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## An Overview of Autoimmune Disorders

Santosh Badure\*

Department of Biotechnology, Aurora's Technological & Research Institute, Telangana, India

### Review Article

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#### \*For Correspondence

Santosh Badure, Department of Biotechnology, Aurora's Technological & Research Institute, Telangana, India.

**E-Mail:**  
santoshbadure13@gmail.com

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#### ABSTRACT

Immune system is a well organised framework made up of cells, tissues, proteins, organs to protect an individual from foreign invaders which are capable to cause the ill effects or fatality. But the immune system in itself is a dangerous mechanism which may works against the body in certain conditions and might cause untreatable diseases. Immune system is a boon working throughout the life of an individual to protect it from antigens but in some conditions the same immune system gets deceived and start malfunction causing the illness to the individual.

#### IMMUNE SYSTEM

Immune system is an excellent and phenomenal mechanism working to protect the host (body) from foreign invaders (antigens) [1-5]. Nature has provided an every living being a phenomenal protective system working out to tackle and destroy the ill causing particles [6-8].

Immunity is a mechanism working out to eliminate and destroy the foreign particles or antigens to sustain the health and longevity of the host [9-12].

Antigens can be cancerous cells, parasites, bacteria, fungi, virus, etc. To destroy these antigens, immune system works in organized way and produces antibodies (immunoglobulin) to eliminate the ill causing particles. Immune system is designed in such a remarkable way that it is able to distinguish between the self (with in the body) and non self (does not belongs the body) [13-17].

When these antigens are detected by immune system a reaction takes place stimulating immune response releasing antibodies to destroy these antigens [18].

#### AUTOIMMUNE DISORDER

Autoimmune disorder is a condition which arises on malfunctioning of the immune system. Dysfunction of the immune system leads to the destruction of healthy tissues of the body causing immune disorder [19-22].

In this condition immune system initiates attacks and destroys its own healthy cells leading to the rise of immune disorders [23].

As per the available data there are approximately 80 autoimmune diseases. Exact reason for the cause of autoimmune disorder is unknown. During the autoimmune disorder the immune system may causes over activity or lower activity of the immune system. Over activity of the immune system leads to the attack and destruction of its own healthy tissues instead of fighting antigens. Individuals suffering from autoimmune disorders have typical antibodies circulating throughout the blood targeting the healthy tissues [24,25].

Here are we are going to list out and describe the few common autoimmune diseases:

Graves' disease, Hashimoto's thyroiditis, Systemic lupus erythematosus (lupus), Type 1 diabetes, Multiple sclerosis, Rheumatoid arthritis, Sjogren syndrome and vitiligo.

## Graves' Disease

Graves' disease is a result of overproduction of thyroid hormones named after the Dr. Robert J. Graves. It is an autoimmune disorder where a malfunction in the immune system causes the thyroid gland to release the excessive amount of thyroid hormone, which is also called as hyperthyroidism [26-28].

Symptoms noticed during the Graves' disease are bulging eyes, Vision problems, Heat intolerance, Weight loss, trembling, goiter enlargement, skin thickening, etc. [29-31].

There are several methods to treat the Graves' disease based on the condition. Treatment includes intake of antithyroid drugs focusing to reduce the over production of thyroid hormones. Surgery is also an option based on the severity of disease [32-35].

## Hashimoto's Thyroiditis

Hashimoto's thyroiditis disease is a result of inflammation of the thyroid gland. Here the thyroid gland becomes underactive and results in autoimmune disorder. This disease is also known as hypothyroidism [36-40].

This disease is named after Sir Hakaru Hashimoto. Hakaru Hashimoto was a Japanese specialist and he described the disease in a science paper published in Germany in 1912. Hashimoto's thyroiditis is considered as a first disease to be discovered as autoimmune disorder [41-45].

In this disease immune system produces the antibodies which mistakenly attacks the healthy thyroid gland and initiates destroying the cells responsible for the production of thyroid hormone. Symptoms manifested during the Hashimoto's thyroiditis are enlargement of goitre, appetite disturbance, abnormal weight gain, dry skin, depression, anxiety and unable to bear the common cold [46-48].

Before initiating the treatment doctors may prescribe TSH test to understand the severity and monitor the disease condition. To treat the disorder doctors might prescribe synthetic thyroid hormone tablet as a daily dose [49,50].

## Systemic Lupus Erythematosus

Systemic lupus erythematosus is a one of the chronic autoimmune diseases where autoimmune antibodies attacks the own healthy tissues and causes the inflammation. In this disorder autoimmune antibodies attack the joints, kidneys, nerves leading to the pain, inflammation and swelling of the affected tissue [51-55].

Symptoms include fever, fatigue, hair loss, reddening and swelling, sun sensitivity, pain; rashes are common the face, etc. There are several screening tests to know the SLE, such as blood tests, chest X-ray, and urinalysis [56-58].

There is no complete cure for the Systemic lupus erythematosus, but it can be treated to minimize the adverse effects. Systemic lupus erythematosus is treated to reduce the severity and to minimize the autoimmune response. Steroids, anti-inflammatory drugs and anti-inflammatory medications are used to treat the disease. Best method is prevention better than cure, so one can get immunized before the severe outbreak of disease [59-63].

## Type 1 Diabetes

Type 1 diabetes is a common autoimmune disorder affecting largely to the youth, people under the age of 30. This autoimmune disorder too is natural occurring due to the mistaken attack of immune system [64,65].

Diabetes is the most common disease and have affected largely to the masses. There is a significant increase in the diabetic cases. According to the report published by Dr. Kanakatte Mylariah Prasanna Kumar, alone in India 97,700 children are suffering with type 1 diabetes mellitus [66-68].

Type 1 diabetes arises when an immune system mistakenly attacks insulin producing cells. As a result pancreas stops producing insulin, which may lead to organ failures such as kidney failure, heart attack, blindness, etc. [69-72].

Symptoms include Sugar in the urine, frequent urination, fatigue, abnormal appetite, vision abnormality, weight loss, etc. Type 1 diabetes cannot be cured completely and cannot be prevented. Insulin intake is not an answer to completely cure the disease. Type 1 diabetes sufferer needs to constantly monitor the disease condition and should focus on healthy life style and other factors to sustain the healthy longevity [73-77].

## Multiple Sclerosis

Multiple sclerosis is an autoimmune disease causing inflammation and demyelinating of the central nervous system. Primarily immune system attacks the healthy nerve cells causing disruption in the nerve communication. Due to the demyelination of insulation covers of nerve cells in the spinal cord and brain results to various abnormal symptoms such as psychiatric, mental and physical problems [78-81].

Exact reason for the attack on healthy myelin-producing cells by the immune system is unknown. Multiple sclerosis term was coined after the observation of numerous scars that develops on the white matter of the brain and spinal cord. Jean-Martin Charcot first described multiple sclerosis in the year 1868 [82-86].

Symptoms of multiple sclerosis include problems in walking and speaking, paralysis, twitching, numbness, blindness and muscle spasm [87,88].

There is no complete cure for the multiple sclerosis. But different medications are practiced after the attack to minimize the severe effect and prevent the new attacks. As similar other autoimmune disorders, women are more prone compared to men [89,90].

### **Rheumatoid Arthritis**

Rheumatoid arthritis is a chronic autoimmune inflammatory disorder affecting the small joints of the hand and leg. Wrist, knuckles and fingers are the most commonly targeted areas. The immune system mistakenly attacks the healthy tissue lining the joints and leads to the Joint deformity and bone erosion [91,93].

Symptoms include limited motion of the joints, pain and stiffness in the joints, swelling, fever and fatigue are the few symptoms manifested during the RA [94].

Rheumatoid arthritis can affect any joint leading to the limited motion, pain and stiffness and these symptoms may fade away after sometime [95]. There are few factors considered to increase the risk of developing rheumatoid arthritis. Risk factor includes as smoking, obesity, genetic inheritance, environmental exposure, etc. Rheumatoid arthritis is hard to be detected at initial stages but physical diagnosis, Blood tests, X-rays, MRI and ultrasound tests are effective to diagnose the severity of the disease. As per the current studies rheumatoid arthritis does not have complete cure but research is going on and alternatives are discovered to tackle and cure the disease [96-99].

Based on the severity of the disease different treatment methods are adopted. Such as strong medication includes NSAIDs, Steroids, Biologic agents, physical therapy and if these all fails to treat the disease then Surgery is an option. Other alternative medicine and promising medicine includes Plant oils, Fish oil and Tai chi (movement therapy) [100-104].

### **Sjogren Syndrome**

Sjogren syndrome is an autoimmune disorder attacking the healthy moisture-producing glands of the body. More than 10 lakh cases are reported in India. As a result of attack on the moisture producing glands saliva and tears get affected. These moisture producing glands slowdowns the production of tear and saliva resulting the dry mouth and dry eyes. Symptoms include dry skin, dryness of mouth and eyes, vaginal dryness, fatigue, etc. Sjogren syndrome was named after Henrik Sjögren in the year 1933. Till today no cure or specific treatment is available to permanently restore the fluid secretion glands completely. Research is continuing in the different parts of the world to find out the treatment to completely cure the disease [106,107].

### **Vitiligo**

Vitiligo is a pigment disorder disease resulted due to the attack by autoimmune antibodies on healthy melanocytes [109-111]. In this condition healthy skin cells are attacked by immune system mistakenly destroying the skin pigment cells. Affected pigment cells get eliminated or become unable to function. Exact reason for the cause of Vitiligo is unknown. One of the major factors considered to be the cause of Vitiligo is contact with certain chemicals, oxidative stress or neural causes [112-115].

Symptoms noted are patchy skin, depigmentation of the skin around the face, hands and wrists, mouth, eyes, nostrils, genitalia and umbilicus. There is no complete cure available for the disease but several other treatment options are available. Applied steroids, Immune mediators, Phototherapy, etc., are the options to treat and minimize the effect of disease [116-117].

## **CONCLUSION**

Immune system is a phenomenal complex system protects from the disease and infections. It is a boon working every moment to keep the individual healthy and fit, but this boon may turn to bane due to the malfunction of autoimmune disease.

Till now it has not been confirmed or discovered the exact reason for the cause of the autoimmune disorder but we are hopeful that researchers will find the cure for the immune disorders.

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