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AN OVERVIEW ON HYPOTHYROIDISM IN AYURVEDA

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ABSTRACT

Thyroid disorders are the most common disorders of the endocrine system. About 42 million people suffer from thyroid disorders in India. Hyperthyroidism and hypothyroidism are the two common functional disorders of the thyroid gland, with hypothyroidism being the most common. Hypothyroidism is a hypometabolic clinical state resulting from inadequate production of thyroid hormones for prolonged periods. Approximately 1 in 10 Indian adults suffer from hypothyroidism. The prevalence of this disease in India is 6% and more than 10 million cases per year are reported. Women are 6 times more prone than men. It can result from a defect anywhere in the Hypothalamic-Pituitary-Thyroid axis. In this condition, TSH will be elevated, as the pituitary produces more TSH to stimulate thyroid to produce more thyroid hormones. In Ayurveda classics, there is no specific name for the disease hypothyroidism. However, the *Ashtonindita Purusha* chapter incorporates the hampered functions of the endocrine system to the major extent. The shadows of functions of *Agni* and its importance can be seen in the thyroid hormones. *Mandagni* is said to be the root cause for practically all ailments and this is true in this situation as well. It is well known fact that there is a close relationship between *Mandagni* and production of *Ama*. The presence of *Ama* causes its own signs and symptoms which reflects the symptoms of hypothyroidism. Hence this study is an attempt to understand the ayurvedic aspects which can be simulated with the concept of hypothyroidism.

KEYWORDS: Hypothyroidism, *Agni, Ama, Mandagni.*

INTRODUCTION

Endocrinology is the Science of cellular communication that enables biochemical integration of life's vital processes.[1] The endocrine system releases chemical signals in the blood stream and regulates functions in distant organs. Thyroid is the largest endocrine gland in the human body. The body's master metabolic center is considered to be the thyroid. It is one of the most important organs of the endocrine system as it regulates nearly all the bodily functions either directly or indirectly. It works as a furnace system. But an overactive or underactive thyroid can result in a wide range of complications. In India, about 42 million people suffer from thyroid disorders.[2] Among various thyroid related disorders, the prevalence of hypothyroidism is high, mostly due to the lifestyle changes and factors like stress.

Hypothyroidism is a hypometabolic clinical state resulting from inadequate production of thyroid hormones for prolonged periods.[3] It can result from a defect anywhere in the Hypothalamic-Pituitary-Thyroid axis. In this condition, TSH will be elevated, as the pituitary produces more TSH to stimulate thyroid to produce more thyroid hormones. Approximately 1 in 10 Indian adults suffer from hypothyroidism.[4] Women are 6 times more prone than men.[5]

Ayurveda is the science of Medicine that believes in complete health and wellbeing of an individual. It not only deals with treatment of diseases but also concentrates more on their preventive aspects. Hypothyroidism is a multisystemic disorder which has a wide range of clinical symptoms, which includes even psychological symptoms. This condition is not mentioned in Ayurveda classics by any specified name. There are many hypotheses put forward regarding the understanding of hypothyroidism in Ayurveda. The *Ashtonindita Purusha* chapter[6] incorporates the hampered functions of the endocrine system to the major extent. Besides these, hypothyroidism is a metabolic disorder. Ayurveda has explained a similar concept called *Agni*, which plays a major role in digestion, transformation and metabolism. When *Agni* is in a diminished state, the body's metabolic rate slows down, resulting in a variety of clinical manifestations. The shadows of functions of *Agni* can be seen in thyroid hormones. In Ayurveda, it is clearly mentioned that the root cause of majority of diseases is the hypo functioning of *Agni* and *Ama*. Here an attempt is made to appraise the condition from an Ayurvedic standpoint.

HYPOTHYROIDISM IN AYURVEDA

It is difficult to get references of thyroid disorders as a separate entity in Ayurveda classics. Hypothyroidism cannot be correlated as a single disease in Ayurveda because its *Dushti Lakshanas* can be seen in the whole body i.e., symptoms related to multiple systems of the body will be present in a patient with hypothyroidism. In Charaka Samhita Sutra Sthana[7], Acharya has rightly quoted that, a Physician should never feel ashamed if he cannot name a particular disease because, it is not always possible to name each and every disease. Acharya also explains that in order to initiate treatment, understanding the nature of *Dosha, Dooshya,* etiological factors are sufficient. Even though many have tried to understand hypothyroidism under different headings, more hypotheses are related to *Agnimandya* in hypothyroidism which holds more valid.

NIDANA

It is told in Ayurveda literatures that body is the outcome of what we eat and the same eatables are going to influence diseases too.[8] Lifestyle issues in today's era are having good relation with hypothyroidism. Intake of cabbage, cauliflower, broccoli, etc interferes with iodine uptake by the thyroid gland and disrupts thyroid hormone production. It is a well-known fact that vitiation of *Doshas* is the outcome of taken food itself. All the above said factors comes under the heading of *Doshabalapravritta Hetu* and encompasses as *Sthoulya Nidana, Kapha Prakopaka Nidana*, etc.

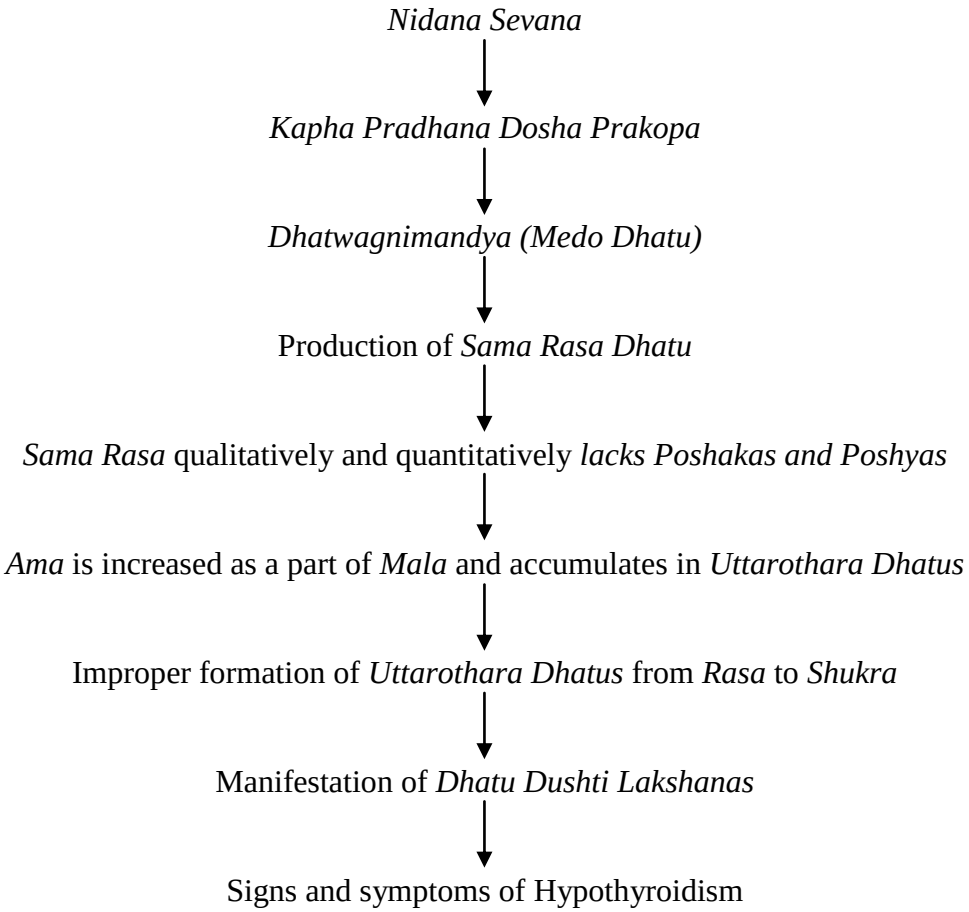
The diseases caused due to morbidity of sperm and ovum are *Adibalapravritta Vyadhi*. Improperly or abnormally developed organs are seen in *Janmabalapravritta Vyadhi*. Congenital hypothyroidism or cretinism may fall in the same pathway. Genetic factors which bring mutation in genes in disorders like thyroid dyshormonogenesis can also be covered here. Regularly consuming materials like wheat, corn, etc are contaminated with bromine containing pesticides which acts over T3 and T4 to decrease it. The concept of *Dooshi Visha* states that poisonous materials when consumed through food remains in the body, without being fatal for many years.

Next is iatrogenic causes which includes thyroidectomy induced hypothyroidism. It reflects the concept of *Shastrakrita Vyadhi* in Ayurveda. Removing the thyroid causes hypothyroidism unless the patient is given thyroid hormones post operatively. Stress is also one of the causative factors of hypothyroidism. In textbooks, there may not be any references

regarding stress as an etiology of hypothyroidism, but, recent studies have proven stress as one of the main causative factors of hypothyroidism.

SAMPRAPTI

Figure No. 1 Probable *Samprapti* of Hypothryoidism



The qualitative and quantitative effect of thyroid function of an individual decides their life. Energy production, thermogenesis, growth and development are all controlled by the thyroid hormones. Moreover, skeletal muscles are the main targets of thyroid hormones. So, good built and good strength has got a relation with thyroid hormones. Thyroid disorders with hormonal changes has got a relation with hyperpigmentation, which shows that thyroid hormones have an effect over complexion also. Each and every cell in the body depends on thyroid hormones for their metabolism, so it can be rightly said that the health of an individual depends on thyroid hormones. These hormones have an effect over mood swings, which indirectly decides the enthusiasm of the person. Alteration in the levels of thyroid hormones affects the functions of immune system also. So, the shadows of functions of *Agni*[9] and its significance are seen in the thyroid hormones.

Mandagni is the root cause for almost all diseases and it becomes true here also. There is a near association between *Mandagni* and production of *Ama*. The presence of *Ama* has its own set of signs and symptoms[10] like *Srotorodha, Balabhramsha, Gourava*, etc. The symptoms of hypothyroidism reflect the symptoms of *Ama* like: *Srotorodha* and stunted growth; *Balabhramsha* and delayed milestones; *Gourava* and puffiness of face, weight gain; *Anilamoodatha* and decreased respiratory rate; *Alasya* and lethargy, sleepiness; *Apakti* and decreased appetite; *Malasanga* and constipation, decreased perspiration, etc.

In case of hypothyroidism, ghrelin and cholecystokinin present in GIT have effects over the thyroid hormones. Ghrelin is a peptide hormone produced mainly in the GIT and performs various physiological functions like gut motility, adipose tissue accumulation and hyper sensation. A relation exists between plasma levels of thyroid hormones and ghrelin. Ghrelin receptors present in the thyroid gland decreases thyroid hormones and has an action over the TSH. Cholecystokinin secreted from the first segment of small intestine has got similar effects as that of ghrelin. Thus, the effects of *Mandagni* at *Koshta* level has its effects at *Dhatu* level also. When we analyze the symptoms of hypothyroidism, it can be seen that the list of symptoms extends from *Rasa Dhatu* to *Shukra Dhatu*. *Mandagni* to a specific *Dhatu* result in specific *Srotodushti Lakshana* and will come out as feature of hypothyroidism.

LAKSHANA

The signs and symptoms of hypothyroidism[11] are: Tiredness, dry skin, feeling cold, hair loss, difficulty in concentrating and poor memory, constipation, weight gain with poor appetite, dyspnea, hoarse voice, menorrhagia, paresthesia, impaired hearing, cool peripheral extremities, puffy face, diffuse alopecia, bradycardia. This can be understood under the concept of *Vikara Prakruti* in Ayurveda. A Physician who studies any disease take the *Lakshana* as the prime tool to identify it. Among the *Lakshana Samucchraya*, *Pratyatma Lakshana* is more enhancing in understanding a disease. *Pratyatma Lakshana* along with other *Samanya* and *Vishishta Lakshana* together build up the diagnosis of a disease. Even though many signs and symptoms are explained in the textbooks, when we see in clinical practice, there are some signs and symptoms which directly gives a hint towards the disease. Such signs and symptoms are as follows.

Tiredness: In people living with an underactive thyroid, the body's metabolism slows down and the process of breaking down food and transforming the nutrients into energy also hampers. This results in diminution of energy levels. Thus, a drop in hormone production

leads to lower energy levels resulting in tiredness and weakness. *Mandagni* is one of the main causative factors for hypothyroidism. The *Ahara Rasa* formed is in *Apakva Avastha*,resulting in *Rasa Dushti*, so it fails to nourish the *Uttarothara Dhatus* and since the *Dhatus* are not getting nourishment, *Ojas* will also get hampered leading to *Dourbalya*. One of the main functions of *Agni* is to impart *Bala* in a person. Here, since the *Agni* is hampered, it causes *Balahani.*

Feeling cold: Whenever there is decreased thyroid hormones, there will be reduction in stroke volume and heart rate and the cardiac output at rest also decreases. This causes an increase in peripheral vascular resistance and blood volume will be reduced leading to decreased blood flow to tissues causing cold sensation. In hypothyroidism, there is decreased *Pitta* and also *Sheeta Guna* of both *Kapha* and *Vata* makes the person feel cold.

Hair loss: The thyroid hormones play an essential role in the development and maintenance of hair follicles. Irregular functioning of T3 and T4 can cause regrowth cycle of the hair to be disturbed, meaning that there will be thinning of hair over time, without hair replacement. *Kapha* and *Rakta* does the *Samrodhana* in *Romakupa* causing hair loss.

Hoarse voice: It occurs due to mucinous deposits in larynx or due to external pressure on the laryngeal nerve. According to *Acharya* Sharangadhara, *Swarabheda* is one among the *Kaphaja Vikaras*. He also said that increase in *Manda Guna* of *Kapha* produces hoarseness of voice.

Poor memory: The hormone thyroxine increases blood flow to brain, so the normal functioning of brain needs the presence of thyroxine. In hypothyroidism, due to decrease in thyroxine, the person will have difficulty in concentrating and poor memory. Natural state of *Kapha* is *Bala* for the body. But in hypothyroidism, *Kapha* is in vitiated state and as a result *Dehabala, Agnibala* and *Manobala* is also hampered. Reduced *Manobala* may cause poor memory and difficulty in concentration.

Dyspnea: Hypothyroidism weakens the respiratory muscles and decreases the lung function. Due to *Kapha Vriddhi* and *Medodushti*, the person will suffer from *Shwasa.*

Weight gain with poor appetite: The hormone thyroxine is essential for maintaining body weight. Whenever there is a decrease in thyroxine, the body weight increases due to fat deposition. Weight gain may also be due to the imbalance between calorie intake and energy

expenditure. When there is *Dhatwagimandya*, there will be *Vriddhi* of *Dhatus* and increase in *Medo Dhatu* and *Mamsa Dhatu* results in weight gain. The *Guru Guna* of *Kapha* due to *Prithvi* and *Jala Mahabhuta* may also be a reason for weight gain. Since the hormone thyroxine decreases appetite and food intake, in case of hypothyroidism there is reduced appetite due to decreased T4. In hypothyroidism, there will be hypo functioning of *Agni*, which causes decreased appetite.

Constipation: The hormone thyroxine increases the secretions and movements of GIT. So, in case of hypothyroidism, due to their deficiency, the person will suffer from constipation. Due to increased *Manda Guna* of *Kapha, Anuloma Gati* of *Vata* and *Mala* is hampered and causes obstruction to *Vata* leading to *Vata Prakopa* causing *Gaada Varchas.*

Excess sleep: Normal thyroxine is essential to maintain normal sleep pattern. Excess sleep may be due to fatigue and lack of energy. Vitiated *Rasa* and *Kapha* induces sleepiness in a person with hypothyroidism.

Dry, coarse skin: The secretion of sweat glands and sebaceous glands are reduced leading to dry, coarse skin. *Sapta Twacha* are formed from *Rakta*. The quality and quantity of *Rakta* depends on the quality and quantity of *Rasa Dhatu* and it can be understood that the features of *Twak* represents the *Rasa Saarata*. *Rasa Dhatu Dushti* in turn causes *Dushti* of *Rakta Dhatu* i.e., vitiated *Rasa Dhatu* cannot nourish the *Rakta Dhatu* resulting in dryness of the *Twak. Twak Parushyata* may also be due to the *Heena Pitta* and *Vriddha Vata Dosha* involved in the *Samprapti*.

Puffy face, oedema: Hypothyroidism causes accumulation of hyaluronic acid which alters the composition of ground substance in dermis and other tissues causing puffiness. Vitiated *Kapha* obstructs *Rasavaha Srotas* and causes puffy face and oedema.

SAMPRAPTI GHATAKAS

Table No. 1: *Samprapti Ghatakas* of Hypothyroidism.

Dosha	*Kapha, Vata*
Dooshya	*Rasa, Meda*
Agni	*Dhatwagni*
Ama	*Dhatwagnimandya janya ama*
Srotas	*Udakavaha, Annavaha, Medovaha, Swedavaha, Purishavaha, Rasavaha*
Srotodushti	*Sanga*

Udbhava Sthana	*Amashaya*
Sanchara Sthana	*Sarva Shareera*
Vyakta Sthana	*Sarva Shareera*
Adhishtana	*Sarva Shareera*
Rogamarga	*Bahya, Abhyantara, Madhyama*

DISCUSSION

Hypothyroidism is a metabolic disorder. It is a multisystemic disorder which has a wide range of clinical symptoms, which includes even psychological symptoms. This condition is not mentioned in Ayurveda classics by any specified name. Ayurveda explains a similar concept known as *Agni*, which is involved in digestion, transformation and metabolism. The body's metabolic rate slows down when *Agni* is in diminished state, leading to a range of clinical symptoms. Thyroid hormones reflect the shadows of functions of *Agni*. The hypo functioning of *Agni* is clearly stated in Ayurveda as the root cause of almost all ailments. It holds true in case of hypothyroidism too. Due to *Nidana Sevana, Kapha Pradhana Dosha Prakopa* happens, leading to *Dhatwagnimandya (Medo Dhatu)*. It further leads to the production of *Sama Rasa Dhatu* which qualitatively and quantitatively lacks *Poshakas* and *Poshyas*. *Ama*, as a part of *Mala* is increased and vitiates *Rasa Dhatu*. This *Ama* accumulates in *Uttarothara Dhatus* resulting in improper formation of *Rasa Dhatu* to *Shukra Dhatu*. Thus, there will be manifestation of *Dhatu Dushti Lakshanas* ending up in the clinical signs and symptoms of hypothyroidism.

CONCLUSION

Hypothyroidism is a clinical condition resulting from inadequate production of thyroid hormones. As the disease is anchored in the endocrine system, it can manifest in a variety of ways including tiredness, anorexia, weight gain, constipation and even psychological issues like difficulty in concentrating and poor memory. Since biochemical evaluations were not available in ancient periods, such a wide range of clinical manifestations could pose a diagnostic issue. As a result, *Acharya* Charaka rightly quoted about the concept of *Anukta Vyadhi*. However, as Science and technology progressed, different biochemical assays have led to the detection and diagnosis of hypothyroidism in the present era. The condition is not detected early because of the indistinct symptoms, especially in subclinical hypothyroidism. Prodromal symptoms are yet to be mentioned in any medical textbook. Hypothyroidism has a direct impact on *Agni*. *Mandagni* is the root cause for almost all diseases and that holds true in this case also.'

REFERENCES

1. https://www.sciencedirect.com/topics/medicine-and-dentistry/endocrinology
2. https://www.downtoearth.org.in/news/health/1-in-10-indians-have-hypothyroidism-61693#:~:text=42%20million%20people%20in%20India,affecting%20one%20in%20ten%20adults.
3. Harshmohan. Textbook of Pathology. Sixth ed. New Delhi: Jaypee Brothers Medical Publishers, 2010; 803.
4. www.theweek.in.thyroiddisorders
5. Colledge R Nicki, Walker R Brian, Ralston H Stuart. Davidson's Principles and Practice of Medicine. Twenty first ed. Elsevier Health Sciences, 2010; 741.
6. Vaidya Jadavji Trikamji Acharya, Charaka Samhita by Agnivesa with Ayurveda Dipika Commentary of Cakrapanidatta, Sutra Sthana; Chapter 21, Verse 3. Varanasi: Chaukambha Krishnadas Academy, 2015; 116.
7. Vaidya Jadavji Trikamji Acharya, Charaka Samhita by Agnivesa with Ayurveda Dipika Commentary of Cakrapanidatta, Sutra Sthana; Chapter 18, Verse 44-45. Varanasi: Chaukambha Krishnadas Academy, 2015; 108.
8. Vaidya Jadavji Trikamji Acharya, Charaka Samhita by Agnivesa with Ayurveda Dipika Commentary of Cakrapanidatta, Sutra Sthana; Chapter 28, Verse 45. Varanasi: Chaukambha Krishnadas Academy, 2015; 181.
9. Vaidya Jadavji Trikamji Acharya, Charaka Samhita by Agnivesa with Ayurveda Dipika Commentary of Cakrapanidatta, Chikitsa Sthana; Chapter 15, Verse 3-4. Varanasi: Chaukambha Krishnadas Academy, 2015; 512.
10. Pt. Hari Sadasiva Sastri Paradakara, Ashtangahrudaya of Vagbhata with Commentaries of Sarvangasundara of Arunadatta and Ayurvedarasayana of Hemadri, Sutra Sthana; Chapter 13, Verse 23-24. Varanasi: Chaukamba Sanskrit Sansthan, 2015; 216.
11. Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J. Harrison's Principles of Internal Medicine. Sixteenth edition. New York: McGraw-Hill Medical Publishing Division, 2005; 2: 2109.