Psoriasis: An Overview

Increasing knowledge about the causes of psoriasis will undoubtedly widen the therapeutic options available for this debilitating disease.

Psoriasis, a chronic skin disease affecting 1% to 3% of the population, is characterized by recurring exacerbations and remissions of thick, scaly lesions. The cause of this defect in skin proliferation is unknown. Psoriatic epidermal cells proliferate at a rate seven fold faster than normal epidermal cells. The number of germinative cells is increased in psoriatic skin and the life of the average psoriatic cell is shorter than that of normal skin (37.5 hours versus 300 hours). Epidermal proliferation is also increased in non-lesion areas of psoriatic skin. Although psoriasis has a significant genetic basis, the specifics concerning the genetic transmission of this disease remain unclear. In one study, 36% of psoriatic patients had at least one relative with psoriasis; however, most patients had no obvious genetic association. Factors such as climate, stress, infection, trauma, and drugs exacerbate psoriasis, but it is unclear whether any of these initiate the disease. There is no cure for psoriasis, but there may be long courses of both remission and relapse of the disease. The drug treatment of psoriasis must take into consideration the long-term nature of this dermatological condition, the extent and site of psoriasis lesions, and the age of the patient. The usual goal of therapy is to achieve complete clearing of psoriatic lesions; partial clearing is an acceptable compromise when using drugs with minor toxicity and high patient acceptance.

Coal Tar. When applied to skin, coal tar causes transient epidermal hyperplasia during the first two weeks of therapy followed by a cytosatatic effect with epidermal thinning. When activated by ultraviolet radiation, coal tar cross-links with DNA to prevent further epidermal cell replication and increases prostaglandin synthesis in the skin. Some clinicians feel that coal tar without UV radiation is not clinically useful for most patients because the clinical response is delayed and suboptimal. In contrast, the clinical response to coal tar is usually more apparent when coal tar is combining with UVB light and/or topical glucocorticosteroids.

Anthralin is an anthrone derivative of chrysarobin which appears to inhibit DNA synthesis by intercalating between DNA strands. It also decreases epidermal proliferation by inhibiting mitochondrial activity. Like coal tar, anthralin may cause significant irritation and staining of skin and clothing. Since staining of the skin results from the binding of anthraquinone exudation products to keratin, and since the stratum corneum rapidly turns-over in psoriasis, this adverse effect may not be apparent early in therapy. The psoriatic areas of involvement, however, may take on a brown or purple color when cell turnover is reduced and as lesion being to heal. When anthralin therapy is discontinued, the discolored skin resumes its natural color after two to three weeks.

Topical Corticosteroids. The routine daily use of topical steroids does not maintain an antimitotic benefit. High potency corticosteroids produce better clinical results in the treatment of psoriasis than low potency corticosteroids, but the potential for side effects is greater.

Methotrexate. In psoriasis, methotrexate is thought to act directly on rapidly proliferating epidermal cells by inhibiting the synthesis of thymidylate, one of the four precursors of DNA. Inhibition of thymidylate synthesis by methorexate is somewhat specific for cells in the S-phase of the cell cycle. Since a large number of psoriatic cells are in the S-phase (i.e., approximately six times more than the number in other phases of the cell cycle and since psoriatic cells may be more dependent on the thymidylate pathway) methotrexate is especially useful for the treatment of psoriasis. Methotrexate use, however, has been associated with significant adverse effects and should only be used for treatment of severe psoriasis that is damaging and not adequately controlled by standard topical antipsoriatic therapy.

Etretinate, an analog of retinol (vitamin A). The mechanism of action for etretinate in psoriasis is unknown, although a decrease in mitotic rate has a role. When used orally for the treatment of psoriasis, etretinate initially induces keratolysis, flattens out papular skin, and reduces erythema; therefore, it is often useful in the treatment or erythrodermic or generalized pustular forms of psoriasis. Methotrexate, psoralens and UVA (PUVA), topical steroids, and UVB radiation enhance the effectiveness of etretinate.

Phototherapy. Some studies evaluation efficacies of psoralens and ultraviolet-A radiation (PUVA) have indicated clearing of psoriasis in 90% of treated patients. The long-term risks of PUVA are unknown and care should be taken in selecting patients for therapy. Indications of PUVA in psoriasis are: severe or incapacitating psoriasis; failure of conventional topical therapy; failure of tar and ultraviolet radiation; and rapid relapse after the above forms of therapy.

Relative contraindications include: photosensitive diseases or use of photosensitizing drugs; history of skin cancer; previous x-ray therapy to the skin; and cataracts.

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