinkles brought on by epidermal atrophy.

VI. PSORIASIS TREATMENT

There is growing evidence that psoriasis is a systemic infection illness with effects on a number of organ systems. Thus, patients with psoriasis should get the right treatment for management of coexisting diseases and psoriasis enhances long-term results. Arthritis can manifest itself in a variety of ways. Dactylitis, which causes the entire digit to swell and is frequently referred to as a sausage digit, is a typical symptom. Psoriatic arthritis can cause oligoarticular or polyarticular joint swelling and can affect both small and large joints(10))

Treatment for adult men with chronic plaque psoriasis (> 5% BSA) without psoriatic arthritis:

- *First-Line Therapy*

- UVB phototherapy (NB or BB) alone
- UVB phototherapy plus acitretin
- PUVA
- UVB phototherapy plus methotrexate

- *Second-Line Therapy (in Alphabetical Order) • Acitretin Plus a Biologic*

- Methotrexate plus a biologic
- UVB plus a biologic

Psoriasis is a reasonably simple clinical diagnosis, particularly when the lesions are composed of erythematous ("salmon pink"), silvery white scaly, strongly delineated, indurated plaques. There are irregular or oval shapes, range in size from one to several centimeters, and are spread symmetrically over the scalp, lower back, and extensor surfaces of limbs (mostly the elbows and knees). The most common psoriasis variation found in children and young people is guttate psoriasis. It is characterized by an acute eruption of many, tiny, round or slightly oval, erythematous, scaly papules and plaques that are extensively dispersed, especially on the trunk and proximal part of the extremities. Some papulosquamous or erythematosquamous conditions, including lymphomatoid papulosis, pityriasis rosea, secondary syphilis, and pityriasis lichenoides chronica, are included in the primary differential diagnosis. (11,12)

The quality of life of those who suffer with pediatric psoriasis is severely impacted. For the time being, there are no international standards for treating pediatric psoriasis. The main foundations for treatment are published case series, adult psoriasis guidelines, professional judgment, and knowledge gained from using these medications for other children's diseases. Compared to adults, children frequently exhibit a thinner surface scale. The Auspitz sign is a phenomenon that happens when scaling is removed; it is characterized by punctuate bleeding spots. Other common diagnostic signs of psoriasis include the development of lesions in traumatized areas (also known as isomorphic response or Koebner phenomenon) and persistent pigmentation after lesions have healed. Biopsy can be used to support the diagnosis in children who have unusual presentations.In dermatology, dermoscopy is now a common diagnostic tool. The dermatoscopic features of a psoriasis plaque often include diffuse, superficial white scales and dotty vessels over a light red background(13)

Table 5 Clinical Manifestations of Psoriasis

Clinical manifestation	Clinical findings
Plaque psoriasis	Well-defined, erythematous, scaly plaques that are >0.5 cm in diameter can be either isolated lesions or signify a broad illness. They are further classified based on the anatomic locations.
Flexural	Also known as inverse psoriasis or intertriginous psoriasis, these thin plaques have a well-defined border and are confined to the skin folds(14,15,16)
Nail	• Skin plaques may be present without being concurrent. • Red lunula, crumbling, leukonychia, oil drop sign, subungual hyperkeratosis, distal onycholysis, and pitting • Psoriatic arthritis is predicted by nail involvement.
Scalp	• One of the most prevalent locations for psoriasis. • Frequently challenging to treat.
Palmoplantar	• Confluent redness and scaling without evident plaques to poorly defined scaly or fissured patches to massive plaques covering the palm or sole. • Localized to the hands and soles of feet.

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Table 6 Other Variants

Guttate	• Sudden appearance of "dew-drop," salmon-pink, tiny papules with fine scales on the trunk or limbs. • Has knowledge of group history a perianal or pharyngitis streptococcal group a dermatitis due to streptococcus.
Pustular	monomorphic pustule sheets on sore, inflammatory skin; typically found on the palms or soles.
Erythroderma	90% or more of the patient's body covered with widespread erythema with little to no scaling that develops suddenly or gradually • May be related to high-output cardiac failure, hypoalbuminemia, hypothermia, and electrolyte abnormalities(17). • A life-threatening situation

➢ *Natural Compounds for Potential Psoriasis Therapy*

There are number of natural sources to treat the psoriasis:

- *Omega-3-fatty acid:*

This type of natural source is available in fish. it contains pufa (omega-3-poly unsaturated fatty acid). it is a safe therapy to treat various skin diseases.

- *Vitamin-d:*

It plays an important role in calcium and bone metabolism. it includes differentiation and suppression of cells and regulation of hormones. it is metabolized to 1,25-dihydroxy vitamin d and causes changes in genes.it is available in animal products like chicken breast, milk, beef, eggs, cheese and mushrooms. it has been demonstrated to restore the integrins and regulate the production of k10.

- *Vitamin-e:*

It is a powerful antioxidant liquid soluble which is found in all cell membranes. the skin disorders looked at vitamin e levels in tissue and sera. antioxidant medicines play an important role in autoimmune illnesses and oxidative stress.the combination of antioxidants vitamin e selenium and coenzyme q (10) was introduced to the diets to evaluate its influence on disease progression(18).

- *Aloe vera:*

It is obtained from dried leaves of the plant aloe barbadensis belongs to family liliaceae. it mainly contains anthraquinone type of glycosides. cheap chemical constituent is aloin. other chemical constituents are enzymes, proteins, vitamins and minerals. available in creams and lotions**.** uses: -used to treat psoriasis reducing redness and scaling.-it promotes skin hydration and wound healing.-acemanann and aloe emodin have anti-bacterial activity to treat psoriasis.-it has anti-inflammatory, anti-fungal, antioxidant and anti-tumor properties.(8)

- *Coffee:*

It is a purine alkaloid obtained from leaves of tea plants, seed of coffee and coca plant and other species, it belongs to the family rubiaceae. it is known as chemically 1,3,7 trimethyl xanthine.uses**:** inhibits the cell proliferation and cycline adenosine monophosphate. it is important in reducing the severity of psoriasis(19).

- *Curcumin:*

It is obtained from rhizomes of curcuma longa and belongs to the family zingiberaceae. uses: it has anti-inflammatory, antioxidant and anti-microbial properties.it is used to treat eye problems, urinary tract, treatment for cancer of the skin and wound repair.

- *Garlic:*

It is obtained from bulbs of plant allium sativa belongs to the family lilliaceae,it mainly contains volatile oils like allicin. **uses:** used in cardiovascular disease.it is used as anti-cancer.it is used as anti-microbial, anti-bacterial and anti-protozoal.

- *Fennel:*

It is obtained from the dried ripe fruits foeniculum vulgare.it belongs to the family umbelliferaceae. it mainly contains 0.3-7% volatile oil like fenchone and anethole uses: anethole is a powerful estrogenic agent that inhibits inflammation and carcinogenesis. it is used as a carminative, anti-septic, flavoring agent and mild astringent.

- *Ginger:*

It is obtained from unscraped rhizomes plant zingiber officinale and belongs to family zingiberaceae.it mainly contains volatile oils like gingerol. uses: it is used to treat diabetes, cancer, cardiovascular diseases and alzheimer's diseases.it improves immunity and better digestion(20,21).

- *Clove:*

It is obtained from the dried flower buds of eugenia caryophyllus, belonging to the family myrtaceae. the active ingredients are eugenol and isoeugenol. uses: it is used as local anesthetics, anti-analgesic and anti-septics.

- *Pomegranate:*

These are bioactive compounds, rich in nutrients uses: it reduces the low-density lipoprotein and cardiovascular diseases.

- *Baking soda:*

it plays an important role in treating psoriasis patches. you may use baking soda in your self-care routine for a variety of things, like teeth whitening and psoriasis itching relief. it's not only for cooking and cleaning. burns advises making a paste out of 1 tsp of baking soda and a little bit of water to apply to psoriasis spots(22,23).

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VII. CONCLUSION

This review has shown that naturally accomplished compounds may very well play an important part in the discovery of new psoriasis treatments. There is no cure for psoriasis yet, but by using these natural products we can reduce psoriasis & these natural products may cause fewer side effects when compared to artificially prepared compounds. By changing lifestyle & preferring a healthy diet, we can prevent psoriasis to some extent. One of these developing techniques is the use of herbal medicine. Many herbs have been proved to have anti-psoriatic activities. To treat psoriasis, herbal extracts may be used with artificial pharmaceuticals. A reduced dosage of the synthetic substance as well as the negative effects arising might occur from its dual use.

REFERENCES

[1]. Pittelkow MR. Psoriasis: more than skin deep. Nat Med. 2005 Jan;11(1):17–8.
[2]. Chiricozzi A, Pitocco R, Saraceno R, Nistico SP, Giunta A, Chimenti S. New topical treatments for psoriasis. Expert Opin Pharmacother. 2014 Mar 7;15(4):461–70.
[3]. McCormick T, Ayala-Fontanez N, Soler D. Current knowledge on psoriasis and autoimmune diseases. Psoriasis: Targets and Therapy. 2016 Feb;7.
[4]. Lowes MA, Bowcock AM, Krueger JG. Pathogenesis and therapy of psoriasis. Vol. 445, Nature. Nature Publishing Group; 2007. p. 866–73.
[5]. Whan B. Kim MD Dana Jerome MD MEd FRCPC Jensen Yeung MD FRCPC VOL 63: APRIL • AVRIL 2017 | Canadian Family Physician • Le Médecin de famille canadien).
[6]. Irena Melnikova. psoriasis market. market indicators. volume 8. Macmillan publishers
[7]. limited. October 2009.
[8]. Nilmarie Ayala-Fontanez. Psoriasis: targets and therapy. Dove press 22 February 2016.
[9]. David C Soler Psoriasis: targets and therapy. Dove press 22 february 2016.
[10]. Thomas S McCormick. Psoriasis: targets and therapy. Dove press 22 February 2016.
[11]. Andrea chiricozzi, rossella pitocco, rosita saraceno, steven paul nistico, alessandro giunta and sergio chimenti. New topical treatments for psoriasis;university of rome tor vergata, department of dermatology, rome, Italy; 2014informa UK.
[12]. Sarah dubois declercq and roxane pouliot; promising new treatments for psoriasis.hindawi publishing corporation;the scientific world journal, volume 2013.
[13]. Ki-wei tan and christopher EM Griffiths; novel systemic therapies for the treatment of psoriasis; Pharmacother 2016 17(1).
[14]. Nancy Carteron, M.D., FACR — By Brandon May and Alina Sharon — Updated on September 11, 2023.
[15]. Avi Varma, MD, MPH, AAHIVS, FAAFP — By Stephanie Watson — Updated on September 13, 2023.
[16]. Christine daugaard, Lars Iversen and kasper Fjellhaugen Hjuler. Comorbidity in adult psoriasis: considerations for the clinician. psoriasis: targets and therapy.2012:12.
[17]. Lucia Brunello. Primeview psoriasis. Management Article number:16083. Published online 24 nov 2016.
[18]. Katie E Benjegerdes, Kimberly Hyde, Dario Kivelevitch, Bobbak Mansouri. Pustular psoriasis: pathophysiology and current treatment perspectives. Psoriasis: Targets and Therapy.
[19]. El-Khawaga OY, Ellety MM, Mofty SO, Ghanem MS, Mohamed AO. Review of natural compounds for potential psoriasis treatment. 2023 Mar 30;31(3):1183–98.
[20]. Best Natural Ingredients and Oils for Psoriasis [Internet]. EverydayHealth.com. 2022 [cited 2023 Sep 13].
[21]. Deepak MW Balak, Enes Hajdarbegovic, Drug-induced psoriasis: clinical perspectives. Psoriasis: Targets and Therapy 2017:7 87–94
[22]. Arash Taheri1, Laura F Sandoval1, Sara Moradi Tuchayi1, Hossein Alinia1, Parisa Mansoori2 Steven R Feldman1–3. Emerging treatment options for psoriasis, Psoriasis: Targets and Therapy 2014:4 27–35.
[23]. Paolo Gisondi 1, Francesco Bellinato1, Martina Maurelli 1 , Davide Geat1, Alen Zabotti 2, Dennis McGonagle3, Giampiero Girolomon, Reducing the Risk of Developing Psoriatic Arthritis in Patients with Psoriasis, Psoriasis: Targets and Therapy 2022:12 213–220.