Review Article.

International Research Journal of Ayurveda & Yoga

An International Peer Reviewed Journal for Ayurveda & Yoga

Physiological Evaluation and Correlation between *Agnimandhya* and Hypothyroidism

***Dr Harsh Sharma **Dr. Rajesh Kumar Sharma ***Dr. Dinesh Chandra Sharma**

ICV-70.44 ISRA-1.318

VOLUME 4 ISSUE 1 JANUARY2021

*M.D. Scholar , P.G. Department of Kriya Sharir, DSRRAU,Jodhpur

**Associate Professor & H.O.D., P.G. Department of Kriya Sharir, DSRRAU,Jodhpur

***Assistant Professor, P.G. Department of Kriya Sharir, DSRRAU,Jodhpur

Corresponding author - Dr Harsh Sharma M.D. Scholar, P.G. Department of Kriya Sharir, DSRRAU, Jodhpur Email: harsh9982@gmail.com

Article received on 2 Jan 2021 Article Accepted 11th Jan2021 Article published 31st Jan 2021

ABSTRACT

According to *Ayurveda Agni* (digestive fire) is the most important factor in the process of *paaka* i.e, digestion and the absorption of the ingested food. *Acharyas* has classified this *Agni* into 13 types, i.e. one *Jatharagni*, five *Bhutagni* and seven *Dhatvagni*. Among all the *Jatharagni* is the most important one, which digests the food and transforms it into *Rasa* and *Mala*.(waste product) The decreased intensity of the *Jatharagni* or weak digestive fire due to various reasons is termed as *Agnimandhya* (decreases agni) which is the root cause of several disease. Proper regulation and maintenance of *Agni* is responsible for digestion and maintenance of proper metabolic activities of the body.

Thyroid gland is also one of the important glands of the endocrine system. The thyroid gland produces hormones that regulate the body's metabolic rate, muscle and digestive function, and bone maintenance. Hypothyroidism is the condition in which secretion of Thyroid gland decreases which disturbs the metabolic rate of the body and slows the movement of food through your stomach and intestines. Slower digestion can lead to symptoms like heartburn, constipation, and bloating etc.

The normal as well as abnormal function of Thyroid Gland can be correlated with the healthy and altered status of *Agni*. This article reflects the correlation between the hypothyroidism and *Agnimandhya*.

Keyword:. ***Agni, Jatharagni, Agnimandhya, Thyroid gland, Hypothyroidism.***

Review Article.

How to cite this article:- Dr Harsh Sharma, Dr. Rajesh Kumar Sharma ,Dr. Dinesh Chandra Sharma, Physiological Evaluation and Correlation between *Agnimandhya* and Hypothyroidism IRJAY, January: 2021 Vol- 4, Issue-1; 211-216;
Doi: https://doi.org/10.47223/IRJAY.2021.4128

INTRODUCTION:

According to the *Ayurveda* along with the *tridoshas* i.e., *vata*, *pitta* and *kapha*, *Agni* plays an important role in maintaining the Physiological function of our body by helping in the digestion and absorption of the food taken by us in our body. In *Ayurveda* Classics the *Agni* is broadly classified in 3 major types as

1) *Jatharagni* - 1
2) *Dhatwagni* - 7
3) *Bhutagni* - 5

Among all the 13 types of *Agni* mentioned in the *Ayurvedic* texts the *Jatharagni* is the *pradhana agni* i.e., the major type which deliberately completes the whole digestive process which digest the four types of food and converts it into *Rasa* and *mala*. All the other types of *Agni* i.e., five types of *Dhatwagni* and 5 types of *Bhutagni* helps in accessory way to complete the process of digestion and absorption of the ingested food. In *Ayurvedic* classics the decrease in the intensity of the *Agni* has been termed as *Agnimandhya* (decreased agni) in which the ingested food is not digested completely due to the diminished power of *Jatharagni*. The Thyroid Gland is Butterfly shaped organ situated at the root of the throat having two symmetrical lobes. This gland produces hormones which regulates various actions of the body. Thyroid hormones influence the functioning of nearly all organs of our body, It is essential for growth and development of our body, nervous system development, the major function of the thyroid gland is to maintain a high rate of metabolism which is done by the means of iodine-containing thyroid hormones, thyroxine(T4) and Tri-iodothyronine (T3).

Hypothyroidism is a hypo metabolic clinical state resulting from inadequate production of the thyroid hormones for prolonged periods. The clinical manifestation of hypothyroidism, depending upon the age at onset of the disorder are divided in two forms :-

1. ***Cretinism* or *congenital Hypothyroidism*** is the development of severe hypothyroidism during infancy ot childhood
2. ***Myxodema*** is the development of hypothyroidism during adulthood due to various causes.[1]

The effect of the thyroid hormone on the body is moreover similar to the functioning of *agni* mentioned by our *Acharyas*. And the symptoms of the Hypothyroidism and *Agnimandhya* (decreased agni)also resembles each other.

AIMS & OBJECTIVIES

1. To Study the Physiological Concept of Hypothyroidism in Modern Science
2. To Study the concept of *Agnimandhya*(decreased agni) in *Ayurveda*
3. To Correlate the clinical Symptoms of Hypothyroidism and *Agnimandhya* (decreased agni).

MATERIALS AND METHODS:

THYROID GLAND

The Thyroid Gland located just below the larynx on each side and anterior to the Trachea. The Thyroid gland is one of the largest and important endocrine gland in our body. Thyroid gland normally weights around 15-20 gms in adults. The Thyroid Gland secretes two major hormones which regulates the proper functioning of the gland and that are *Thyroxine* and *Triodothyronin.* Both of these hormone profoundly increase the metabolic rate and all the metabolic functions of our body. The *Thyroid* gland also secrete hormone *calcitonin,* which regulates the calcium metabolism of our body.The Thyroid secretion is controlled primarily by *Thyroid Stimulating Hormone (TSH)* which is secreted by the anterior Pituitary. **[2]**

PHYSIOLOGICAL FUNCTIONS OF THYROID GLAND

The major function of the thyroid gland is to maintain a high metabolic rate of our body which is performed by iodine containing thyroid hormones, *Thyroxine* (T4) and *Tri-iodothyronin* (T3)

- General Metabolism : Thyroid hormone increases the overall metabolism in the tissue. BMR is increased. O_2 consumption and heat production is also increased.
- Carbohydrate mechanism : Thyroxine stimulates the absorption of monosaccharide from the intestine. Thyroid hormones increases the rate of absorption of carbohydrates from the gastrointestinal tract. It stimulates the process of glycogenolysis and also stimulates the consumption of glucose in the tissue.
- Protein Metabolism : Thyroxine hormone has anabolic effect on protein and enhancement of growth of all bodily tissues.
- Fat Metabolism: Thyroxine increases synthesis of lipids and also promotes lipolysis by mobilising and degrading the lipids.
- Iodine metabolism : Thyroxine helps in the absorption of inorganic iodidie from the plasma and oxidation of iodide into iodine.**[3]**

HYPOTHYROIDISM

Hypothyroidism is a hypo metabolic condition in which the production of Thyroid hormone i.e., T3 and T4 is decreased for prolonged periods due to various reasons including Thyroiditis, endemic goitre, idiopathic goitre, destruction of the thyroid gland by irradiation or surgical removal of the thyroid gland etc. The clinical manifestation of hypothyroidism depending upon the age and onset of disorder are divided into 2 types :

1. ***Cretinism :*** The development of hypothyroidism during infancy or Childhood. Also known as ***Congenital hypothyroidism***
2. ***Myxodema :*** It is the development of hypothyroidism during adulthood

CRETINISM

It is the condition of development of hypothyroidism present at birth or developing within the first two years of postnatal life. Mostly it doesn't occur before 6 month of of post natal life because of the enough amount of hormones present in the mothers milk.

ETIOPATHOGENESIS

1. Any Developmental anomalies like Thyroid agenesis and ectopic Thyroid.
2. Foetal exposure to iodides and antithyroid drugs.
3. Genetic defect in Thyroid hormone synthesis like defect in iodine trapping, oxidation, coupling etc.
4. Endemic Cretinism in regions with endemic goitre due to lack of iodine in the diet.

The **clinical features** of Cretinism will be discussed below along with the features of **Myxodema.**

Myxodema

The onset of Hypothyroidism during the adulthood is known as **Myxodema.** It develops in persons who have almost lack of thyroid hormones. The occurrence rate is almost 6-7 times more frequently in females than in male.

ETIOPATHOGENESIS

There are various reasons for the development of the hypothyroidism in adults some of are as follows :

1. Surgical removal of thyroid gland
2. Autoimmune Thyroditis
3. Thyroid cancer
4. Prolonged administration of anti-thyroid drugs
5. Endemic goitre.**[4]**

CLINICAL FEATURES OF CRETINISM AND MYXODEMA [5]

CRETINISM	MYXODEMA
Skeleton : Stunted growth, short club- like fingers**,** deformed bones and teeth	**Skin and body:**. Irregular deposition of the fat on the body Swelling of tongue , hoarseness and slow speech.
Face : bloated face, idiotic look , saliva dribbing	**Face :** Swollen puffy and oedematous look of the face and whole body
Abdomen : overweight or bloated belly, umbilicus often protruding.	**Abdomen :** overweight and bloated belly
GI Tract : Appetite is reduced .Motility of GI tract is reduced , Constipation	**GI Tract and metabolism:** Appetite and motility is reduced. Body weight is increased, Constipation. BMR is reduced by 35-40% Low body temperature.
Metabolism : BMR is reduced by 20-40%, low body temperature, deposition of fat especially above the clavicle.	**Blood :** low blood sugar and iodine. Increased sugar tolerance Raised serum Cholesterol
Susceptible to cold and flu, immunity is reduced.	**Heart other symptoms :** Slow heart rate(Bradychardia) Stroke volume and minute volume is reduced. So the cardiac output is reduced. Respiration rates are reduced.
Urine output is reduced.	**Excretion** of Nitrogen and urine output is reduced.
Dry scaly skin, hoarse cry and bradycardia	**Lethargy and apathy.**

Agni and Ayurveda

Agni is a termed proposed in *Ayurveda* which is responsible for the digestion of all 4 types of food taken by us. *Acharya Charak* has mentioned the importance of *Jatharagni* in *Charak Chikitsa sthana.* According to *Acharya Charaka* the food taken by us is responsible for the nourishment of all the *dhatu, oja , bala* and *varn* but it can only be fulfilled only after the proper digestion of food by *Jatharagni* and if *Jatharagni* is weak then proper digestion of food and nourishment of body will not be possible.**[6]**

Acharya charak also stated the importance of *dehagni* as the various factors including the age,

varn,(complexion) bala(strength) ,oja(essence) , kanti (glow) etc. all these factors are related to *dehagni* i.e., *jatharagni*.he also added that the absence of *jathargni* result in the death or end of life.**[7]**

4 types of *Agni* :-

Acharya Charak mentioned 4 types of *Agni* on the basis of their function and status as *Vishmagni, Tikshnagni, Samagni* and *durbalagni. Vishmagni* is the altered condition of *jathargni* which digest the food in disproportionate or uneven manne resulting in the uneven nourishment of the *sharirik dhatu. Tikshnagni* is the one which is more fierce in nature and results in the exploitation (*Shoshan)* of *Sharirik Dhatu, Samagni* is the one which digest the ingested food in proper manner and results in the proper nourishment of the *Dhatu*. The fourth type of *agni is Durbalagni* which is unable to digest the ingested food and results in the *vidaha* (burning) and is the root cause of various disorders.**[8]**

Ama (undigested)*and *Agnimandhya (decreased agni)

Ayurvda has mentioned the link between the *Agnimandhya*(decreased agni) and *Ama**(undigested)***. *Ama* is the condition which develops due to improper digestion of food resulting due to the *agnimandhya.* decreased agni)

According to *Acharya Vagabhat* due to insufficient or low digestive fire the food is not digested and as a result the *rasa dhatu* is not formed completely which gets vitated by *vataadi doshas* in the *amashaya(stomach)* and this is known as *Ama* **[9]**

Clinical Features of *Ama*

Acharya vagbhata has mentioned the clinical features of *Ama* caused due to impaired digestive fire which are as follows: [**10]**

- *Srotorodha* – Obstruction to body channels
- *Balbhrinsha* – Loss of body strength
- *Gaurava* – Heaviness
- *Anil Mudhata* – Abnormal movement of Vata Dosha ¬
- *Aalasya* – Laziness
- *Apakti* – Indigestion
- *Nisthiva* – Excess drooling
- *Malsanga* – Obstruction to Mala eg. Purisha, etc.
- *Aruchi* – Loss of Taste
- *Klama* – Lethargy

Acharya Charak has also mentioned that due to incomplete digestion of food resulting from insufficient digestive fire leads to a condition called ***Ajeerna.*** *Acharya* Further mentioned vairious symptoms of *Ajeerna* as *Vishtambh* (obstruction of food or feces), *Sadan* (lethargy in the body), *moorcha* (fainting or delirium), *Angmard* (body pain) , *pyas* (Thrist), jwar(fever) , *vaman* (vomiting), *aruchi* (loss of appetite) Etc**[11]**

Agnimandhya can be considered as the factor which furthur leads to development of these two conditions i.e., *Ama* and *Ajeerna*.

Coorelation between -Agnimandhya *(decreased agni)* and Hypothyroidism

As discussed above development of *Ama* is solely because of *Agnimandhya* (decreased agni) resulting from decreased digestive fire. Cretinism and Myxodema are the two classification of Hypothyroidism which depend on the age of onset of symptoms. The Symptoms of *Agnimandhya* i.e., *Ama* and Hypothyroidism can be coorelated as :

Symptoms due to *Ama*	Symptoms of Hypothyroidism
Srotorodh	Irregular deposition of the fat on the body, hoarseness and slow speech.
Balbrinsha	BMR is reduced , Bradycardia
Gaurava	Body Weight is increased , loss of appetite
Anil Mudhata	Deformed bones and teeth, constipation
Aalasya	Lethargy and apathy.
Apakti	Appetite is reduced, Indigestion
Malsanga	Motility of GI tract is reduced , Constipation
Klama	Lethargy

CONCLUSION:

Thyroid Gland is most important gland which regulates metabolism of the body. Thyroid gland has significant impact on carbohydrate , protein and fat metabolism.

There is no direct correlation between hypothyroidism and *Agnimandhya* in *Ayurveda* but as discussed in this article there are some significant features of *Ama* mentioned by various *Acharyas* which are related with those of hypothyroidism

.

Acknowledgement:- Nil

Conflict of Interest:- Nil

Financial Support-Nil

REFERENCE:

1) Harsh Mohan,Textbook of pathology, Seventh Edition, 2015,Section III, Pg. 794
2) Guyton and hall textbook of medical physiology, Thirteenth Edition, Unit XIV, Chapter 77, Pg. 951
3) CC Chatterjee's Human Physiology, Twelfth Edition 2018, Chapter 72, Pg. 607
4) Harsh Mohan,Textbook of pathology, Seventh Edition, 2015,Section III, Pg. 794
5) CC Chatterjee's Human Physiology, Twelfth Edition 2018, Chapter 72, Pg. 608-609
6) Charaka Samhita, Edited by Dr.Brahmanand Tripathi, Chaukhambha Surbharati Prakashan, Varanasi, Reprint Edition 2009 Chikitsa Sthana, Gahani Dosha Chikitsa Adhyaya, 15/5.
7) Charaka Samhita, Edited by Dr.Brahmanand Tripathi, Chaukhambha Surbharati Prakashan, Varanasi, Reprint Edition 2009 Chikitsa Sthana, Gahani Dosha Chikitsa Adhyaya, 15/1.
8) Charaka Samhita, Edited by Dr.Brahmanand Tripathi, Chaukhambha Surbharati Prakashan, Varanasi, Reprint Edition 2009 Chikitsa Sthana, Gahani Dosha Chikitsa Adhyaya, 15/50-52
9) Ashtanga Hridaya, Edited by Dr. Brahmanand Tripathi, Chaukhambha Sanskrit Prakashan, Delhi, Reprint Edition, 2007 SutraSthana, Doshopakramniya Adhyaya, 13/25. Page no. 188
10) Ashtanga Hridaya, Edited by Dr. Brahmanand Tripathi, Chaukhambha Sanskrit Prakashan, Delhi, Reprint Edition, 2007 SutraSthana, Doshopakramniya Adhyaya, 13/23-24. Page no. 188
11) Charaka Samhita, Edited by Dr.Brahmanand Tripathi, Chaukhambha Surbharati Prakashan, Varanasi, Reprint Edition 2009 Chikitsa Sthana, Gahani Dosha Chikitsa Adhyaya, 15/45-49.