

Qillat-e-Darqiyya (Hypothyroidism): A Comparative Approach Between Conventional Medicine and Unani System of Medicine

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Abstract

Hypothyroidism refers to hormone deficiency caused by intrinsic thyroid gland dysfunction that disrupts the synthesis and secretion of T4 and T3. Primary Hypothyroidism is one of the most common endocrine conditions, occurring in 5% of individuals. Mild hypothyroidism is present in as many as 15% of older adults. Hypothyroidism is more common in women. Thyroid hormone deficiency affects almost all body functions, and hypothyroidism, if left untreated, may lead to complications such as infertility, delirium, dementia, cerebellar ataxia, seizures, psychosis (myxedema madness), confusion, myxedema coma, hypothermia, severe cardiac failure (myxedema heart), pericardial effusions, etc. In conventional medicine, levothyroxine is being used effectively in the management of hypothyroidism, but it can suppress the TSH to subnormal range and can cause serious side effects on bone density and cardiac function, such as osteoporosis, atrial fibrillation, myocardial ischemia, etc. In a recent survey conducted by the American Thyroid Association, it was demonstrated that patients taking natural preparations, rather than synthetic hormone replacement therapy or combination therapy, were more satisfied with their treatment. In the Unani system of medicine, the principles of treatment (*Uṣūl-i-ʿIlāj*) include *Tanqiya* (elimination of morbid material from the body) and *Ta'dīl-i-Mizāj* (temperamental alteration). Accordingly, the disease-causing humor, i.e., *Balgham* (Phlegm), needs to be evacuated from the body. For this purpose, *Mundij-i-Balgham* (Phlegmatic Concoctive) drugs, such as *Baykh Kāsnī*, *Baykh Bādiyān*, *Baykh Izkhar*, *Baykh Karafs*, *Barg-i-Gaozabān*, *Gul-i-Gaozabān*, *Tukh Khatmī*, *Teen*, etc., and *Mushil-i-Balgham* (Phlegmatic Purgative) drugs, such as *Turbud*, *Sanā Makkī*, *Tukhm Hanzal*, *Qusṭ*, *Ghariqūn*, *Muqil*, *Sūranjān*, etc., can be used. This review paper will highlight recent literature on this topic and offer some practical aspects according to the Unani System of Medicine.

Keywords: *Qillat-e-Darqiyyat*, Hypothyroidism, Unani Medicine, Pre-clinical trial, Management

Introduction

The term "hypothyroidism" is derived from the Greek words hypo- meaning "decreased," thyreos meaning "shield," and eidos meaning "form." (1) Primary hypothyroidism refers to hormone deficiency caused by intrinsic thyroid gland dysfunction, which disrupts the synthesis and secretion of T4 and T3. It is a common condition, affecting over 1% of the general population and approximately 5% of individuals over the age of 60 (1, 2).

The prevalence of hypothyroidism continues to rise significantly in India, particularly among women. A survey conducted by the Indian Thyroid Society shows that one in ten adults in India suffers from hypothyroidism (3). A significant proportion of patients may remain undiagnosed and untreated, even though the condition continues to impair quality of life, work performance, and economic productivity (3, 4).

Hypothyroidism, if left untreated, may lead to complications such as infertility, delirium, dementia, cerebellar ataxia, seizures, psychosis (myxoedema madness), confusion, myxoedema coma, hypothermia, severe cardiac failure (myxoedema heart), pericardial effusions, etc. (5). In conventional medicine, levothyroxine is being used effectively in the management of hypothyroidism, but it can suppress thyroid stimulating hormone (TSH) to subnormal ranges and can cause serious adverse effects on bone density and cardiac function, such as osteoporosis, atrial fibrillation, myocardial ischemia, etc. (4, 5). In a recent survey conducted by the American Thyroid Association (ATS), it was demonstrated that patients taking natural preparations, rather than synthetic hormone replacement therapy or combination therapy, were more satisfied with their treatment (3).

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Unani concept

Unani Physicians have described a common disorder of the thyroid gland in their literature as enlargement of the thyroid gland and its treatment. *Buqrāt* mentioned in the context of the glands that "when glands of the neck become diseased, they become tubercular and produce struma (6).

The term "struma" is still used in some European countries as the medical designation of goitre. *Ismā'il Jurjānī's* 'Treasure of Medicine' first associated exophthalmos (protrusion of the eyes), which is now linked to Grave's disease (goitre). 'Alī ibn 'Abbās *Majūsī* stated that the *waram*, which occurs due to *Balgham-e-Ghalīz*, results in *Ghayngha* (goitre), which is similar to the glands (6, 7).

Ibn Hubal narrated that the main cause of *Juhūz al-'Ayn* is the accumulation of matter. The matter may be liquid or gaseous in nature. These matters accumulate in the vessels of the eyes, resulting in dilation of the vessels. Collectively, we can say that the increased pressure in the vessels of the eyes is the cause of the disease (8).

Hypothyroidism is not explicitly described in Unani classical literature; however, some of its clinical features closely resemble those associated with *Su'-i-Mizāj Bārid* (abnormal cold temperament)(9, 10).

According to Unani teachings, the normal temperament of the thyroid gland is hot, but in hypothyroidism, this changes to an abnormal cold temperament (*Su'-i-Mizāj Bārid*). Some Unani scholars view hypothyroidism as a *Balghmaī* (phlegmatic) disease. *Ghlaba-i-Balgham* (domination of phlegmatic humour) manifests as bradycardia, low-volume pulse, sluggishness of skeletal muscles, puffiness, peripheral edema, cool extremities, and sluggish thinking—all of which are common in hypothyroidism (11, 12).

The signs and symptoms of *Su'-i-Mizāj Bārid* include *Khushk wa Khurdarī Jild* (dry and coarse skin), *Shuhūb* (skin pallor), *Lisān Samīk* (thick tongue), *Farī al-Nawm* (excessive sleep), *Takān wa Kasalmandi* (lethargy and somnolence), *Nabḍ Baṭī wa Mutaḥawwīt* (low-volume pulse), *Khafaqān* (palpitations), *Tahabbuj* (puffiness of the face), *Kund Zahni* (diminished intellectual function), *Du'f al-Shahwa* (loss of libido), *Huṣr* (constipation), and *Du'f al-Ishtiḥā* (decreased appetite), among others. These features align with the clinical manifestations of *Qillat-e-Darqiyyat* (hypothyroidism) (13).

Thus, *Su'-i-Mizāj Bārid*, including *Su'-i-Mizāj Balghmaī*, may be interpreted in light of the clinical presentations of *Qillat-e-Darqiyyat* (hypothyroidism). Although ancient Unani physicians have described a common disorder of the thyroid gland in their literature, known as goitre (enlargement of the thyroid gland), and its treatment, they did not specifically categorize hypothyroidism as a distinct condition. (14-16).

Effects of hypothyroidism

Hypothyroidism is a hormonal imbalance that affects almost all body functions, leading to a diseased state. As it impacts metabolism, the basal metabolic rate (BMR) decreases. In hypothyroidism, hypercholesterolemia and hypertriglyceridemia are commonly observed. Acting on carbohydrates, it can cause hypoglycemia in severe cases. Due to the accumulation of mucoproteins, there is an increase in body weight. On the cardiovascular system, hypothyroidism leads to bradycardia,

decreased cardiac output, and potential cardiac failure. In cretinism, lethargy and mental retardation are prominent. The musculoskeletal system is affected by cramping, stiffness, and fatigue (17,18).

The gastrointestinal system shows a decrease in appetite, constipation, and ascites. Due to defects in RBC production, anemia is noted in the hematopoietic system. In the reproductive system, symptoms such as menorrhagia, infertility, decreased libido, impotence, oligospermia, and sexual dysfunction are observed. A puffy face and a large tongue are also characteristic features of hypothyroidism. The skin becomes pale due to anemia, dry and coarse, with intolerance to cold, coarse hair, and brittle nails (19).

Classification: Hypothyroidism has been classified into three main categories, which are as follows (20):

Primary Hypothyroidism: It is due to permanent loss or atrophy of thyroid tissue.

Goitrous Hypothyroidism: It is due to transient or progressive impairment of hormone biosynthesis with compensatory thyroid tissue enlargement.

Central Hypothyroidism: It is due to insufficient stimulation of a normal gland. It further includes:

Secondary Hypothyroidism: It is due to a defect at the pituitary level.

Tertiary Hypothyroidism: It is due to a defect at the hypothalamic level.

In all the varieties of hypothyroidism, 95% of cases belong to primary and goitrous hypothyroidism.

Risk factors (21):

According to Unani medicine, risk factors for the development of hypothyroidism include alterations in *Asbāb Sitta Darūriyya* (the six essential factors of health), excessive consumption of *Ghidhā' Kathīf* (viscid diet), excessive intake of *Ghidhā' Bārid wa Raṭb* (cold and moist diet), excessive use of *Bārid Mashrūbāt* (cold drinks), and *Namaṭ-i Ḥayāt Mustaqirr* (sedentary lifestyle).

Etiology (22, 23):

According to conventional medicine, Hypothyroidism may be associated with a goitre or an atrophic gland, and each of these entities may be either congenital or acquired in etiology. The acquired causes include Hashimoto's thyroiditis (Chronic Lymphocytic Thyroiditis), iodine deficiency disorders, goitrogen exposure (drugs such as lithium, amiodarone, carbimazole, methimazole, etc.), (20) and antithyroid drug treatment (e.g., propylthiouracil). Its congenital causes include iodide transport or utilization defects (such as NIS or pendrin mutations) and defects in thyroid hormone genesis (2).

Causes of hypothyroidism include *Balgham Ghayr Tabī'ī* (abnormal phlegm), *Du'f al-Dimāgh* (cerebrasthenia), *Du'f al-Kabid* (hepatic insufficiency), *Du'f al-Ṭihāl* (splenic insufficiency), and *Sū al-Qinya* (anemia with hypoproteinemia). (11, 14, 16).

Clinical features (24):

Symptoms of typical hypothyroidism include weight gain, diminished sweating, hoarseness of voice, paraesthesia, dry skin, impaired hearing, constipation, lethargy, excessive salivation, general weakness, flabbiness, loss of appetite, and hair loss. Since thyroid hormones increase oxygen consumption and heat production, their deficiency is characterized by decreased tolerance to cold (23,24).

Signs of typical hypothyroidism include edema, ascites, palpitations, low volume pulse, dry and coarse skin, slow movements, delayed ankle reflexes, and periorbital puffiness. Increased blood cholesterol (hypercholesterolemia), particularly in the form of low-density lipoproteins (LDL), is also observed (25).

There is a characteristic accumulation of a mucus-like material in extracellular spaces, especially in the skin. This material consists of a protein complexed with hyaluronic acid and chondroitin sulfate (4,6). Due to its osmotic effect, it causes water to accumulate in these spaces, leading to the boggy appearance of the skin and subcutaneous tissues in patients with severe hypothyroidism. This condition is termed myxoedema (4).

According to Ibn Sīnā (Avicenna), the signs and symptoms of hypothyroidism, when phlegm predominates, include excessive pallor, flabbiness of the body, cold and moist skin, excessive salivation, and viscid saliva (12). Thirst is diminished, especially in elderly individuals, unless acid phlegm is predominant. Other characteristics of this condition are weak digestion with acid eructation, pale urine, excessive sleepiness, flabby muscles, mental dullness, and a soft pulse with a slow rate and speed (13, 14). In cases where the temperamental abnormality is simple and without complicating factors, the treatment involves counteraction (14).

Diagnosis

Serum TSH is the best initial diagnostic test to assess Primary Hypothyroidism, and a normal or reduced TSH value excludes Primary Hypothyroidism (25). Low serum T4 with elevated serum TSH confirms the diagnosis of Primary Hypothyroidism, while normal serum T4 with isolated elevation of serum TSH leads to the diagnosis of subclinical hypothyroidism (25, 26).

In patients with autoimmune thyroiditis, titers of antibodies against thyroperoxidase (anti-TPO) and thyroglobulin (anti-TG) are elevated. Basal body temperature (BBT), which is the body temperature at rest, is the most sensitive functional test of thyroid function. Delayed ankle reflex is also an important indicator of thyroid dysfunction (25).

For clinical diagnosis of hypothyroidism, Zulewski's Clinical Score and Billewicz Diagnostic Index may be used. A total Zulewski's score of >5 points define hypothyroidism, while a score of 0-2 points defines euthyroidism (27). The Billewicz score includes all the signs and symptoms, with the total score ranging from +67 to -47, with the highest score being assigned to a delayed ankle jerk and slow movements. A total Billewicz score of +25 or more suggests hypothyroidism, while a score of -30 or less excludes the disease (28).

Management

Hypothyroidism cannot be cured, but it can be treated. In conventional medicine, it requires lifelong thyroid hormone

replacement therapy, and lrvothyroxine is the first drug of choice for Primary Hypothyroidism, and it is typically taken lifelong as hormone replacement therapy. ⁽²⁹⁾ The recommended dosage of levothyroxine is 1.6–1.8 mcg/kg body weight, which should be taken on an empty stomach early in the morning for better absorption. In some cases, a combination of both T3 and T4 is used as treatment for Primary Hypothyroidism (30).

Surgery

It is considered the last option, where in cases of uncontrolled disease, the removal of the thyroid gland is opted for as the final course of action (29).

In the Unani system of medicine, the principles of treatment (*Uṣūl-i-ʿIlāj*) include *Tanqiya* (elimination of morbid material from the body) and *Taʿdīl-i-Mizāj* (temperamental alteration) (31).

Accordingly, the disease-causing humor, i.e., Balgham (Phlegm), needs to be evacuated from the body. For this purpose, *Mundij-i-Balgham* (Phlegmatic Concoctive) drugs, such as *Baykh Kāsni*, *Baykh Bādiyān*, *Baykh Izkhār*, *Baykh Karafs*, *Barg-i-Gaozabān*, *Gul-i-Gaozabān*, *Tukh Khatmī*, *Tin*, etc., (32) and *Mushil-i-Balgham* (Phlegmatic Purgative) drugs, such as *Turbud*, *Sanā Makkī*, *Tukhm Hanzal*, *Qusṭ*, *Ghariqūn*, *Muqil*, *Sūranjān*, etc., can be used. (31, 32).

When a temperamental abnormality is simple, i.e., without any complicating factors, the line of treatment is *ʿIlāj bi'l Didd* (heteropathy). Accordingly, Unani drugs possessing a hot temperament are used to treat hypothyroidism, as it is caused by *Suʿ-i-Mizāj Bārid* (cold temperament) (31). Hence, *Musakhkhin* (Calorific) drugs are used for *Taʿdīl-i-Mizāj* (temperamental alteration) after *Tanqiya-i-Balgham* (elimination of phlegm). Single *Musakhkhin* drugs, such as *Bisbāsa*, *Filfil Siyāh*, *Qaranfal*, *Dārchīnī*, *Zīra*, *Zanjabil*, *Zaʿfrān*, *Ambar*, *ʿAsl* (Honey), *Azārāqī*, etc., and compound *Musakhkhin* drugs, like *Jawārish Bisbāsa*, *Jawārish Kamūnī*, *Jawārish Jālīnūs*, *Maʿjūn Zanjabil*, *Maʿjūn Chobchīnī*, etc., may be used (33).

Ancient Unani physicians used both single and compound formulations to reverse the abnormal temperament of the body.

Single Unani Drugs with Anti-Hypothyroidism Activity

Several preclinical in vitro and in vivo studies have been conducted to observe the anti-hypothyroidism effects of various single Unani herbal drugs, which have been shown to possess thyroid-stimulating activities (34). The phytochemicals present in these drugs may have the potential to act as preventative or therapeutic agents against hypothyroidism. Some of these single herbal drugs are listed below:

Muqil (Gum Guggul) is an oleo-gum-resin obtained from the medicinal plant *Commiphora mukul* (Indian Bdellium). It contains steroids, specifically guggulsterones E and Z, which are its characteristic constituents. Guggulipid is hypocholesterolemic. Guggul resin increases catecholamine biosynthesis and activity in cholesterol-fed rabbits, inhibits platelet aggregation, exhibits anti-inflammatory activity, and activates the thyroid gland in rats and chickens. Z-guggulsterones may enhance iodine uptake by the thyroid gland and increase oxygen uptake in liver and muscle tissues (35). Preclinical studies have shown that *Commiphora mukul* enhances the tri-iodothyronine (T3)/thyroxine (T4) ratio in female mice. Many

studies suggest that guggul enhances the conversion of T4 to T3, thereby increasing T3 levels (37). Preclinical studies also indicate a thyroid-stimulating effect of Muqil (Gum Guggul). It has the potential to improve hypothyroidism and possesses potent antioxidative properties (35, 37).

Kachnar (Bauhinia purpurea Linn.), commonly known as the butterfly tree or orchid tree, is a flowering plant whose flowers contain astragalins, quercetin, isoquercetin, and anthocyanins, while its seeds contain chalcone glycosides. The bark of *B. purpurea* is used in the treatment of thyroid gland disorders due to its balancing effect on thyroid function. It helps reduce excess thyroid hormone production while also addressing deficiencies. This plant is also known for its efficacy in treating swollen lymph nodes, scrofula, cervical adenitis, and other glandular swellings (38). A preclinical study demonstrated an increase in thyroid weight and active thyroid histology, enhancing thyroid function in hypothyroid rats. Research on female mice suggests that the use of *B. purpurea* increases serum T3 and T4 concentrations (39). In a preclinical study involving female mice, daily administration of *B. purpurea* bark extract (2.5 mg/kg body weight) for 20 days resulted in significantly increased serum triiodothyronine (T3) and thyroxine (T4) levels, indicating the plant's potential to stimulate thyroid function (40).

Teen (Ficus carica Linn.): It is commonly known as the fig plant, is native to the Carica region in Asia and grows in nearly all tropical and subtropical countries. It contains various minerals, vitamins, and phenolic compounds that contribute to overall health management. It has been shown to have anti-inflammatory, antimicrobial, anticarcinogenic, and antioxidant effects. The leaf extract of *F. carica* helps regulate and control the body's metabolic activities by enhancing thyroid hormone levels. Studies have demonstrated that *F. carica* elevates the synthesis of T3 and T4 hormones by acting on thyroid gland follicles (41).

Aam (Mangifera indica Linn.): The ripe fruit contains sugars, citric acid, ascorbic acid, and β -carotene. Its seed kernel is rich in α - and β -amyrins, gallocatechin, glucogallin, and several sterols. The leaves of *Mangifera indica* contain pentacyclic triterpene alcohols, including indicol, taraxerol, friedelin, lupeol, and β -sitosterol. The bark contains tannins, protocatechuic acid, mangiferin, alanine, glycine, α -aminobutyric acid, and kinic and shikimic acids. Numerous studies have highlighted the protective role of mango in hypothyroidism. In a preclinical study, *Mangifera indica* extracts were shown to elevate serum T3 and T4 levels (42).

Compound formulations: used in hypothyroidism include: (43-45).

Majoon-e-Muqil, *Sufoof-e-Muhazzil*, *Habb-e-Asgand*, *Habb-e-Muqil*, *Itrifal Ghududi*, *Majoon-e-Jograaj Gugal*, *Majoon-e-Sarakhs* and *Majoon-e-Saras*

These formulations have been traditionally used to help manage and treat thyroid-related disorders.

Diet

As per the principle of contradiction, the therapeutic diet should be hot in temperament, along with Jaiyyad ul Kaimus (normal chyme), Lateef (tense food), and Saree ul Hazm (fast appetizer). Goitrogenic foods, such as turnips, cabbage, mustard

greens, radish, broccoli, soybean, peanuts, pine nuts, millet, etc., should be avoided (46).

Prevention

Risk factors such as *Namaṭ-i Hayāt Mustaqirr* (sedentary lifestyle), and excessive consumption of *Ghidhā' Kathīf* (viscid diet), *Ghidhā' Bārid wa Raṭb* (cold and moist diet), and *Bārid Mashrūbāt* (cold drinks) should be avoided. Moderation in *Asbāb Sitta Darūriyya* (the six essential factors of health) is also important for the management of *Qillat-i Darqiyyat* (Hypothyroidism) (47).

Conclusion

This article has tried to seek the parallels for hypothyroidism in Unani literature. The diagnosis of *Su-e-Mizaj Barid Balghami* seems to be similar to that of hypothyroidism in conventional medicine. Details of treatment guidelines and various treatments of Unani medicine have also been mentioned in detail.

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