National Institutes of Health

Fact Sheet — *Psoriasis*

Psoriasis is a chronic, relapsing, autoimmune disease, with variable clinical features and triggers. It is characterized by thick patches of inflamed, scaly skin, created by abnormal, rapid, and excessive proliferation of skin cells. Psoriasis is estimated to affect 2-2.6% of the U.S population, with a higher incidence in Caucasians; it affects men and women at about the same rate. Children are also affected. Approximately 15% of psoriasis patients may subsequently develop psoriatic arthritis, a potentially debilitating joint condition.

Yesterday

- Psoriasis was equated with leprosy and was believed to be a contagious disease.
- Although psoriasis was observed in families, it appeared to be sporadic (no discernable pattern in the affected family members); there was no information about a genetic association with the disease.
- Doctors prescribed therapies without understanding the disease mechanism. These treatments included arsenic and ammoniated mercury. Coal tar was a common and effective treatment; however, it was smelly, messy, and made patients feel socially unacceptable.
- Rapid turnover of keratinocytes (cells of the outer layer of skin, or epidermis) was believed to be the cause of psoriasis, and became the target of most treatments.

Today

We have learned that psoriasis is not contagious.

- It is widely accepted that psoriasis has an immunologic basis, and it is classified as an autoimmune disease; however, the initial cellular stimulus of the immune reaction (skin cells vs. cells of the immune system) is still under investigation.
- Genetic research has already identified a few susceptibility genes. Ongoing studies of gene variations associated with the disease's different clinical features are currently underway.
- Additional stimuli, such as environmental triggers or expression of still-unidentified genes, are probably required for disease occurrence. Some of these genes are for inflammatory factors that overlap with other autoimmune diseases, such as rheumatoid arthritis, lupus, and type I diabetes.
- Less toxic, easier-to-use topical treatments are available, including corticosteroids.
- Phototherapies, using ultraviolet light, are effective for treating moderate-to-severe psoriasis.
- Trials of biologic agents targeting tumor necrosis factor alpha (TNF-α) and cells of the immune system have yielded positive results for psoriasis and psoriatic arthritis.

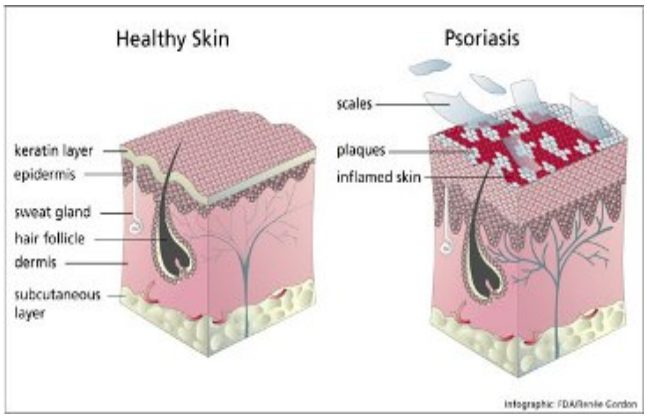
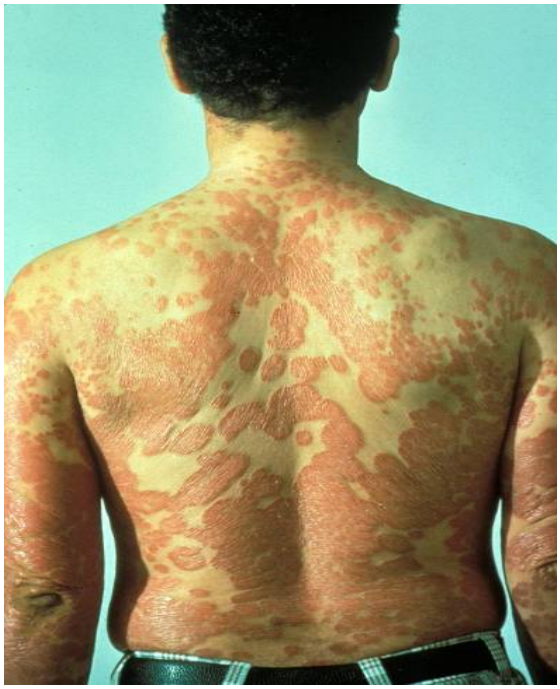


Illustration courtesy of the Food and Drug Administration.

- In addition to providing relief from symptoms, clinical trials of these biologic agents reveal important information about the mechanisms of psoriasis and response to treatment, which will aid the development of future therapies. However, trials with large populations must be conducted, to gain a better understanding of their long-term risks, before these novel therapies can be adopted as standard of care for psoriasis.
- More attention is given to the psychological impact of the disease; NIH supports research on mental health issues in psoriasis patients. Patients still cope with itching, pain, and social rejection.
- Cardiovascular disease is increasingly recognized as a common co-morbidity with many inflammatory diseases. Preliminary studies suggest that some psoriasis patients may have an increased risk of heart attacks.



There is no cure for psoriasis, but there are many effective Treatments—each of which has side effects.

Tomorrow

- Many current therapies could be improved by lower cost and ease of use. Small businesses have received NIH funding recently for developing cheaper, easier-to-use topical therapies, as well as less expensive, less time-consuming phototherapies.
- New therapies will target the cells and molecular factors in the immune system. To control the aberrant, autoimmune reaction that causes psoriasis, a better understanding is needed to determine whether the primary cause is due to cells of the immune system (T cells) or the skin (keratinocytes).
- There are a series of steps, or pathways, in the autoimmune reaction. Many autoimmune diseases appear to share pathways. NIH is funding research to understand the details of these pathways and to interrupt the steps in the autoimmune reaction. Some of these projects, which are focused on treating diabetes, rheumatoid arthritis, lupus, and other diseases, may also help psoriasis patients.
- Researchers have recently identified a very specific population of immune cells (Th17) that may be involved in autoimmune diseases, including psoriasis. More work is needed to establish this connection, but it is a very promising avenue for new treatments. Understanding the behavior of Th17 cells and associated molecules, and regulating their activities, could lead to new psoriasis therapies.
- The variable clinical features of psoriasis and multi-gene nature of the disease require understanding of the subtypes of the disease and knowledge of all of the associated genes in the immune reaction pathway. Current NIH projects (including GAIN, the Genetic Association Information Network, supported by a public-private partnership) are conducting gene searches and gene expression studies of psoriasis patient samples. This information will drive the design of new, better, and more personalized therapies.

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