Ministry of Defence

Synopsis of Causation

Psoriasis

Author: Dr Tony Fisher, Medical Author, Medical Text, Edinburgh
Validator: Dr Cameron Kennedy, Bristol Royal Infirmary, Bristol

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Disclaimer

This synopsis has been completed by medical practitioners. It is based on a literature search at the standard of a textbook of medicine and generalist review articles. It is not intended to be a meta-analysis of the literature on the condition specified.

Every effort has been taken to ensure that the information contained in the synopsis is accurate and consistent with current knowledge and practice and to do this the synopsis has been subject to an external validation process by consultants in a relevant specialty nominated by the Royal Society of Medicine.

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1. Definition

1.1. Psoriasis is a common, chronic, relapsing inflammatory skin disorder with a strong genetic basis.

1.2. The prevalence of the condition is about 2% in the Caucasian population, and it can appear for the first time at any age, from infancy to the eighth decade. There are two peaks in the age of onset: the first at 20-30 years of age and again at 50-60 years. However in approximately three-quarters of patients, the onset is before the age of 40 years. Although the age of onset is earlier in women than in men, the natural history is similar.

2. Clinical features

2.1. The severity and distribution of the condition varies from a few small lesions on the knees or elbows to involvement of the entire skin surface. In almost all cases it pursues a chronic, unpredictable course with intermittent remissions, and in one epidemiological study 39% of the patients stated they had experienced remissions of 1-54 years. The impact of psoriasis on quality of life is significant[1,2.]

Clinical variants

2.2. A number of clinical variants are recognised. They include:

2.2.1. **Chronic plaque psoriasis** (psoriasis vulgaris, nummular psoriasis).This is the commonest presentation and consists of sharply demarcated erythematous plaques with scaling. These lesions are most common on the extensor surfaces of the knees and elbows, and on the scalp and trunk. The scale is adherent, silvery white, and reveals bleeding points when removed (Auspitz's sign).

2.2.2. **Guttate psoriasis** Presents as small psoriatic lesions that usually appear on the trunk and limbs. Characteristically it often appears suddenly after an upper respiratory tract infection and a family history of psoriasis is not infrequently obtained[3,4.]

2.2.3. **Pustular psoriasis** Presents as sterile pustules on a background of erythema. The commonest type is confined to the feet and hands. In **generalised pustular psoriasis** the lesions occur diffusely over the body surface, and may proceed through a cycle of erythema, pustules, and scaling. It is rare, often serious and occasionally fatal.

2.2.4. **Erythrodermic psoriasis** Presents as generalised painful erythema, itching, and scaling. It is a severe, unstable disease that may appear as the first manifestation of psoriasis but usually occurs in patients with previous chronic disease. Precipitating factors include systemic corticosteroids, the excessive use of topical steroids, phototherapy, or an infection.

2.2.5. **HIV-induced psoriasis** Psoriasis may be one of the first signs of progression to AIDS in HIV-infected patients. In this setting it may be mild, moderate, or unusually severe and extensive. A typical presentation involves sudden onset with erythroderma or pustular lesions that rapidly become confluent. The disease is difficult to treat.

2.2.6. **Light-sensitive psoriasis** In most cases, psoriasis responds favourably to sunlight. However some patients are unable to tolerate any significant exposure to ultraviolet light without the appearance of psoriatic lesions.

Variations in location

2.3. A number of variations in the location of psoriasis are recognised. These include the following:

2.3.1. **Scalp psoriasis** The scalp is affected in approximately 50% of patients with psoriasis, but the condition may occasionally be localised to the scalp, where it presents as erythematous raised plaques with silvery white scale.

2.3.2. **Nail psoriasis** Psoriasis of the nails too may affect any patient with the disease, but it occasionally occurs on its own. It may cause a variety of changes including pitting, thickening and yellowish discolouration of the nails, and separation from the nail bed (onycholysis).

2.3.3. **Inverse psoriasis** Occurs on the flexor surfaces; axilla, groin, and in skin folds. It is characterised by smooth, inflamed lesions and scaling is usually absent.

2.3.4. **Psoriasis of the palms and soles** The palms and soles may be involved as part of generalised psoriasis, or they may be the only locations affected. There are several presentations, including a localised, painful, remitting pustular form (see 2.2.3.).

2.3.5. **Psoriatic arthritis** is a distinct form of arthritis in which the rheumatoid factor Is usually negative. Psoriatic arthritis may precede, accompany, or more often follow the skin manifestations. The usual onset is between ages 20 and 40 and the sexes are equally affected. Only about 5-8% of individuals with psoriasis suffer from the condition, but half of psoriatic patients suffer from arthralgia. Psoriatic arthritis occurs more frequently in patients with severe cutaneous disease and is characterised by widespread stiffness, pain, and progressive joint damage affecting the hands, feet, and, at times, the larger joints[4]. However remission can occur, and in one investigation the frequency of remission was 17.6%[5].

2.3.6. **Oral psoriasis** Oral lesions of psoriasis are extremely rare. They occur more commonly in association with the severe forms of the disease, such as generalised pustular psoriasis[6].

2.3.7. **Ocular lesions** A variety of ocular manifestations have been reported. These are uncommon.

2.4. Normally, patients with psoriasis have an unusually low incidence of sun-related cancers and solar keratoses. However, those who have received treatment with high-dose PUVA, and those treated with cyclosporine have an increased risk of developing squamous cell carcinoma.

3. Aetiology

3.1. The cause of psoriasis is unknown. Hyperproliferation of the keratinocytes in the epidermis typifies the condition, and the normal epidermal turnover time of 27 days is reduced to 5 days in the psoriatic plaque. Several observations have suggested that psoriasis is a T-lymphocyte-mediated autoimmune disease.

3.2. The condition has long been considered to be multifactorial. The generally-held hypothesis is that in individuals with a genetic predisposition, the condition is triggered by environmental factors such as infection, certain medications and stress.

Genetic factors

3.3. Psoriasis is seen more frequently in some families. In one series a positive family history was recorded in 36% of patients, whereas another census study reported a family history of psoriasis in 91%. Furthermore, a large survey found that if both parents were affected the risk for the child developing it was 41%, whereas if only one parent was affected the risk was 14%[7].

3.4. These studies, and others analysing concordance rates amongst monozygotic and dizygotic twins, suggest that genetic factors are of major importance. In addition, genetic factors appear to play a role in the clinical course of the disease.[8]

3.5. Genetic data suggests that multiple genes at several loci are necessary for the development of disease. One of the psoriasis genes is located within the MHC region in the short arm of chromosome 6, termed PSORS1, and several other susceptibility genes are scattered throughout the genome.[9]

3.6. It is clear however that while genes are important, the way in which they influence the disease is complex, and psoriasis may represent a spectrum of genetic diseases. At one end may be the rare families within which changes in a single gene may be sufficient to cause the disease, while at the opposite end of the spectrum may be those patients who have no family history of the disease. In those individuals, it is likely that genetic variants in multiple genes (polygenic inheritance), interacting both with each other and the environment (multifactorial aetiology), are required for disease expression[10].

Triggering factors

3.7. Both external factors (that directly interact with the skin) and systemic factors can elicit psoriasis in genetically predisposed individuals.

3.7.1. **Trauma** The occurrence of psoriasis at the site of injury is well-recognised. The trauma may be physical, chemical, mechanical or surgical and a psoriatic lesion appears on the previously normal skin one to two weeks later. This in known as the Köebner phenomenon. A reverse Köebner reaction can also occur, with clearing of psoriasis following injury.

3.7.2. **Drugs** A number of drugs appear to exacerbate or provoke psoriasis. They include lithium (used in treating bipolar disorders), beta-adrenergic blocking agents (used for hypertension and ischaemic heart disease) and the antimalarial, chloroquine. Systemic corticosteroids rapidly clear the lesions of psoriasis, but in some cases the disease worsens on cessation of treatment, occasionally evolving into pustular psoriasis. Less certain are the non-steroidal anti-inflammatory drugs, (NSAIDs), angiotensin converting enzyme (ACE) inhibitors, tetracyclines and interferons [11]. Although these groups of drugs have been implicated, reports are often based on small, uncontrolled numbers of cases.

3.7.3. **Infections** Bacterial infections in particular may aggravate psoriasis or induce it in genetically predisposed individuals, and in up to 44% of patients a history of a provoking infection may be obtained. Streptococcal pharyngitis is most commonly responsible, but other streptococcal infections, e.g. dental abscesses, perianal cellulitis and impetigo may be responsible. These streptococcal infections often lead to a flare of guttate psoriasis, especially in children and adolescents, but also may precipitate pustular psoriasis or exacerbate plaque disease.

3.7.4. **Alcohol consumption and smoking** A high alcohol consumption and an increased incidence of smoking have been associated with psoriasis, and the latter is a particular risk factor for palmoplantar pustular psoriasis[12]. Patients with moderate to severe psoriasis are at increased risk of death from all causes; alcohol is a major cause for this excess mortality[13].

3.7.5. **Ultraviolet radiation** Exposure to damaging intensities of sunlight may prompt Köebner's phenomenon, with the appearance of guttate lesions or the formation of a painful, inflamed plaque in the burned area.

3.7.6. **Psychogenic stress** Psychogenic stress does not cause psoriasis. However, many patients associate an increase in severity of symptoms with psychological stress, and psychogenic factors have also been associated with the first appearance of the condition[1415]. It is said that exacerbations of the disease usually occur a few weeks to months after the stressful event. Psychological distress has a significant and detrimental affect on treatment outcome in patients with psoriasis[16]. However the exact role of psychogenic factors remains controversial[17,18,19] .

3.7.7. **Endocrine** The severity of psoriasis appears to fluctuate with hormonal changes and the incidence of the condition peaks at puberty and during the menopause. The pregnant patient's symptoms often improve, while the disease is more likely to worsen in the postpartum period. The reason for these observations is not yet understood.

4. Prognosis

4.1. Psoriasis is a disease characterised by episodes of exacerbation and remission. Guttate psoriasis carries the best chance of complete remission. However it is not possible to foretell the outcome or the course of any case of psoriasis, and the duration of the disease, the time or frequency of relapses, or the duration of remissions cannot be predicted. Both early onset and family history of disease are considered poor prognostic indicators.

4.2. Current treatments, although often temporarily effective, do not as a rule provide a satisfactory long-term solution. However new lines of research have opened up fresh therapeutic approaches, and the clinical impact of gene discovery and the concurrent identification of disease-specific biological pathways, are potentially very significant[4,20.]

5. Summary

5.1. Psoriasis is a common, chronic, unpredictable, relapsing inflammatory skin disorder, characterised most commonly by sharply demarcated erythematous plaques with scaling. 5-8% of individuals with psoriasis suffer from an associated distinct form of arthritis.

5.2. It is generally accepted that the disease arises in genetically predisposed individuals in response to external or systemic triggers. The role of psychogenic factors is uncertain.

6. Related Synopses

Dermatitis

7. Glossary

arthralgia	Painful joint, or joints.
autoimmune disease	An Illnesses which occur when the tissues are attacked by the body's own immune system.
dizygotic twins	Twins arising from two separate fertilised eggs.
epidermis	Outer layer of the skin.
erythema	Redness. Hence *erythematous*.
erythroderma	A non-specific designation for intense and usually widespread reddening of the skin due to dilatation of blood vessels.
extensor surface	That aspect of a limb underlain by muscles which extend, or straighten the limb. Cf *flexor*.
flexor surface	That aspect of a limb underlain by muscles which flex, or bend the limb. Cf *extensor*.
guttate	In the shape of a drop.
keratinocyte	A type of cell found in the outer layer of the epidermis (*q.v.*)
locus, loci	The site or sites in a chromosome where the gene for a particular trait is located.
MHC	The major histocompatibilty complex: the set of gene loci specifying antigens involved in immune phenomena.
monozygotic twins	Twins arising from a single fertilised egg.
pharyngitis	Inflammation of the throat, or pharynx.
plaque	An elevated area of skin, often flat, whose diameter is greater than its height.
pustule	A blister containing pus. Hence *pustular*.
PUVA	Acronym for oral administration of psoralen and subsequent exposure to long wavelength ultraviolet light.
T-lymphocyte	A class of cells concerned with immunity.
urethritis	Inflammation of the urethra, the tube that conveys urine from the bladder to the outside.

8. References

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