

HYPOTHYROIDISM – A SILENT PHENOMENON**Rai Amit Kumar^{1*} and Deepshikha²**¹Medical Officer, Ch. Brahm Prakash Ayurved Charak Sansthan, New Delhi, India.²Assistant Professor, Dept. of Kaumarbhritya, Uttarakhand Ayurved University Campus, Gurukul Kangri, Haridwar, Uttarakhand, India.Article Received on
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Author****Dr. Amit Kumar Rai**Medical Officer, Ch.
Brahm Prakash Ayurved
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Delhi, India.**ABSTRACT**

Hypothyroidism is a commonly prevailing disorder in adult Indian population. It is second only to diabetes mellitus as the most common endocrine disorder. It is a clinical syndrome resulting from deficiency of thyroid hormones due to their insufficient synthesis which in turn results in a generalized slowing down of metabolic processes. It is characterized by a broad clinical spectrum ranging from an asymptomatic or subclinical condition with normal levels of T₄ and T₃ and mildly elevated levels of serum TSH to an overt state of myxedema, end-organ effects and multisystem failure. The symptoms of hypothyroidism are notorious for their non-specific nature and for the way in which they mimic many symptoms of other diseases. So it

often remains undiagnosed or misdiagnosed. The analysis of the pathogenesis and manifestations of hypothyroidism in the light of Ayurvedic principles showed that hypothyroidism occurs due to dysfunction of *Agni* (entity essential for digestion and metabolism). The modern treatment of hypothyroidism is *Levothyroxine sodium* but it has certain side-effects on long term use. So, there is a great need to find out a safe and effective remedy which not only relieve symptoms but also increase in sense of well-being leading to better compliance. It can be traced from unsheathed treasure of *Ayurveda*.

KEYWORDS: Hypothyroidism, *Dhatvagnimandya*, *Agni*, Treatment of Hypothyroidism through *Ayurveda*, *Kanchnar Guggulu*.

INTRODUCTION

In the current highly civilized era, stress and strain of day to day life along with irregular food habits and sedentary life-style affect one's bodily organs through several psycho-somatic

mechanisms. This has resulted in various metabolic disorders. Among these disorders, Hypothyroidism is one of the significant disorders whose incidence increases day by day. It is second only to diabetes mellitus as the most common endocrine disorder.

Hypothyroidism is a clinical syndrome resulting from deficiency of thyroid hormones due to their insufficient synthesis which in turn results in a generalized slowing down of metabolic processes.^[1] It is characterized by a broad clinical spectrum ranging from an asymptomatic or subclinical condition with normal levels of thyroxine (T₄) and triiodothyronine (T₃) and mildly elevated levels of serum TSH to an overt state of myxedema, end-organ effects and multi-system failure.^{[2][3][4][5]}

The prevalence of hypothyroidism in the developed world is about 4-5%^{[6][7]} and that of subclinical hypothyroidism is about 4-15%.^[8] India has a high prevalence of hypothyroidism, which is about 10%. It is much more common in females than males.^[9] The condition most commonly afflicts middle aged women who perhaps attribute their symptoms wrongly to ageing or menopause. Also, one out of every 5000 infants is born without a working thyroid gland. It is more common than anyone would believe and millions of people are currently hypothyroid & do not know it.

It is sometimes referred as '**Silent disease**' as the symptoms of hypothyroidism are notorious for their non-specific nature and for the way in which they mimic many symptoms of other diseases. So it often remains undiagnosed or misdiagnosed.

The clinical manifestations of Hypothyroidism, depending upon the age at onset of disorder are divided into two types – Cretinism (in infants and children) and Myxedema (in adulthood). Two principal types of Hypothyroidism are Primary Hypothyroidism and Secondary Hypothyroidism. Primary Hypothyroidism is a condition of decreased hormone production by the thyroid gland due to its loss or destruction through processes such as autoimmune destruction or irradiation injury. Secondary hypothyroidism is the result of hypothalamic or pituitary disease or defects in the thyroid-stimulating hormone (TSH) molecule. Primary one is in approximately 99% of cases of hypothyroidism.^[10] Iodine deficiency remains the most common cause of hypothyroidism worldwide. In areas of iodine sufficiency, autoimmune mechanisms (Hashimoto's thyroiditis) appear to play an etiological role in a significant proportion of patients^[11] along with iatrogenic causes (like treatment of hyperthyroidism).

Weight gain, tiredness & easy fatigability, swelling over face, hands & feet, menstrual irregularities, cold intolerance & dry rough skin, thin brittle hair & hair fall, muscle stiffness & pain, weakness in the extremities, constipation, decreased appetite, mood disturbances, forgetfulness, inability to concentrate, goitre, hoarseness of voice are major presentations of Hypothyroidism. In due course of time, untreated hypothyroidism may lead to no. of health problems such as obesity, arthritis, heart disease, infertility etc.^[12]

Third-generation thyroid-stimulating hormone (TSH) assays are generally the most sensitive screening tool for primary hypothyroidism. If TSH levels are above the reference range, the next step is to measure free thyroxine (fT4). Because the most frequent presenting symptoms of hypothyroidism are non-specific, it can be commonly differentiated from the diseases like Anemia, Chronic Fatigue Syndrome, Depression, Menopause, Obesity, Ovarian Insufficiency, Fibromyalgia, Hypoalbuminemia, Hypopituitarism (Panhypopituitarism), Hypothermia, Hypercholesterolemia, etc.

The mainstay of treatment of Hypothyroidism is Thyroid hormone replacement therapy i.e. *Levothyroxine*. The starting dose of *levothyroxine* should be based on the patient's weight, lean body mass, pregnancy status, aetiology of hypothyroidism, degree of TSH elevation, age, general clinical context, and serum TSH goal, according to the American Thyroid Association.^[13] Thyroid hormone can be started at anticipated full replacement doses in individuals who are young and otherwise healthy. In elderly patients and those with known ischemic heart disease, treatment should begin with a low dose and titrating higher to achieve serum TSH goals.^[14] *Levothyroxine* dosage may need to be adjusted if there are large changes in body weight, aging, and pregnancy. The dose should be given consistently either 60 minutes before breakfast or at bedtime for optimal absorption, and should not be given at the same time as medications and supplements that might interfere with absorption. Prognosis, in case of adult hypothyroidism is good, if the treatment started early. Patients generally lead to normal life after treatment. In cases of cretinism (where chances of intellectual abnormalities are greatest in proportion), if treatment is started before age of 4 months, then neurological damage can be prevented with better intellectual development.

But *Levothyroxine* has to be taken life-long & has certain side-effects (due to thyrotoxicosis) on long term use like it precipitates angina,^[15] causes cardiac arrhythmia, palpitation, tachycardia, muscle cramps, weakness, restlessness, osteoporosis^[16] etc. On the other hand,

under-treatment with levothyroxine can lead to dyslipidemia and progression of cardiovascular disease.^[17]

So, there is a great need to find out a safe and effective remedy which not only relieve symptoms but also increase in sense of well-being leading to more acceptability and better compliance. Extensive research has been carried out all over the world in exploring new modes of treatment for hypothyroidism. It can be traced from rich, time-tested unsheathed treasure of knowledge of *Ayurveda*. *Ayurveda* is a science of life with sole aim of providing health to the mankind. It can offer new dimensions towards understanding the aetio-pathogenesis and successful management of hypothyroidism. As far as the name of disease is concerned, no specific term is found for Hypothyroidism in *Ayurvedic* classics. Though many diseases of current era do not find mention in *Ayurvedic* texts, yet they can be successfully treated due to deep insight provided by the *Ayurvedic* principles. According to *Acharya Charak*, it is not necessary that every disease manifestation must have certain name, but it is more important to understand the possible pathogenesis of the disease in terms of involved factors like *dosha*, *dushya* etc. After knowing that, it can be successfully treated.^[18]

THYROXINE AND AGNI

The principal function of Thyroxine is to stimulate basal rate of metabolism. Thyroxine acts as a catalyst 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 processes of the body are under the control of *Jatharagni*, and *Dhatvagni* as per *Ayurveda*.^[19] *Jatharagni* contributes parts of itself to dhatu. Moieties of *Jatharagni* present in dhatu (*Dhatvagni*) when hyperactive leads to wasting and when hypoactive leads to hypertrophy of dhatu.^[20] These points, perhaps, can be illustrated with hyper and hypo-metabolism associated with hyper and hypo functioning of thyroid gland.

AYURVEDIC OVERVIEW OF HYPOTHYROIDISM

The analysis of the symptomatology of hypothyroidism in the light of *Ayurvedic* principles showed that the pathogenesis and manifestations of hypothyroidism occurs due to dysfunction of *Agni*. It all starts with improper diet (heavy, cold, sweet and saturated fat containing food items) and sedentary lifestyle (lack of physical activity, sleeping after meals, sleeping during day time) which is nowadays very common. It leads to aggravation of *kapha*. The increased amount of *kapha* impairs the *Jatharagni* with the formation of *aamdosha*. As

dhatvagni depends on *Jatharagni bala*, so impairment of *dhatvagni* takes place in due course of time. The effect of hypothyroidism is alteration in metabolic activity which, according to *Ayurveda*, is vitiation of *Dhatvagni*. This *dhatvagni* vitiation causes improper formation of *sapta dhatu* starting from *rasa* to *shukra*.^[21] It leads to improper nourishment to the body leading to symptoms of hypothyroidism along with swelling in neck described as '*Galganda*' in *ayurvedic* texts.^[22] Thus, a chain of pathological events is started followed with complications like obesity and infertility. A critical conceptual analysis of hypothyroidism with reference to *Ayurvedic* principles of metabolism shows *Agnimandya* (*Dhatvagnimandya*), *Aam doṣa*, *Kapha prakopa* and *Rasa dhatu duṣṭi* as prominent pathological features in this condition.

Dhatvagnimandya (esp. *Rasa dhatvagnimandya*) leads to *Sama Rasa Vridhi* and over production of *mala* of *Rasadhatu* i.e. *Mala rupa KaphaVridhi*. Majority of the *Nanatmaja Roga* of *Kapha Dosha*^[23] can be included as signs and symptoms of Hypothyroidism i.e. *Tandra* (Drowsiness), *Atinidra* (Excessive sleep), *Staimitya* (Timidness), *Gurgatrata* (feeling of Heaviness), *Aalasya* (Laziness), *Balasaka* (Loss of strength), *Apachana* (Indigestion), *Hridayolepa* (feeling of heaviness over chest), *Galganda* (Goitre), *Atisthoulya* (Obesity), *Svetavbhashta* (Pallor). Many of *Rasaja Vikara*, which have been mentioned by *Acharya Charak*^[24] are similar to the clinical features of Hypothyroidism i.e. *Asradhdha* (Loss of desire for food), *Aruchi* (Anorexia), *Gaurava* (feeling of Heaviness), *Tandra* (Drowsiness), *Angamarda* (Malaise), *Panduroga* (Anemia), *Klaibya* (Impotency), *Srotorodha* (Obstruction of microcirculatory channels), *Agnimandya* (hypometabolic state) etc.

According to *Ayurveda*, Hypothyroidism can be considered as *krichrasadhya* (chronic ailment) as vitiation of *Dhatvagni* once created can't be corrected easily, so it takes time to reverse the pathological changes takes place due to Hypothyroidism. This vitiation of *Dhatvagni*, if not treated properly can reach up to genetic levels (*shukra and artava*) which may give an idea about congenital Hypothyroidism (as per modern science).

AYURVEDIC MANAGEMENT

In light of above discussion, the drugs that have their effect at *Agni* level and possess *Kapha-vatashamaka* properties are supposed to be ideal agents for treating hypothyroidism. The dietary rules and proper lifestyle (*Dinacharya*, *Ratricharya* and *Ritucharya*) as described in *ayurvedic* texts should also be followed for proper control of Hypothyroidism. *Ayurveda* has

advised three fundamental modalities to manage every disease i.e. *Nidana Parivarjana*, *Sanshodhana Chikitsa* and *Sanshamana Chikitsa*.

1. *Nidana Parivarjana*^[25] - It means avoidance of the various causative factors of the disease. It is first line of treatment of any disease. Hypothyroidism manifests as a result of *Kapha-vata vriddhi*, *Agnimandya*, *Rasa Dhatu dushti* and formation of *Ama dosha*. Therefore, all the *Kapha-vata dosha aggravating* and *Agnimandyakaraka ahaara-vihaara* should be avoided in Hypothyroidism.

2. *Samshodhana Chikitsa*: Because of its slow onset, Hypothyroidism is categorized as chronic disease where involved *dosha* are at its maximum level. For *Pravridha*, *Bahu Dosha* and *Jirna Vyadhi* (chronic ailment), *Ayurveda* always suggests *Shodhana* therapy.^[26] Due to the dominance of *Kapha Dosha* in the pathogenesis of Hypothyroidism and ***Vamana Karma*** being specially prescribed for *Kapha Dosha*,^[27] so amongst *Shodhana Chikitsa*, it may be effective for the patients of Hypothyroidism. ***Virechana*** can also be used if *shotha* is dominant feature. For proper evacuation of bowel and to regularize *Agni*, ***Niruha Basti*** should be administered. In *medovridhi* (dyslipidemia and obesity) conditions, ***Lekhana Basti*** may also be given.^[28]

3. *Samshamana Chikitsa*

- Drugs acting on *Agni*,^[29] having *Deepana* (stomachics and appetisers), *Pachana* (Digestives), *Lekhana* (Depleting and reducing weight), *Anulomana*, *Srotoshodhaka* (Microcirculatory channels cleansing), *Shothahara* (anti-oedema) and *Kaphashamaka* properties are likely to check the basic pathogenesis of Hypothyroidism and pep-up body's sluggish metabolism.
- Thyroid stimulatory drugs like *Kanchnara Guggulu* are also found to be effective in various clinical studies.^{[30] [31]}
- Anti-stress (adaptogenic) drugs like *Brahmi* and *Ashwagandha* may be beneficial to alleviate stress^[32] and restore balance of hormones.
- Immunomodulatory drugs like *Guduchi*^[33] may be prescribed in autoimmune related conditions.

SPECIFIC HERBS

- ***Kanchnara*** – It is probably the most important drug in Ayurvedic pharmacopoeia for treating any type of thyroid problems.

- **Guggulu** – It is the best *vata* and *medohara* as per *Aṣṭāṅga Samgraha*. It possesses *laghu*, *rukṣha*, *sukṣhma guṇa*, *uṣṇa virya*, *kaṭu vipaka* and *lekhana* property, so it is effective in the management of *Kapha-meda* predominant disorders like hypothyroidism. It is found to be having thyroid stimulating property and supports healthy thyroid function, mostly by increasing the conversion of less active Thyroxine (T₄) to more active Triiodotyronine (T₃) through increasing thyroid proteolytic activity. It also increase iodine uptake along with hypocholesterogenic property.^[34]
- **Pippali** – It increases the absorption of selenium, whose deficiency can impair thyroid function because conversion of T₄ into T₃ is catalysed by specific selenoproteins.^[35] *Vardhman Pippali Rasayana* shows good results in hypothyroidism during many research works.^{[36][37]}
- **Punarnava** – It is an excellent remedy for treating swelling or inflammation from all over the body by its diuretic action.^[38] Since, hypothyroidism has one of the symptoms of swelling; it can be very beneficial for treating such conditions.
- **Bhallatka** - *Bhallataka* is considered best *anti-kapha* dosha drug.^[39] It has *Deepana*, *Pachana*, *Shothanashaka*, *Sheetanashaka*, *Kapha-Vata shamaka*, and *Dhatvagnivardhaka* properties. All these properties are useful in managing the signs and symptoms of hypothyroidism like anorexia, oedema, decreased basal metabolic rate, cold intolerance etc.
- **Trikatu** - *Trikatu* is predominantly having *uṣṇa*, *tikṣṇa*, *laghu*, *rukṣa guṇa*, *Kaṭu rasa*, *kaṭu vipaka* & *uṣṇa virya*. Hence it exhibits *kapha-vata shamaka*, *deepana*, *pachana*, *srotovishodhana* & *shothahara* properties.^[40] It is commonly used to treat the condition of *mandagni*, *aamdoṣa*, and *kapha-vata disorders* and hence effective in correcting the dysfunction of *Agni* seen in hypothyroidism.
- **Triphala** – It is one of the most popular herbal remedies which 'cleanse' by promoting bowel movement. It is having *deepana*, *pachana*, *vatanulomaka* and *srotoshodhaka* properties. Hence *Triphala* may correct the state of *Agnimandya* which is one of the main factors involved in pathogenesis of hypothyroidism as per *Ayurveda*. Various scientific researches have demonstrated that *triphala* stimulates bile secretion, helps digestion and assimilation, and significantly reduces serum cholesterol and lipid levels (as hypercholesterolemia occurs due to hypothyroidism).^[41]

- **Varuṇa twak** possesses *laghu*, *rukṣha guṇa*, *uṣṇa virya*, *kaṭu vipaka* and *Kapha-vata* & *medohara* property, so it is effective in the management of *Kapha-meda* predominant disorders like hypothyroidism.^[42]
- **Panchkola** - It comprises of five drugs i.e. *Pippali*, *Pippalimula*, *Chavya*, *Chitraka* and *Shunṭhi*. *Panchkola* is predominantly having *uṣhṇa*, *tikṣhṇa*, *laghu*, *rukṣha guṇa*, *kaṭu rasa*, *kaṭu vipaka* & *uṣhna virya*. Hence it exhibits *kapha-vata shamaka*, *deepana*, *pachana*, *srotovishodhana* & *shothahara* properties. *Panchkola* is considered as one of the common drugs to treat the condition of *mandāgni*, *aamdoṣa*, and *kapha-vata disorders*.^{[43][44]} All these properties of *Panchkola* will take care of the *mandagni* and sluggish metabolism seen in hypothyroidism. As per *Chakradutta*, the diet & drinks prepared with *Panchkola* are indicated in *Amavata*. The pathogenesis of hypothyroidism as per *Ayurveda* is more or less similar to *amavata* with the predominance of *Agnimandya* & *Amadosha*.^[45]
- **Coconut Oil** – It contains medium chain triglycerides, which improves the body's sluggish metabolism^[46] seen in hypothyroid patients.

SPECIFIC FORMULATIONS

- **Vati/Guggulu** - *Kanchnara Guggulu*^[47], *Punarnavadi Guggulu*, *Vyoshadi Guggulu*, *Arogyavardhini vati*, *Agnitundi vati*, *Vishmusti vati*, *Chandraprabha vati*
- **Churna** - *Panchakola Churna*, *Trikatu Churna*
- **Bhasma/Lauha/Mandoora** - *Jalkumbhi Panchanga Antardhuma Bhasma*, *Punarnava Mandura*, *Varunadi Louha*, *Tryushnadi Lauha*
- **Kwatha/Asava-Arista** - *Kanchanaradi Kwatha*, *Varun Shigru Kwatha*, *Dashamooladi Kwatha*, *Lauhaasava*, *Kumaryaasava*, *Punarnavasava*
- **Rasayana Therapy** - *Pippali Vardhamaana Rasayana*, *Shilajatu Rasayana*, *Triphala Rasayana*, *Lauh Rasayana*.

DIETARY AND LIFE-STYLE MODIFICATIONS

- Iodine rich foods such as fish, sea foods, beetroot, kelp, parsley, oatmeal etc. should be taken.
- Avoid Goitrogenic foods such as cabbage, cauliflower, broccoli, turnips, soybean products, peaches, pears, sweet potatoes, mustard, maize, cassava etc.^[48] Also minimize intake of Caffeine drinks like coffee, cola and Smoking.^[49]

- Diet should be high in fibre and low in calorie. Salt intake should be kept at a minimum. Heavy, fried food and high sugar diet should be avoided.
- Coconut oil which contains medium chain fatty acids is good in improving sluggish metabolism.
- Sedentary life style should be avoided. Patient should increase his physical activities. Aerobic exercises should be done regularly (increases tissue sensitivity to thyroid hormone and stimulates thyroid gland secretion).^[50]
- Physical and emotional stress should be reduced.

YOGA AND PRANAYAMA^[51]

Yoga: *Sarvangasana* is the most suitable and effective *asana* for the Thyroid Gland disorders. *Matsyasana*, *Halasana*, *Suryanamaskara* and *Suptavajrasana* are also found to be helpful in Hypothyroidism. In these yogic exercises an enormous pressure is placed on the gland that may lead to beneficial effects by improving circulation to the gland.

Pranayama: The most effective *Pranayama* for thyroid problems is “*Ujjayi*”. It acts on the throat area and has relaxing and stimulating effects. *Anuloma-Viloma* and *Kapalbhati* Pranayama is useful in increasing the metabolic rate of the body.

CONCLUSION

Hypothyroidism is a clinical syndrome due to deficiency of thyroid hormones resulting in generalized slowing down of metabolic processes. As per *ayurvedic* principles, Hypothyroidism occurs due to *Jatharagnimandya* and *Dhatvagnimandya* along with *Kapha prakopa*. Symptoms of Hypothyroidism are notorious for their nonspecific nature, so it often remains undiagnosed or misdiagnosed. The incidence is high in females as compared to males. Increasing the quantum and quality of *Agni* is the mainstay of treatment so drugs having *Deepana*, *Pachana*, *Lekhana*, *Kaphashamaka*, *Vatanulomaka* and *Srotoshodhaka* properties seems to be effective in this condition along with dietary rules and proper lifestyle as described in *ayurvedic* texts. Thus a multifactorial and holistic approach is required in successfully managing the condition of hypothyroidism i.e., diet, drugs and yogic exercises all in combination helps in normalizing the thyroid function in hypothyroidism.

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