Conceptual Study Of Hypothyroidism And Agnimandya

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ABSTRACT:

Thyroid gland is one of the important glands of the endocrine system. Principal function of thyroid gland is to act as a ‘catalyst’ for the maintenance of oxidative metabolism.

Hypothyroidism is the most common endocrine disorder observed all over the world in present time. It occurs about 7-8 times more frequently in females than males. In infants, symptoms do not appear till six months because enough hormone is present in mother’s milk. It affects the quality of life of individuals. The only treatment available is synthetic thyroxine tablets which patients had to take lifelong.

Agni is the unique concept of Ayurveda related to Pachana or conversion, Dhatupaka or Metabolism, etc. i.e. various chemical reactions occurring in the body. It is responsible for and controls each and every process of conversion. The normal as well as abnormal functions of thyroid gland can be correlated to healthy and altered status of Agni. So hypothyroidism can be considered as a stage of Agnimandya resulting in the formation of Ama.

Key words – Thyroid gland, Hypothyroidism, Agni, Agnimandya, Ama, Dhatupaka, Metabolism

Introduction:

Thyroid disorders are the most common disorders of the endocrine glands. It is estimated that about 42 million people suffer from thyroid disorders in India. Women are six times more prone than men. In general; disorders of thyroid gland are hypothyroidism, hyperthyroidism, goitre and iodine deficiency disorders, Hashimoto’s thyroiditis & thyroid cancer.

The Thyroid gland produces two related hormones Thyroxin [T₄] and Tri- iodothyronine [T₃]. These hormones play a critical role in cell differentiation during development and help maintain thermogenic and metabolic homeostasis in the body. Deficiency of these hormones is known as Hypothyroidism.
Hypothyroidism is one of the most common functional disorders of thyroid gland. It occurs due to the hypo functioning of thyroid gland which results in decrease in body’s basal metabolic rate [BMR].

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 one of the most important criteria of Swastha Purusha. Agnimandya is one of the commonest disorders of Agni. Agnimandya leads to formation of Ama – noxious form of Rasa Dhatu that causes various diseases.

Management of Hypothyroidism with synthetic thyroid hormone derivatives may bring the value of TSH and T4 to normal range but the increased dosage and continuous medication are cost expensive and makes the patient drug dependent till the end of mortal life. So, a better, safer and long lasting therapy is needed for the present society and now it is the need of hour to search the management for this type of ailment through the alternative medicine. Ayurveda has not mentioned endocrine disorders, instead for treatment of unspecified syndromes, it emphasizes on careful observation of symptoms and pathophysiology.

The normal and abnormal functions of Thyroid gland and Agni are similar. Also the symptoms of Hypothyroidism and Agnimandya are almost same. So the present article aims to correlate Hypothyroidism and Agnimandya and to ascertain treatment of Hypothyroidism in Ayurveda.

Aims & Objectives:

- To study the concept of Hypothyroidism in Modern Science
- To study the concept of Agnimandya and Ama in Ayurveda
- To correlate the symptoms of Hypothyroidism and Agnimandya and ascertain treatment of Hypothyroidism in Ayurveda

Materials and Methods:

This study is carried out by literature search and critical review of the obtained facts. The pathogenesis of hypothyroidism is obtained by searching various medical research databases like PubMed, Google scholar, Embase and other national research databases. The study of various Ayurvedic texts were made critically and an effort is made to understand the pathogenesis of hypothyroidism.
The thyroid gland is one of the most important endocrine glands affecting almost every system in the body. It is situated at the root of throat, having two lateral lobes each about 5×2×2 cm, one on either side of trachea, joined by isthmus. The normal weight of thyroid gland in adult is 20-25 gm. The thyroid gland produces three hormones viz. Thryoxine, Triiodothyronine and Calcitonin.

The major function of thyroid hormones is to stimulate the synthesis of protein once they have entered the cell nucleus. Another important function is to stimulate the activity of cell mitochondria, the site of controlled exchange of energy. Some energy is conserved for the normal functioning of body while the remainder is dissipated as heat. The proportion of energy devoted to each of these processes is controlled by thyroid hormones.

**Physiological actions:**

- Principle function of Thyroid gland is to act as catalyst for maintenance of Oxidative Metabolism (Increase of BMR)
- Thyroid hormones help in proper development during the foetal period and the first few months after birth.
- Necessary for normal growth, maturation and tissue differentiation.
- Accelerates energy production (Calorigenic)
- Regulates metabolism of carbohydrates, proteins, fats, calcium and phosphorus.

Hypothyroidism is a common condition with various causes like Autoimmune, Iatrogenic, Transient Thyroiditis, Iodine Deficiency, Stressful lifestyle, Drugs, Congenital, Infiltrative, Secondary Hypothyroidism. The clinical presentation depends on the duration and severity of the Hypothyroidism. A state of Hypothyroidism may be due to primary disease of the thyroid gland itself or lack of Pituitary TSH [Thyroid Stimulating Hormone] or Hypothalamic TRH [Thyrotropin Releasing Hormone].

The signs and symptoms of Hypothyroidism at the initial stage are vague and ambiguous which is often missed in its early stages and instead treated for infertility, hyperlipidaemia, depression etc. In primary stage the signs and symptoms are in general but later on affect the different systems of the body and worsen the condition of patient. Hence, Hypothyroidism is an important public health issue.

Hypothyroidism is caused due to under secretion of thyroid hormones. It produces Cretinism in young and Myxoedema in adults.
Clinical Presentation of Hypothyroidism:

<table>
<thead>
<tr>
<th>Cretinism</th>
<th>Myxoedema</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed developmental milestones</td>
<td>Swollen, puffy oedematous look of face</td>
</tr>
<tr>
<td>Stunted growth</td>
<td>Hoarseness of voice</td>
</tr>
<tr>
<td>Deformed bones and teeth</td>
<td>Hair fall</td>
</tr>
<tr>
<td>Rough, thick, dry, wrinkled skin</td>
<td>Decreased appetite, BMR</td>
</tr>
<tr>
<td>Bloated face, idiotic look</td>
<td>Low blood sugar, high serum cholesterol</td>
</tr>
<tr>
<td>Pot belly</td>
<td>Slow heart rate</td>
</tr>
<tr>
<td>Decreased appetite, BMR</td>
<td>Reduced respiratory rate</td>
</tr>
<tr>
<td>Altered mental growth</td>
<td>Thought process slow down</td>
</tr>
<tr>
<td>Low blood sugar, high serum cholesterol</td>
<td>Lethargy</td>
</tr>
<tr>
<td>Lowered resistance</td>
<td>Apathy, impotency</td>
</tr>
<tr>
<td>Cold intolerance</td>
<td>Amenorrhoea</td>
</tr>
</tbody>
</table>

Table no 1 (clinical presentation of hypothyroidism)

**Agnimandya & Ama:**

*Agni* is the unique concept of *Ayurveda* related to *Pachana* or conversion i.e. various chemical reactions occurring in the body. It is defined as “*Nayate Parinaamyati*” that which brings about changes in an organism or a substance, indicating that it is a key factor in transformation of consumed *Aahara Viharadi Dravya* of *Vijatiya* (heterogenous) origin into *Sajatiya* (Homogenous) nature. It is responsible for and
controls each and every process of conversion. Of the thirteen types of Agni (Jatharagni – 1, Bhootagni – 5, Dhatvagni - 7), Jathargni is the one of prime importance controlling other Agni.

Jatharagni is responsible for initial digestion of ingested food and its conversion into Rasa Dhatu. Agnimandya is the vitiated state where Agni is unable to digest even the meagre quantity of ingested food. Due to improper digestion, Agnimandya results in formation of abnormal Rasa Dhatu (Apachit Rasa Dhatu) i.e. Ama. The dictionary meaning of Ama means raw or undigested.

The sole causative factor of Ama formation is Agnimandya. Thus the etiology of Agnimandya can be considered as etiology of Ama.

Etiology of Agnimandya:

- **Abhojanat** – Fasting
- **Ajeerna bhojana** – Eating even after indigestion
- **Ati bhojana** – Over eating
- **Vishamashana** – Improper eating
- **Asatmya, Guru, Shita, Ati Ruksha, Samdushta bhojanat** – Ingestion of allergic, heavy, frozen, excessive dry and contaminated food
- **Virechan, Vaman, Sneha Vibhrama** – Deranged Sneha, Vamana and Virechana Karma
- **Vydhi Karshanat** – Emaciation of body due to chronic disorders
- **Desha, Kala, Ritu Vaishmya** – Alteration in Desha (Region), Kala (Time) and Ritu (Season)
- **Vega Vidharanat** – Supressing natural urges

Clinical Features of Ama:

- **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** – Letahrgy
Also the Ama Dosha has tendency to attach with the local Dosha (Vata, Pitta & Kapha) and Dushya (Dhatu, Upadhatu & Mala) and produce typical symptoms. The disorder is considered as Sama when Ama is associated with Dosha and Dushya (Dhatu & Mala) and shows above clinical features and Nirama otherwise. The line of treatment of diseases changes as per the Sama / Nirama state.

<table>
<thead>
<tr>
<th>Dosha</th>
<th>Sama Dosha Lakshana</th>
<th>Nirama Dosha Lakshana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vata</td>
<td>➢ Vibandha – Obstruction</td>
<td>➢ Vishada – Aridness</td>
</tr>
<tr>
<td></td>
<td>➢ Agnisada – decreased digestive fire</td>
<td>➢ Ruksa – Excess dryness</td>
</tr>
<tr>
<td></td>
<td>➢ Stambha – Stiffness of affected body part</td>
<td>➢ Nirvibandha – Without Obstruction (Free)</td>
</tr>
<tr>
<td></td>
<td>➢ Aantrakujana – Rumbling sound of bowel</td>
<td>➢ Alpa Vedana – Decreased Pain</td>
</tr>
<tr>
<td></td>
<td>➢ Vedana – Various types of pain</td>
<td>➢ Viparit Guna Shanti - Symptoms subside on application of drugs with opposite Guna as that of Vata Dosha e.g. Snigdha Guna drugs.</td>
</tr>
<tr>
<td></td>
<td>➢ Shopha - Inflammation</td>
<td>➢ Vaparatiguna Shanti</td>
</tr>
<tr>
<td></td>
<td>➢ Nistoda – Pricking pain</td>
<td>➢ Symptoms subside on application of drugs with opposite Guna as that of Vata Dosha e.g. Snigdha Guna drugs.</td>
</tr>
</tbody>
</table>

The above symptoms are episodic in nature and aggravates especially during application of Sneha (in any form), sunrise, night and cloudy weather.

<table>
<thead>
<tr>
<th>Dosha</th>
<th>Sama Dosha Lakshana</th>
<th>Nirama Dosha Lakshana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitta</td>
<td>➢ Durgandhi, Harita, Shyava, Amla, Ghana, Guru, Pitta – Expulsion of foul smelling, greenish black, sour taste, thick and bulky Pitta Dosha</td>
<td>➢ Aatamra, Pita, Ati Ushnam, Katu Rasa, Asthiram, Vigandhi Pitta – Golden yellow, warm, fluid Pitta without any odour</td>
</tr>
<tr>
<td></td>
<td>➢ Amlika – Sour belching</td>
<td>➢ Ruchi - Proper Taste</td>
</tr>
<tr>
<td></td>
<td>➢ Kantha Hrid Dahakar – Burning sensation in throat and epicardium region</td>
<td>➢ Pakti Balapradam – Proper Digestion</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Kapha</td>
<td>➢ Aavil, Tantul, Styan Durgandhi Kapha - Turbid, sticky, foul smelling, thick and dense Kapha that remains in throat</td>
<td>➢ Phenwan, Pindit, Pandu, Nissara, Agandhi, Chhedvan – Frothy, formed, whitish, odourless, easily expelled Kapha</td>
</tr>
<tr>
<td></td>
<td>➢ Kshut Vighatkrita – Loss of appetite</td>
<td>➢ Vaktra Shuddhi – freshness of mouth</td>
</tr>
<tr>
<td></td>
<td>➢ Udgara Vighatkrita – restricts eruption</td>
<td></td>
</tr>
</tbody>
</table>

Table no. 2 (sama and nirama dosha lakshana)
Principle of Treatment:

The line of treatment of Ama Dosha revolves around Pachana (digestion of Ama) then Deepana (igniting digestive fire) and lastly Shodhana after Sneha & Sweda Karma\(^1\). The Shodhana Karma is strictly contra indicated in first place since Ama Dosha is not localised. Shodhana without Ama Pachana results in further complication as Ama Dosha is amalgmated with body tissues. The therapy focuses on Pachana (digestion of existing Ama Dosha), Deepana (increasing digestive power), Anulomana (purge) and Shamana (medicine) to avoid further formation of Ama.

Observation & Discussion:

There is no direct mention of Thyroid gland and Hypothyroidism in Ayurveda. However, a disease named Galganda, characterised by neck swelling is well known. Aacharya Charaka has included it under 20 Shleshma Vikara\(^2\). Aacharya Sushruta has mentioned the seat of Galganda as Rohini Twacha, the sixth layer of skin\(^3\). Charaka described it as a solitary swelling\(^4\) while Sushruta has mentioned it as two encapsulated, big or small swelling, hanging like scrotum, in the anterior angle of neck\(^5\).

Bhela describes Shleepada and Galganda are more common in Prachya Desha (eastern parts of country) and that of consumption of fish predominantly are liable to develop Galganda. Harita has described the role of Dushtambu (contaminated water) and Krimi Dosha (infections) in the precipitation of disease. Kashyapa has further added that regions that are cold, damp, with densely grown trees, water stagnation and heavy rains may be prone for Galganda\(^6\).

Although these facts are mentioned centuries ago, it is still an accepted fact that environmental factors, especially iodine, plays an important role in the functioning of thyroid gland. From the above description, Galganda can be correlated with the Simple Goitre, the non- inflammatory, non – neoplastic condition of thyroid gland. It is observed both in hypothyroidism and hyperthyroidism. Any imbalance in iodine metabolism, either too much or too little iodine can result in development of goitre. Goitre is a localised condition but hypothyroidism is related to many systems of the body.

The comparative study shows that almost all symptoms of Hypothyroidism can be incorporated in Ama Lakshana.

Comparison of Ama Lakshana and Hypothyroidism symptoms:

<table>
<thead>
<tr>
<th>Ama Lakshana</th>
<th>Symptoms of Hypothyroidism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Srotorodha</td>
<td>Stunted growth, Hoarseness of</td>
</tr>
</tbody>
</table>
The causes of Ama Dosha are mainly dietary. It is observed that Nidan Sevana of Ama Dosha further aggravates the symptoms of Hypothyroidism. Nidan Parivarjana is the basic treatment of any disease in Ayurveda. The Nidan Parivarjana of Ama Dosha gives symptomatic relief and restrains further advancement of disease.

The Deepana – Pachana therapy of Ama Dosha strengthens Jatharagni and in turn regularizes Bhootagni and Dhatvagni. Thus the Ayurveda therapy not only gives symptomatic relief but also metabolism at the cellular level is kept into check.

So it can be concluded that the treatment of Ama Dosha can be useful in Hypothyroidism.

Conclusion:

- Thyroid gland is essential for metabolism in the body.
- Agni is entity that brings about all kind of transformations in the body according to Ayurveda.
- Agnimandya is precursor factor of all the diseases resulting in Ama formation.
- Symptoms of Ama and Hypothyroidism are almost similar.
Treatment of *Ama* gives significant result in Hypothyroidism.

**References:**

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