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Autoimmune Disorders

The purpose of the immune system is to keep infections, caused by certain bacteria and viruses, out of the body, and to destroy any infections that do invade the body. When the immune system does not function properly, a number of diseases can occur. Allergies and increased hypersensitivity to certain substances are considered immune system disorders. An autoimmune disorder occurs when the immune system attacks its own healthy cells.

Autoimmune disorders are seen more often in women than men, and are also seen more frequently in certain populations. For example, lupus is more common in African-American and Hispanic women than in Caucasian women of European ancestry. Rhematoid arthritis and scleroderma affect a higher percentage of Native Americans than the general U.S. population.

What Causes Autoimmune Disorders?

Most autoimmune disorders are thought to be multifactorial. Multifactorial inheritance means that "many factors" are involved in causing a health problem. The factors are usually both genetic and environmental. A combination of genes from both parents, in addition to unknown environmental factors, produce the trait or condition. Multifactorial traits do recur in families because they are partly caused by genes. The environmental factors are generally thought to trigger an immune response to certain environmental influences such as viral infections or sunlight.

Once an autoimmune disease is present in a family, other relatives may be at risk to develop the same autoimmune disease, or a different autoimmune disease. For example, a mother may have rheumatoid arthritis, and one of her siblings may develop lupus. Genes and family history are not the only factors involved in determining who will get an autoimmune disease. In other words, if autoimmune diseases are in your family, it does not automatically mean that all relatives will develop one of these conditions. A positive family history of autoimmune disorders means that there is a genetic predisposition that may increase your risk or your child's risk to develop an autoimmune disease.

A group of genes on chromosome 6 codes for the HLA (human leukocyte antigens) which play a major role in predisposition and resistance to disease. Specific HLA influence the development of many common disorders, which may be autoimmune related. A person who has the specific HLA type associated with the disease may have a genetic predisposition to develop the condition. It is important to understand that a person without these antigens may also develop an autoimmune disease, so that HLA testing is not diagnostic or accurate for prediction of these conditions.

Presymptomatic and prenatal testing are not available for autoimmune disorders.

Risks for Developing Autoimmune Disorders

The table below gives examples of autoimmune disorders and risks for developing these disorders depending on your family history.

Autoimmune Disease	Risks
Behcet's Disease	Up to a 10% risk for first degree relatives
Crohn Disease*	10-20% of cases appear to run in families; several genes at different locations may contribute to this disease. Risk for first degree relatives

	depends on the study (10-40 fold increase).
Dermatitis herpetiformis	Autosomal dominant inheritance (50% recurrence risk) has been reported, however, females are more often affected than males.
Grave's Disease	Clusters in families with other autoimmune disorders; recurrence risks not specified.
Hashimoto's thyroiditis	Clusters in families with other autoimmune disorders; recurrence risks not specified.
Multiple Sclerosis	3-5% for first degree relatives; 38% for monozygotic twins; 30% for offspring of 2 affected parents; 0.5-3% for brothers of an affected sibling; 13% for a brother to have MS if he has an affected sibling and one parent with MS (age of onset 21-30 yrs); 1.5-8% for sisters of an affected sibling; 7-50% for a sister to have MS if she has an affected sibling and one affected parent.
Myasthenia Gravis	Genetically heterogeneous. Usually occurs by chance; 1 to 4 % of cases cluster in a family; familial predisposition may be due to autoimmunity in general; there is also an autosomal recessive (congenital/infantile form; 25% RR) and autosomal dominant form (50% RR).
Pemphigus vulgaris	Some studies show autosomal dominant inheritance with up to 50% recurrence risk.
Pernicious Anemia	20% of relatives with pernicious anemia, have pernicious anemia, especially first-degree female relatives; more common in Caucasians; recurrence risks not specified.
Polymyositis/Dermatomyositis	Clusters in families with other autoimmune disorders; recurrence risks not specified.
Psoriasis	One-third of cases appear to run in families. More commonly seen in Caucasians, and more common in women. Lifetime risk if one parent has psoriasis = 0.28; if both parents=0.65. If one parent and one affected child, RR=0.51; if both parents and one affected child, RR=0.83. If one affected child (parents unaffected), RR=0.24.
Rheumatoid Arthritis	Females are 2-3 times more likely to be affected than males; risk for parents and siblings of an affected individual is about 2-4.5%. For an affected individual to have an affected child, risk is 0.7%.
Scleroderma	1% RR for first degree relatives

Sjogren syndrome	9/10 pts. are women; 50% of cases occur alone while 50% of cases occur in the presence of another autoimmune disease; recurrence risks not specified.
Spondyloarthropathies (such as ankylosing spondylitis)	For first degree relatives, general RR 4% for ankylosing spondylitis; w/HLA-B27 antigen RR 9%; w/out HLA-B27 antigen, RR <1%
Systemic lupus erythematosus (SLE)	9/10 pts. are women; first degree relatives have a 8-9 fold increased risk over the general population.
Type I or Immune Mediated Diabetes Mellitus	RR=4%; up to 50% if multiple affected relatives.
Ulcerative Colitis*	10-20% of cases appear to run in families; several genes at different locations may contribute to this disease. Recurrence risks range depending on the study (10-40 fold increase).
Vitiligo	20% of individuals with vitiligo have a positive family history of vitiligo; relative risk for vitiligo is 7 for parents, 12 for siblings and 36 for children. Relative risk for second degree relatives varies from 1-16.

*Inflammatory bowel disease (IBD) is a group of chronic disorders that causes inflammation or ulceration in the small and large intestines. Most often, IBD is classified either as ulcerative colitis or Crohn's disease. While ulcerative colitis affects the inner lining of the colon and rectum, Crohn's disease extends into the deeper layers of the intestinal wall. It is a chronic condition and may recur at various times over a lifetime.

RR=recurrence risks

Relative risk = a measure of comparative risk of developing a disease or condition; a relative risk of 2 means you are twice as likely to develop the condition.

First degree relatives = parents, siblings, children

Second degree relatives = aunts/uncles, nieces/nephews, grandparents

Additional Information

Additional information about autoimmune diseases can be found at Medline Plus: http://www.nlm.nih.gov/medlineplus/autoimmunediseases.html.