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“A CRITICAL REVIEW OF AUTOIMMUNE DISORDERS IN AYURVEDA”

Vd. Ashwini S. Ghogare¹, Vd. Rajashri Bharati², Vd. Mushraf Rashid Sayyad³

¹P.G. Scholar, Dept. of Samhita Siddhanta

Hon. Annasaheb Dange Ayur. Med. College, Ashta, Dist: Sangli, Maharashtra, India.

Email ID: drashwiniawate12@gmail.com

²H.O.D., Dept. of Samhita Siddhanta

Hon. Annasaheb Dange Ayur. Med. College, Ashta, Dist: Sangli, Maharashtra, India.

³Associate Professor, Dept. of kriya Sharira

L. R. P. Ayurvedic Medical College, Islampur, Dist: Sangli, Maharashtra, India.

Corresponding Author e-mail:

Email ID: drashwiniawate12@gmail

ABSTRACT:

An Autoimmune disorder is a condition arising when your immune system sees your own tissues as foreign invaders and attacks itself. As widely demonstrated, autoimmune diseases are characterized by a multifactorial pathogenesis, in which genetic and environmental factors interact in determining disease development. Autoimmune diseases are the result of interplay between predisposing genes and triggering environmental factors, leading to loss of self-tolerance and an immune-mediated destruction of autologous cells and or tissues. In the early classical texts of *Ayurveda*, there are descriptions regarding the genetic basis of diseases. *Charakacharya* explains that the human body in its entirety is represented in a seed form in the male and female reproductive element, called as *bīja* (germ cells), which is composed of many components called the *bījabhāgas* (chromosome) and *bījabhāga Avayava* (Gene). Each organ of the body is formed from specific *bījabhāgas* or *bījabhāga avayavas*. Such *bījabhāgas* or *bījabhāga Avayava* are called as *janakas* (progenitors) of specific structures of the body and when defective can cause partial or total defects or absence of specific organs or parts of the body. The texts also differentiate between diseases originating from familial inheritance and other causes that affect the *bījabhāgas*. This article is an attempt to critically review the descriptions related to autoimmune diseases with genetic origin according to classical texts of *Ayurveda*.

KEY WORDS: Autoimmune disorder, gene, Bijabhag, *Bijabhagavayava*,

INTRODUCTION:

An Autoimmune disorder is a condition arising from an abnormal immune response to normal body part. Our immune system normally identify all foreign substances that invade our body and everything we come in contact and produces antibodies to ward off harmful invader. Autoimmune disease occur when the body is working hard to defend against potentially hazardous substances to our body such as allergens, toxins, infections or food but does not see the difference between the invaders and our body cells. Thus there is wrong reaction of defense mechanism against the body's own tissues. If a person becomes immune to his / her own tissues the process of acquired immunity would destroy the individuals own body part by releasing proteins called auto antibodies that attack healthy cells. Some Autoimmune disease target only one organ e.g.in type-1Diabetes it damage the pancreas whereas some diseases like Lupus affects whole body. There are more than 80 different Autoimmune Diseases, Rheumatoid Arthritis ,Psoriasis and Psoriatic Arthritis, I.B.D., S.L.E., Type 1Diabetis etc. are common . While each of them has unique disease mechanism they all ultimately represent an immune system gone awry. As widely demonstrated, autoimmune diseases are characterized by a multifactorial pathogenesis, in which

genetic and environmental factors interact in determining disease development. Autoimmune diseases are the result of interplay between predisposing genes and triggering environmental factors, leading to loss of self-tolerance and an immune-mediated destruction of autologous cells and or tissues.

Charakacharya explains that the human body in its entirety is represented in a seed form in the male and female reproductive elements. The germ cell is called a *bīja*, which is composed of many components called the *bījabhāgas* and *bījabhāga avayavas*. Each organ of the body is formed from specific *bījabhāgas* or *bījabhāga avayavas*. Such *bījabhāgas* or *bījabhāga avayavas* are called as *janakas* (progenitors) of specific structures of the body and when defective can cause partial or total defects or absence of specific organs or parts of the body¹. The texts also differentiate between diseases originating from familial inheritance and other causes that affect the *bījabhāga*.

MATERIAL AND METHODS:

This review article is based on various references of autoimmune diseases and classical references of Ayurveda regarding the genetic transmission of diseases.

DESCRIPTIONS OF GENETICS IN MODERN AND CLASSICAL AYURVEDIC TEXT-

A genetic disorder is a disease caused in whole or in part by a change in the DNA sequence away from the normal sequence. Genetic disorders can be caused by a mutation in one gene (monogenic disorder), by mutations in multiple genes (multifactorial inheritance disorder), by a combination of gene mutations and environmental factors or by excess or deficiency of the genes that are located on chromosomes (chromosome disorders)². Most genetic disorders, however, are multifactorial inheritance disorders and autoimmune disorders are multifactorial.

The Ayurvedic scholar had a fundamental knowledge of genetics much before the modern genetic scientist. Though Ayurveda does not implicate the pure and literary aspect of genetics in much detail but has taken up its applied aspect scientifically under the following headings³.

- the Theory of evolution
- the role of *Panchamahabhuta* in the formation of different organs in human body
- Manifestation of different genetically determined congenital disorders.
- The genetic factors which are responsible for procreation of human being, concept of *Beeja* (germ cells), *Beejabhag* (chromosomes) and *Bijabhagavayava* (gene), *Upatapta*

(mutation), determination of sex, concept of eugenic principle etc.

Concept of inheritance pattern in Ayurveda-

The factors responsible for procreation of fetus or human being derived from the following sources like *Matruja bhava* (mother), *Pitruja bhava* (father), *Atmaja* (Soul), *Satmaja* (Wholesomeness), *Rasaja* (proceeding from chyle) and *Sattvaja* (mind)⁴.

Due to defect in seed and associated with the soul, uterus, time and food as well as regimen of the mother, Dosha gets variously vitiated and leads to impairment of the shape, color, sensory as well as motor organs of the offspring⁵.

2. DESCRIPTIONS OF DISORDERS WITH GENETIC ORIGIN IN MODERN AND CLASSICAL AYURVEDIC TEXTS-

Autoimmune conditions are multifactorial in their cause, with a mixture of genetic and environmental factors often playing a role. As multifactorial conditions are partly caused by genetic factors, autoimmune conditions tend to run in families. Environmental factors such as viruses or sunlight trigger an immune response in genetically susceptible individuals. When one individual in a family has an autoimmune condition, other family members are then at an increased risk of autoimmunity. However,

genetically susceptible individuals are at higher risk to develop an autoimmune condition. There are three main groups of genes that are thought to raise the risk of autoimmune diseases developing. These genes are associated with T cell receptors, immunoglobulin and the major histocompatibility complexes. T cell receptors and immunoglobulin are important for the recognition of antigens and are highly variable to allow for the massive variation in antigens that the immune system needs to be able to target. However, this number of variations can also give rise to the development of lymphocytes that are capable of auto reactivity.

Classical Ayurvedic texts mention about disorders with genetics origin with various terms like *Sahaja rogas*, *Kulaja rogas* or *Adibalapravruttha rogas*.

Sahaja roga means that which is present from birth⁶.

Kulaja roga means those which run in families⁷.

Adibalapravruttha roga means that which arises from defects in the male and female reproductive elements⁸.

Diseases like hemorrhoids, certain skin disease and diabetes are some of the diseases that have been considered to be inherited in Ayurveda. Eight disorders by birth which have been traced to have genetic origin in Ayurved, E.g. giant –

dwarf, obese-thin, hirsute- hairless, albinic–melanoid⁹. The ancient physicians put forth theories to explain the phenomenon of genetically inherited diseases. Ayurvedic texts have also discussed various sexual anomalies at birth including impotency and mal development of sexual organs.

3. THEORIES REGARDING GENETIC TRANSMISSION OF TRAITS AS DESCRIBED IN AYURVEDIC TEXTS-

We find some explanations in *Charaka Samhita* about specificity of transmission of genetic information within a given species. From human being only human being can be born. Just like molten metal poured into a mold takes the shape of a mold, even so various factors coalesce together to produce a human being from another human being¹⁰. In his commentary on the *Charaka Samhitā*, the famous commentator *Chakrapānidatta* points out that the human reproductive element (*manushyabījā*) is made up of many seed parts (*bījabhāga*) representing the various organs and parts of the body (*pratyanga*). From this seed and its parts is born a replica human being with the same set of parts and organs. In this manner, from a human being, another life exhibiting the general features of human beings is born. It is very tempting to compare the divisions of the human

genetic material into the *bīja*, *bījabhāga* and *bījabhāgāvayava* with the Germ cell, Chromosome, and Gene respectively described in modern genetics although there is no evidence to indicate that there was an understanding of the molecular basis of genetics as known to science today.

BIJA- male and female reproductive elements viz., *Śukra* –semen and *Śonita* – ovum is taken.

BIJABHAGA- is defined as those innumerable parts of the *bīja* that are responsible for the development of specific parts and organs of the body. E.g.-Uterus

BIJABHAGAAVAYAVA- has been defined as components of the *bījabhāga* that are responsible for the development of specific parts of a particular organ, for example, parts of the uterus –ovaries fallopian tube etc.

4. THE TRANSMISSION OF AUTOIMMUNE DISEASES WITH GENETIC ORIGIN AS DESCRIBED IN MODERN SCIENCE AND AYURVEDIC TEXTS-

Autoimmune Disease share a number of characteristics that suggest common etiologic pathways or mechanisms including reactivity to self antigens by the cellular or humoral immune system associations with human leukocyte antigen (HLA). Although familial clustering of autoimmunity has

long been recognized, the patterns of aggregation across different autoimmune phenotype are known to have a common genetic basis.

Among the most common autoimmune disorders probably the best evidence for familial clustering of autoimmunity has long been recognized, the patterns of aggregation across different autoimmune phenotypes, such as the polyglandular autoimmune endocrinopathies are known to have a common genetic basis. Among the more common autoimmune diseases, probably the best evidence for familial clustering among different autoimmune diseases involves R.A, Autoimmune Thyroid disease, Type 1 Diabetes. However the degree and significance of familial clustering among the larger group of autoimmune diseases is uncertain. Clustering of diseases within families may be explained by shared environmental exposure, shared genes or interaction between genetic and environmental factor.

In Ayurveda, *Acharya Charak* put forth theories regarding the genetic transmission of diseases and congenital anomalies in *sharirsthana*¹¹.

The genetic transmission of diseases and congenital anomalies is due to-

1. Due to vitiation of seed (*upatapta beeja*)
2. Due to vitiation of part of seed (*Upatapta Beeja bhaga*)

3. Due to Past Deed (*daivkruta or purvajanma karma*)

The reason for genetic transmission of disease has been traced to the affliction (*upatāpa*) of the seed and part of the seed (*bījabhāga*) that is responsible for the development of the part of an organ. Further it has been stated that defect caused by *Doshas* in the seed or part of the seed representing a particular organ will result in the complete damage to that particular organ.

Chakrapani mentioned the following causes for the vitiation of seed¹².

1. Wrong diet and regimen of mother and father,
2. Severe diseases of both or either parent,
3. Sinful acts of past life.

5. EXPLANATION OF AUTOIMMUNE DISEASES WITH GENETIC ORIGIN IN AYURVEDA: TYPE 1 DIABETIC MELLITUS:

In the description of diabetes, juvenile diabetes or diabetes at birth has been attributed to arise from genetic defects (*bīja dushti or bijabhag dusti*)

Chakrapāni in his commentary clarifies that diabetes at birth happens when the *Dosha* that is responsible for the manifestation of diabetes damages the *bīja* or genetic material¹³.

Acharya Sushruta mentioned two types of *Prameha*, *sahaja* and *apathyanimithaja*.

Sahaja (congenital) is inherited from mother and father due to vitiation of *sukra* and *shonit* (defected seeds) respectively¹⁴.

Patients who are diabetic right from time of birth and those who are born from diabetic parents are not curable because of morbidity in their respective Genes.

PSORIASIS-

In the context of skin diseases (*kustha*) the same theory is put forth to explain genetic transmission.

Sushruta explains that if the seed (*bīja*) of the parent has been affected by the disease, then the child will also inherit the disease. E.g. .if both or either parent with severity of *Kushta* will give birth to child having *kushta*¹⁵.

On the other hand, *Chakrapani* explain that even if the father is affected by the disease, if the seed (*bīja*) has not been affected, then the progeny will not acquire the disease¹⁶. E.g. If parent (either or both parents) is affected with *Kushta*, but if his *beeja* is not affected, then his child will not acquire *Kushta*.

Chakrapani comments on this that seat of *Kustha* (psoriasis) are skin, from where it arises. Here *beeja* is not affected only part of *Beeja* is affected. But if disease becomes chronic vitiated *Doshas* causes damage to further *Dhatu*s and lead to vitiation of *shukra* (*beeja*) only then their child will acquire *Kushta*.

TREATMENT ASPECT OF AUTOIMMUNE DISEASES IN AUYRVEDA:

Though many diseases have been mentioned under heading of autoimmune disorders in Modern but Ayurveda has always given importance to knowing root cause of disease which makes easy path way to treat any disease. Ayurvedic approach to managing auto immunity is to restore a healthy level of inner awareness. Treatment of underlying cause, solving the problems through evacuation therapy (*Shodhan*) and palliative treatment (*Shaman*) and the rehabilitation through Rejuvenation therapy (*Rasayan*) by stimulating the vitality of the body together form the Ayurvedic treatment of autoimmune disease

DISCUSSION:

Autoimmune conditions are multifactorial in their cause, with a mixture of genetic and environmental factors often playing a role. As multifactorial conditions are partly caused by genetic factors, autoimmune conditions tend to run in families. Environmental factors such as viruses or sunlight then trigger an immune response in genetically susceptible individuals.

When one individual in a family has an autoimmune condition, other family members are then at an increased risk of autoimmunity. However, genetically

susceptible individuals do not always go on to develop an autoimmune condition.

The Ayurvedic scholar had a fundamental knowledge of genetics much before the modern genetic scientist .though Ayurveda does not implicated the pure and literally aspect of genetics in much details but has taken up its applied aspect scientifically under the following heads

The theory of evolution, the role of *Panchamahabhuta* in the formation of different organs in human body, manifestation of different genetically determined congenital disorders, the genetic factors which are responsible for procreation of human being, concept of *Beeja* (germ cells), *Beejabhaga* (chromosomes) and *Bijabhagavayava* (gene), *upatapta* (mutation),determination of sex, concept of eugenic principle etc.

The factors responsible for procreation of fetus or human being derived from the following sources like *Matrujabhava* (mother), *Pitrujbhava* (father), *Atmaja* (Soul), *Satmaja* (Wholesomeness), *Rasaja* (proceeding from chyle) and *Sattvaja* (mind). *Jnakas* (*bījabhāgas* or *bījabhāgaavayavas*) when defective can cause partial or total defects or absence of specific organs or parts of the body. The texts also differentiate between diseases originating from familial inheritance and other causes that affect the *bījabhāgas*.

Due to defect in seed and associated with the soul, uterus, time and food as well as regimen of the mother, *Doshas* gets variously vitiated and leads to impairment of the shape, color, sensory as well as motor organs of the offspring.

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Ayurvedic approach to managing autoimmunity is to restore a healthy level of inner awareness. Treatment of underlying cause, solving the problems through Evacuation therapy (*Shodhan*) and palliative treatment (*Shaman*) and the rehabilitation through Rejuvenation therapy (*Rasayan*) by stimulating the vitality of the body together form the Ayurvedic treatment of autoimmune diseases.

CONCLUSION:

We can conclude that autoimmune disorders with Genetic transmission was understood and described in the early stages of the evolutionary history of Ayurveda. The ancient physicians of Ayurveda put forth the theory that the entire genetic information representing

each and every part of the human body was transmitted from the parents to the progeny. The *Charaka Samhitā* and the *Suśruta Samhitā*, the earliest texts of Ayurveda, discuss about the genetic basis of diseases and also illustrate the concept citing examples of a few diseases. Though many diseases have been mentioned under heading of autoimmune disorders in Modern but Ayurved has always given importance to knowing root cause of disease which makes easy path way to treat any disease.

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