



## HYPOTHYROIDISM IN CONTEXT TO AYURVEDA: A CRITICAL REVIEW

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### ABSTRACT

Lot of attempts has been made to put an *Ayurvedic* frame to the disease hypothyroidism. Although, after mere knowledge of disorder pertaining the thyroid gland from view of modern system of medicines, one can't directly correlate this in *Ayurveda* as a whole disease yet signs and symptoms which we approach in day-to-day clinical practice can be seen in *Ayurvedic* texts in different manners.

*Ayurveda* has endowed the function of thermogenesis and metabolism in the body to *Agni*. It is defined as substance or entity that brings about transformation / conversion in any form. The thirteen types of *agni* bring about all the chemical reactions and transformations in the body. ***Samagni* is the most important criteria of *Swastha purusha*.** *Agnimaandya* is one of the most common disorder of *agni*. *Agnimandya* leads to the formation of *Ama* that causes various diseases.

The concept of *Agni* is basic concept of *Ayurveda*. This Siddhanta provides fundamental knowledge for understanding of the theories of *Ayurveda* viz. *Ahara Pacana*, *Dhatu Utpatti*, *Vyadhi Utpatti*, *Ayu Parijnana* etc. . *Agni* is believed to be the agency for any kind of transformation. It is a known fact that at each and every second multiple procedures of transformation take place in the body. These may be biochemical or bio physical or any other type of biotransformations. Due to these constant transformation procedures, body grows, develops and lastly destroys too.

**Key words :** *Ayurveda* , *Agni* , *Jatharagnimandya* , *Ama* .

## INTRODUCTION

The term hypothyroidism refers to an underactive thyroid gland. The Thyroid gland is located in the neck and is an important endocrine organ that produces the thyroid hormones, important hormones responsible for the regulation of metabolism. Some of the common signs and symptoms of hypothyroidism include weight gain, fatigue, depression, sensitivity to the cold, dry skin and hair, muscle ache, constipation and loss of libido. Diagnosis of this condition is based on symptoms and blood tests to assess the thyroid-stimulating hormone (TSH) and thyroxine level<sup>1</sup>.

Ayurveda system of medicine is very futuristic and Acharya Charaka in 18<sup>th</sup> chapter of *sutrasthana* emphasized that there is no need to emphasize on the exact nomenclature of the disease, on the contrary he insisted on diagnosis of the constitutional status and plan the treatment of the disease accordingly<sup>2</sup>.

Lot of attempts has been made to put an Ayurvedic frame to the disease hypothyroidism. Although, after mere knowledge of disorder pertaining the thyroid gland from view of modern system of medicines, one can't directly correlate this in Ayurveda as a whole disease yet signs and symptoms which we approach in day-to-day clinical practice can be seen in Ayurvedic texts in different manners. In *Charaka-Samhita*, eight type of *Nindita Purushas* viz. *Atidirgha*, *Atihrusva*, *Atiloma*, *Aloma*, *Atigaura*, *Atikrishna*, *Atisthula*, *Atikrishna* have been discussed which can be taken as functional disorders

आयुवर्णो बलं स्वास्थ्यमुत्साहोपचयौ प्रभा।

ओजस्तेजोऽग्नयः प्राणाश्चोक्ता देहाग्निहेतुकाः॥ (च.चि. 15/3)

The analysis of the symptomatology of hypothyroidism in the light of Ayurvedic principles showed that the pathogenesis and

of the endocrine glands<sup>3</sup>. Classical features or lakshana of *kaphaja Shotha*, *Kaphaja paandu*, *Grahani* mentioned in the Ayurveda texts can be correlated with that of Hypothyroidism mentioned in the modern texts. Description of the disease "*Galganda*" has been present in all Ayurvedic classical texts which can be correlated to Thyroid gland disorders. The earliest description of Thyroid disorders is found in *Atharvaveda* by the name "*Apachi*".

## Aims and objectives

1. To understand the hypothyroidism in context to principles of Ayurveda.
2. To understand the symptomatology of Hypothyroidism in terms of Ayurveda.

## Materials and methods

This study was carried out by literature search, critical review, various medical research database like pubmed, and other national research database.

## Discussion

Acharya Chakrapani has described "*Kantha parshva*" as the anatomical position of thyroid gland. Thyroid gland is situated in the anterior part of neck (*Kantha*). Doshas are present in each and every cell. The principal function of Thyroxine is to control the rate of metabolism. Thyroxine acts as a catalysts for the maintenance of cellular oxidative processes throughout the body. Hence, it has profound influence on tissue metabolism all over the body. These functions have striking similarity with the description of *Agni* in Ayurveda. Like Thyroxine, all the metabolic activities of body take place due to *Agni*<sup>4</sup>.

manifestations of hypothyroidism occurs due to dysfunction of *Agni*. The normal and abnormal functions of thyroid gland and

Agni are similar. Also the symptoms of *agnimaandya* and hypothyroidism are same .

Ayurveda has endowed the function of thermogenesis and metabolism in the body to *Agni*. It is defined as substance or entity that brings about transformation / conversion in any form .The thirteen types of agni bring about all the chemical reactions and transformations in the body . **Samagni is the most important criteria of Swastha purusha** . *Agnimaandya* is one of the most common disorder of agni . *Agnimandya* leads to the formation of Ama that causes various diseases.

The concept of *Agni* is basic concept of Ayurveda. This Siddhanta provides fundamental knowledge for understanding of the theories of *Ayurveda* viz. *Ahara Pacana, Dhatu Utpatti, Vyadhi Utpatti, Ayu Parijnana* etc. . *Agni* is believed to be the agency for any kind of transformation. It is a known fact that at each and every second multiple procedures of transformations take place in the body. These may be biochemical or bio physical or any other type of biotransformations. Due to these constant transformation procedures, body grows, develops and lastly destroys too. With the help of that particular *Agni*, the body substances can get nourishment and

can perform their functions normally.This can be understood in the terms of wear and tear phenomena of each body cell. It is very clear that any of the body cell cannot do anything without the help of *Agni*.

Therefore a Vaidya should always take care of *Agni* as the *Prasama* or *Prakopa* of *Dosa, Dhatu* and *Mala* are dependent on the status of *Agni*. In other words, it can be said that homeostasis of *Dosa* etc can be maintained through *Agni*.

Food material having heterologous *panchabhautika* composition to that of body is ingested. To make it suitable for the assimilation in the body, *Jatharagni* along with *kleda* and *vayu* acts on it for a particular time period. This whole process is termed as *sthula paka*. Sara of this digested food is absorbed in *pakavashaya* by 'soshana' karma of *Jatharagni*. It is further acted upon by *Bhutagni* and *Dhatvagni* to make it completely homologous to *dhatu* <sup>5</sup>.

Clinical presentation of hypothyroidism includes symptoms like lethargy, fatigue, weakness, heaviness in the body, sleepiness, hypochlorhydria, constipation, loss of appetite which denotes presence of *Amaavastha* in the disease.

#### Comparison of *Ama Lakshana* and Hypothyroidism symptoms<sup>6</sup>:

##### **Ama Lakshana**

*Srotorodha*

*Balbhrinsha*

*Gaurava*

*Anil Mudhata*

*Aalasya*

*Aruchi, Apakti*

*Malsanga*

*Klama* (fatigue)

##### **Symptoms of Hypothyroidism**

Stunted growth, Hoarseness of voice

Delayed development milestones, Cold intolerance , Lowered resistance, Mental impairment

Swollen, puffy oedematous look of face, Bloating

Face, idiotic look, Pot Belly, Weight gain

slow heart rate, reduced respiratory rate, decreased hearing, joint pain, inability to concentrate

Lethargy, sleepiness

Decreased appetite and BMR

Constipation, decreased perspiration

Thought process slow down, loss of energy, apathy,

## Clinical presentation of Hypothyroidism / pathogenesis

**1. Shotha (Generalized swelling) –** Puffiness is due to accumulation of hyaluronic acid in the tissues which is related to loss of inhibitory effect of thyroid hormones on hyaluronate, fibronectin and collagen. Increased deposition of connective tissues like hyaluronic acid, glycosaminoglycans and other polysaccharides leads to non-pitting boggy oedema<sup>7</sup>.

As per *Aacharya Charaka* when vitiated *doshas* due to *mithya Aahara* or *Vihara* causes obstruction of *srotas* or channels which hampers the normal movement of *vata* i.e *vayumargaavarodha*, leads to *Shotha utpatti*<sup>8</sup>.

*Amarasa* is formed by the *Amaanna* or *apakva anna* due to *Agnimaandya*. This *Aam rasa* produces *kleda* and obstruction in *dhatu* and *srotas* which further hampers the nourishment and leads to *Amarupi* or *malarupi dhatu vridhi*. Due to *rasa dhatu dushti* by *Ama Rasadhatvagnimandya* occurs. Now *prasaadansha* of previous *dhatu* which is *Amarupi* here with the help of respective *Dhatvagni* which is *manda* here i.e *Dhatvagnimandya dushita rakta dhatu* is produced. Other *dhatu*s are also affected due to *uttarottara dhatu poshana karma*. On the whole this type of *srotorodha* and *dhatudushti* leads to *vayumargaavarodha*, which further vitiates the whole process and leads to the *Shotha utpatti*.

Swelling of face especially eyelids, hands and feet result due to accumulation of hydrophilic mucopolysaccharides subcutaneously which is nothing but *Amarupi* or *malarupi Dhatu* due to *Dhatvagnimandya*.

**2. Angamarda/Angabheda (Generalized pain)—**Pain is due to abnormal muscle function. Mechanism underlying abnormal

muscle function includes impaired glycogenolysis<sup>9</sup>, alteration in myosin heavy chain gene expression<sup>10</sup> and reduced mitochondrial activity with decreased production of adenosine triphosphate. *Angamarda* is due to *rasadhatudushti* or *rasavahasrotodushtivikara*<sup>11</sup>.

Again this *rasvahasrotodushti* or *rasvahasrotorodha* is due to *Amarasa* produced due to *agnimaandya*. Wherever this *Amarasa* is accumulated, it produces *srotorodha* in the body. It produces *vikara* according to the dominant *dosha* involved<sup>12</sup>. Moreover due to *srotorodha* *vayu* is aggravated leading to *Angamarda*. *Rasadhatu dushti* leads to the hypofunctioning of its *pachakansh* i.e *Rasadhatvagnimandya*.

### 3. Shrama/Daurbalyata (Fatigability)

Peripheral circulation is impaired in hypothyroidism which leads to decreased blood supply to tissues. Due to lack of oxygen, muscles start anaerobic respiration to carry out muscular work which results in accumulation of lactic acid, and finally ends in fatigue<sup>13</sup>.

*Angasaada* is also a *Rasapradoshaja vikara*<sup>14</sup> [Ch Su 10/28]. Here also *Amarasa* and aggravated *vata* plays an important role in genesis of this symptom. *Ama* is produced due to *Agnimandya*.

### 4. Stambha (Muscle stiffness)

The lack of thyroid hormones, results in slow or reduced metabolic function, such as decreased protein turnover and impaired carbohydrate metabolism in muscle tissue. This leads to slow muscle contraction and relaxation, known as hypothyroid myopathy, may be caused by a shift in the distribution of muscle fibres from fast twitch fibres to slow twitch fibres. All these changes lead to muscle stiffness<sup>15</sup>.

*Agnimandya* produced due to *mithya aahar vihar* produces *Ama*. When vitiated *vayu* along with this *Aam* circulates in the body produces *Stabdhatu* or muscle stiffness<sup>16</sup>.

### 5. Vibandha (Constipation)

Without enough thyroid hormones many of the body functions slow down including the motility of digestive tract causing constipation.

*Vata prakopa* results in *gadhavarcha* and aggravated *kapha* may cause decrease in *apakarshan* gati of *mahasrotasa* leading to *vibandha* or constipation.

### 6. Gatraparushyameva (Dry and coarse skin)

Dry and coarse skin is due to decreased eccrine gland (ordinary sweat gland) secretion. Cutaneous vasoconstriction leads to decreased blood supply and myxedematous infiltration i.e. hyaluronic acid or dermal mucopolysaccharides will hamper nourishment of the skin making skin dry and pale<sup>17</sup>.

*Rasadhatvagnimandya* produces vitiated *raktadhatu*. *Raktadhatu dushti* leads to the hypofunctioning of its *pachakansh* i.e. *Raktadhatvagnimandya*. This further produces *dooshita* or improper *Maansdhatu*. Due to this *twacha/skin* which is *updhatu* of *Maansdhatu* is also vitiated.

### 7. Sheet Asahatvam (Cold intolerance)

Thyroid hormones have thermogenic effect<sup>18</sup>. So deficiency of thyroid hormones lead to cold intolerance. Also hypothyroidism is a state of low metabolic rate or less energy/heat inside the body leading to cold intolerance.

The vitiated *vaat* and *kapha dosha* & *alpa pitta* could be the reason behind low body temperature and slower rate of metabolism. *Agnimandya* along with the above mentioned reasons could be another accounting factor.

### 8. Aartava vikruti (Menstrual abnormalities)

Women with hypothyroidism often have menstrual cycle irregularities, ranging from absent or infrequent periods to very frequent and heavy periods. The menstrual irregularities can make it difficult to become pregnant, and pregnant women

with hypothyroidism have an increased risk for miscarriage during early pregnancy.

Severe hypothyroidism is commonly associated with ovulatory dysfunction due to interactions of thyroid hormones with the female reproductive system. Both hyperprolactinemia, due to increased TRH production, and altered GnRH pulsatile secretion, leading to delay in LH response and inadequate corpus luteum, have been reported. Thyroid responsiveness by the ovaries could be explained by the presence of thyroid hormones receptors in human oocytes. Hypothyroidism can also lead to menorrhagia by altered production of coagulation factors<sup>19</sup>. It includes both *anartava* as well as *atyaartava*. *Aartava* is *updhatu* of *rasadhatu*. *Agnimaandya* produced due to *mithya Aahar Vihara* produces *Ama* which causes *Rasadhatu dushti*. Due to *rasadhatu dushti* *Aartava dushti* occurs because *Aartava* is *updhatu* of *rasadhatu*.

### 9. Weight gain / atistholayata

Gain in weight occurs due to fluid retention, large extravascular accumulation of albumin and other proteins. Also weight gain may be due to lethargy, somnolence, and sluggishness like symptoms which make the patients to avoid physical activities.

*Rasadhatvagnimandya* leads to *uttarottar dhatu dushti*. *Medodhatu dushti* due to *maansdhatvagnimandya* leads to *atistholayata*.

### 10. Rakta alpataa /Haemoglobin

Thyroid hormones increase erythropoiesis, possibly because of increase oxygen utilization by tissues leading to increased erythropoietin production. Due to deficiency of thyroid hormones erythropoiesis decreases. Due to *rasadhatvagnimandya* there is not a proper nourishment of *raktadhatu* leading to *raktalpataa*

### 11. Medodhatudushti / Dyslipidemia

Thyroid hormones plays an important role in Fat Metabolism .Their deficiency greatly increases the plasma concentration of cholesterol , phospholipids ,and triglycerides.Dyslipidemia can be correlated with *medodhatudushti* which is further due to *Dhatvagnimandya*.

## CONCLUSION

Pathogenesis and symptomatology of hypothyroidism is similar to that of **DHAATVAGNIMAANDYA**, **SHOTHA** and **STHOLYA**. When we go through the classical text, we see that all these three disorders arises due to *agnimaandya* and *srotoavarodha*. Due to improper functioning (Hypofunctioning) of *Pachakamsha* present in *Dhatu* leads to states analogous to myxedema resulting in improper *Dhatu Vruddhi*. Impaired *Dhatvagni* can be correlated with abnormal chemical reactions like impaired glycogenolysis, impaired mitochondrial oxidation etc. in hypothyroidism.

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