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Perspective

Auto Immune Disorders and its Treatment Methods

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DESCRIPTION

A condition caused by an abnormal immune response to a functioning body part is known as an autoimmune disease. There are at least 80 types of autoimmune diseases known, with some evidence indicating that there may be more than 100. Common symptoms range from mild to severe and generally include a low grade fever and fatigue.

The reason is unknown. Some autoimmune diseases, such as lupus, are hereditary, and some cases may be triggered by infections or other environmental factors. Common autoimmune diseases include celiac disease, type 1 diabetes, Graves' disease, inflammatory bowel disease, multiple sclerosis, alopecia areata, addison's disease, pernicious anaemia, psoriasis, rheumatoid arthritis, and systemic lupus erythematous.

When the immune system is overactive, the body attacks and damages its own tissues (autoimmune diseases). Immune deficiency diseases impair the body's ability to fight invaders, making it susceptible to infections. In response to an unknown trigger, the immune system may begin producing antibodies that attack the body's own tissues rather than fighting infections. In general, treatment for autoimmune diseases focuses on reducing immune system activity.

TREATMENT METHODS

Immunosuppressant medications are used to control the autoimmune reaction in autoimmune disease treatment. Corticosteroids can be used to suppress the immune system and control inflammation. Other treatment options are dependent on the type of autoimmune disease.

Immunosuppression and anti-inflammatories

Conventional treatments for autoimmune diseases have focused on breaking the cycle of inflammation by using prostaglandin-cyclooxygenase pathway inhibitors or immunosuppressive drugs to reduce antibody production in a nonspecific manner.

Induction of immune tolerance–tolerizing therapies

T-cell receptors are known to be incapable of distinguishing between self and non-self-antigens. The majority of T-cells with high-affinity receptors that react to self-antigens are eliminated during thymic development, but a few survive in healthy people. These are limited by mechanisms of peripheral tolerance. Tolerizing therapies aim to induce immune tolerance by increasing antigen-specific Tregs in comparison to antigen-specific effector T-cells.

Tolerizing therapies include T-cell or T-cell peptide vaccinations, which use attenuated activated T cells to suppress disease-causing T-cells. T-cell receptor peptides have also been used for the same purpose instead of the entire T-cell.

Peptide analogs

Newer biological drugs in development may block specific immune pathways. One approach is to use peptide analogues to prevent the formation of the MHC-auto antigen-T-cell receptor complex. These medications work to stop the autoimmune process. The peptide may inhibit antigen presentation to the adaptive immune system by antagonising the T cell binding wild type antigen. This inhibits T- cell activation and the immune response to the auto antigen.

The peptide may stimulate neutral T helper cells to differentiate into anti-inflammatory Th2 cells (immune deviation). The peptide may stimulate the development of a specific clone of regulatory T- cells that bind to the auto antigen and suppress the resulting autoimmune response.

CONCLUSION

A combination of therapies for autoimmune disease will most likely be preferred, utilizing different mechanisms of action and selecting complementary methods to achieve the most effective therapy with the least amount of redundancy. A combination of

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approaches could be used to achieve remission first and then restore immune tolerance, ensuring that the disease process is not reactivated. Individual variability and the possibility of undesirable synergism can complicate such combinations, necessitating careful clinical testing.