

Review Article

To Study the Role of Calcareo Carbonica in Management of Hypothyroidism

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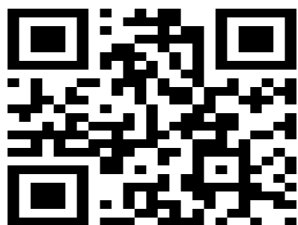
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ABSTRACT

In India, hypothyroidism was usually categorized under the cluster of iodine-deficient disorders which were represented in terms of total goiter rates and urinary iodine concentrations, typically assessed in school-aged children. In 2004, the World Health Organization assessment of worldwide iodine status classified India as having “optimal” iodine nutrition, with a majority of households (83.2% urban and 66.1% rural) now consuming adequate iodized salt.

Hypothyroidism is a fairly common disorder. Population prevalence of overt hypothyroidism is 0.3% while subclinical hypothyroidism can be found greater than 4%. The prevalence increases with age and it is more common in women than in men. In developed nations, the prevalence of undiagnosed thyroid disease is decreasing due to widespread awareness and appropriate testing and treatment techniques being readily available.

Keywords: Hypothyroidism, Homoeopathy, calcarea carb and diet regimen



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Conflict of Interest: None Declared!

(Received 20 September 2023; Accepted 17 October 2023; Published 21 October 2023) ISSN: 2347-8136 ©2023 JMPI

INTRODUCTION

Hypothyroidism- the thyroid gland is not stimulated properly by the hypothalamus or pituitary gland. Hypothyroidism is a term used for less secretion of thyroid hormone. Because of less secretion hormones for longer time period. It becomes a hypo-metabolic state.

The androgen and estrogen metabolism effected or influence by thyroid hormones.

Hypothyroidism manifest with the history of irregular menstruation, delayed puberty, anovulatory cycle, miscarriage and infertility. The major complication of hypothyroidism is Infertility and Birth defects.

EPIDEMIOLOGY

1)Primary hypothyroidism is most commonly seen in 5% of individuals.

2)Mild hypothyroidism is present in as many as 15% of older adults.

3 Hypothyroidism is more common in women

4) Secondary hypothyroidism is rare, representing less than 1% of cases.

HYPOTHYROIDISM –

It is also known as underactive thyroid. In this condition thyroid gland insufficient to produced certain hormones.

WEIGHT GAIN AND DYSFUNCTION OF THYROID GLAND –

Thyroid gland and body composition both closely related to each other because thyroid

hormones that is T3 and T4 they help in regulation of thermogenesis lipid metabolism glucose metabolism basal metabolism

CLASSIFICATION OF HYPOTHYROIDISM BASED ON T3, T4, TSH

Laboratory assesment of suspected hypothyroidism: Source- Goldman-Cecil Medicine.

Primary hypothyroidism:

Primary hypothyroidism is disease of thyroid itself.

It accounts for approximately 99% of cases, with < 1% being due to TSH deficiency known as central or secondary hypothyroidism.

Primary hypothyroidism can be classified depending on whether it is associated with goitre or an atrophic gland.

The laboratory diagnosis of primary hypothyroidism is known by the presence of low serum T4(or free T4) and elevated serum TSH. The serum TSH is the most sensitive test in the diagnosis of primary hypothyroidism. In mild hypothyroidism, the T4 level may be within normal level in the presence of TSH elevation. This is termed as subclinical hypothyroidism.

CAUSES:

PRIMARY HYPOTHYROIDISM

A) Insufficient functioning of thyroid tissue

Congenital absence of thyroid tissue

Autoimmune thyroiditis (Hashimoto's thyroiditis)

Surgical removal of thyroid tissue

B) Impaired synthesis of thyroid hormone

a) Iodine deficiency

b) Congenital c) Drugs

SECONDARY HYPOTHYROIDISM

A) Insufficient secretion of TRH or TSH Hypothalamic disorders

a) Tumor (lymphoma)

b) Irradiation

c) Inflammation (sarcoidosis, vasculitis)

Hypopituitarism

a) Mass lesions

b) Pituitary surgery

c) Pituitary radiation

d) Hemorrhagic apoplexy (Sheehan syndrome)

e) Infiltration (hemochromatosis, tuberculosis, fungal infection)

B) Thyroid hormone resistance syndrome

HASHIMOTO'S THYROIDITIS: The term thyroiditis is more appropriately defined as evidence of intrathyroidal lymphocytic infiltration without the necessity of follicular damage-which may however develop later.

RISK FACTORS

1. Genetic Susceptibility

Family predisposition to autoimmune diseases

Hashimoto's disease almost certainly is associated with polygenic susceptibility, HLA being only one of the gene involved. Weak association also exists between polymorphisms in CTLA - 4 and T cell regulatory gene.³

NON-GENETIC RISK FACTORS

Pregnancy

Drug

Age and gender

Infection

Irradiation

CONGENITAL HYPOTHYROIDISM

Endemic Cretinism is the most common cause of congenital hypothyroidism in severely iodine deficient regions and major cause of iodine deficiency worldwide.

MYXOEDEMA

Primary hypothyroidism occurring in juveniles & adults leads to Myxoedema. Hypothyroidism is the common endocrine disorders noticed in India. Myxoedema is associated with other autoimmune disorders like diabetes mellitus, rheumatoid arthritis, and pernicious anaemia. Clinical features vary upon degree of impairment of thyroid function & its duration. The onset is insidious and often unnoticed by the patient or relatives.

Etiopathogenesis

Ablation of thyroid surgery or radiation

Autoimmune thyroiditis

Endemic or sporadic goiter

Hypothalamic-pituitary lesion

Thyroid cancer

Prolonged administration of anti-thyroid drug

Mild developmental anomalies and

dysmorphogenesis the fully developed clinical syndrome may appear after several years of Hypothyroidism.

Secondary hypothyroidism:

Hypothyroidism due to pituitary or hypothalamic deficiency or due to resistance at thyroid hormone receptor.

Infiltrative disorders affecting the hypothalamus that can interfere with TRH secretion include sarcoidosis, hemochromatosis and histiocytosis.

TERTIARY HYPOTHYROIDISM

Results when hypothalamus fails to produce sufficient thyrotropin releasing hormone (TRH). TRH prompts the pituitary gland to produce thyroid stimulating hormone (TSH). Hence may also termed hypothalamic-pituitary-axis hypothyroidism.

SUBCLINICAL HYPOTHYROIDISM

This condition occurs when Serum TSH is undetectable, and serum T3 and T4 are at the upper end of the reference range.

Other terms for this condition: Mild Hypothyroidism, Early Thyroid Failure, Preclinical Hypothyroidism, Decreased Thyroid Reserve.

Occurs in person > 65 yrs, prevalence 13%.

CLINICAL FEATURES OF HYPOTHYROIDISM

Clinical features of hypothyroidism depend on the age and the Early symptoms are variable and relatively nonspecific.

It can affect all organ systems.

Nervous system:

Patients with hypothyroidism might complain of forgetfulness, reduced memory, mental slowing, depression, paraesthesia (sometimes associated with compression of nerves such as carpal tunnel syndrome), ataxia, and reduced hearing. Tendon jerks showed slowed or "hung-up" relaxation.

Voice is hoarse, deep reflexes particularly the ankle and supinator jerks show prolonged relaxation time ($> 300 \mu\text{sec}$) due to myotonia. Conductive deafness may be present.

Cardiovascular system

There may be bradycardia, diastolic hypertension, reduced cardiac output, quiet heart sounds, a flabby myocardium, pericardial effusion, reduced voltage on the electrocardiogram and flat T waves,

endothelial dysfunction, arterial stiffness, and dependent edema, cardiomegaly seen on plain film is usually shown by echocardiography to be attributable to effusion.

Heart is enlarged partly due to dilatation, pericardial effusion or due to cardiomyopathy. This is called "Myxedematous heart". Heart sounds are muffled. Postural hypotension is common. Anginal pain may develop. Signs of heart failure may be present.

Gastrointestinal system

Constipation is most common in hypothyroidism, achlorhydria occurs often along with pernicious anemia.

Appetite is poor, thirst is impaired, absorption of food from the gut is delayed, peristalsis is less, tympanitis is present. Tongue is large.

Renal system:

Reduced excretion of water load might be associated with hyponatremia. Renal blood flow & GFR are reduced, but serum creatinine is normal.

Pulmonary system:

Ventilatory response to hypoxia and hypercapnia are reduced. Severe hypothyroidism may cause carbon dioxide retention.

Musculo skeletal system:

Arthralgia, joint effusions, muscle cramps & stiff muscles occur. Serum creatinine phosphokinase may be high.

Fatigue, weakness and muscular pain.

Skin and hair:

The appearance of dry, cool skin is common. Glycosaminoglycans mainly hyaluronic acid, accumulate in skin and subcutaneous tissues, causing retention of sodium and water.

The face is puffy and features are coarse, Face is pale and puffy with baggy eyelids and a characteristic malar flush.

There is swollen appearance of neck, the supra clavicular region, hand and feet but these do not pit on pressure (solid oedema). Nails are thin and brittle. True obesity is rare.

Reproductive system:

Menorrhagia from anovulatory cycles may be seen, Or the menses may become scanty

and even cease completely because of deficient secretion of gonadotropins, In adolescents, there may be primary amenorrhea.

Hyper prolactinemia happens because of the absence of the inhibitory effect of thyroid hormone on prolactin secretion, resulting in galactorrhea and amenorrhea.

There is impotency in males and sterility in females.

Development:

Growth & development of children is retarded.

Secretion of growth hormone is deficient because thyroid hormone is needed for synthesis of growth hormone.

Untreated hypothyroidism in pregnant women could result in reduced intellectual function of progeny.

Metabolic system:

Hypothermia

Hypercholesterolemia

Hypertriglyceridemia

Hereditary hyperlipidemia

Weight gain is most common despite reduced food intake, but severe obesity is rarely caused by hypothyroidism.

Metabolism is low (BMR = -30% to -50%) .

Thyroid gland:

Enlargement of thyroid gland with hypothyroidism in young children suggests a biosynthetic defect.

Goitrous hypothyroidism in adults by Hashimoto's thyroiditis.

Mental changes:

Intelligence is impaired and the memory is poor. Questions are answered after a latent period. There might be depression and melancholia, called "Myxoedematous madness".

Psychosis and dementia may develop.

PHYSICAL FINDINGS

Bradycardia, Diastolic hypertension, Thin brittle nails, Hard pitting oedema, thinning of outer halves of eyebrows, thickening of tongue, thinning of hair, Puffy face and eyelids, Skin pallor or yellowish, Dull face expression, Coarsening or huskiness of voice, Hypothermia, Delayed relaxation of deep tendon reflexes.

COMPLICATIONS

Patients with severe Hypothyroidism have

increased susceptibility to bacterial Pneumonia.

Cardiac complications are usual.

Megacolon is been described in long standing Hypothyroidism.

Organic psychosis with Paranoia.

Adrenal crisis.

Subclinical Hypothyroidism is associated with increased IHD, increased mortality in men, but not in women.

Untreated Hypothyroidism during pregnancy results in miscarriage.

DIFFERENTIAL DIAGNOSIS

Nephrotic syndrome, Neurasthenia, Chronic Nephritis, Depression, Euthyroid sick syndrome, Congestive heart disease, Primary Amyloidosis.

INVESTIGATIONS:

Thyroid Function Tests:

A. ISOTOPIC TESTS:

Serum T4(average reference range 5-12 ug/dl).

Free thyroxine (FT4) (average refer range 0.8 to 2.0 ng/ml)

Serum T3(average refer range 80 to 180 ng/dl)

Serum TSH (average reference range 0.3 to 3.0 mU/ L13(average

TRH stimulation test

Thyroid scan

Radioactive iodine uptake (RAIU) testT3 suppression test

NON-ISOTOPIC TESTS:

1. Demonstration of thyroid antibodies

Imaging procedures of neck, USG, CT, MRI

2. FNAC-biopsy of thyroid II.Common thyroid antibodies:

TSH receptor (TSHRAb) or TSH blocking Ab

Thyroglobulin (TgAb)

Thyroid peroxidase (TPOAb)

Biochemical markers of hypothyroidism:

Increased – Creatine kinase (MM isoform)

Low density lipoprotein cholesterol Lp(a)-lipoprotein a

Plasma norepinephrine Aspartate transaminase Decreased- vasopressin

The serum TSH concentration is critical laboratory determination.

High TSH level confirms Primary Hypothyroidism, a low free T4 confirms Hypothyroid state.

TSH increases in Primary Hypothyroidism because of loss of feedback inhibition of Thyrotropin releasing hormone and TSH production by Hypothalamus and Pituitary respectively.

Many patients with Primary Hypothyroidism have normal circulating levels of Triiodothyronine (T3) probably caused by sustained TSH stimulation of failing Thyroid, resulting in preferential synthesis and secretion of biologically active T3, so serum T3 is not sensitive for Hypothyroidism.

In patients with elevated TSH level and a reduced FT4 level, the presence or absence of TPO-AB (immunological markers) should be ascertained- it usually points out to autoimmune thyroid disease- HASHIMOTO'S THYROIDITIS.

Other laboratory abnormalities can include Hyponatremia, Hypoglycaemia or Anaemia. Anaemia is rarely severe

Serum cholesterol is usually high in Primary Hypothyroidism but less in Secondary Hypothyroidism.

Serum cholesterol level is raised more than 300 mg/dl in many cases of Myxedema.

LAB TESTS PRIMARY

HYPOTHYROIDISM

TSH elevated

Serum free T4 decreased.

CENTRAL HYPOTHYROIDISM

TSH low

Serum free T4 decreased

Impaired TSH response to TRH

SEVERE HYPOTHYROIDISM

Anaemia

Elevated cholesterol

Elevated Creatinine Phosphokinase,

Elevated Lactate Dehydrogenase

Elevated Aspartate Aminotransferase.

Hyponatremia

SUBCLINICAL HYPOTHYROIDISM

TSH elevated

Serum free T4 normal.

FOLLOW UP AND SPECIAL CONSIDERATIONS

Disorders that may alter lab results

Pregnancy, Severe illness, Chronic protein malnutrition, Hepatic failure, Nephrotic syndrome.

Drugs that may alter lab results

Cortisone, Dopamine, Phenytoin, Estrogen or androgen therapy, Amiodarone, Salicylates.

PHYSICAL EXAMINATION OF THYROID GLAND

Examination sequence

General:

Look for:

Signs of weight loss or gain

Agitation,restlessness or apathy and lethargy

The facial expression and

Appearance.

Examine:

Hands

Pulse and blood pressure

Arms and legs for skin abnormalities,muscle power and deep tendon reflexes The eyes for:

Exophthalmos,diplopia,conjunctival oedema or conjunctivitis,corneal ulceration

Lid retraction

Lid lag

THYROID GLAND

Examination sequence

Inspect the neck from the front-Give a glass of water to him/her and ask him to take a sip of water. Look for swelling when he swallows.

Ask the patient to sit with neck muscles relaxed and stand behind him and palpate the gland by asking him/her to swallow the water and feel the gland as it moves upwards.

Note the shape, size & consistency of any goitre and feel for any thrill.

Measure any discrete nodules

Record maximum neck circumference of a large goitre using a tape.

Auscultate for a thyroid bruit.

GENERAL MANAGEMENT

Diet

Foods to Eat	Foods to Avoid
Antioxidant-rich fruits and vegetables such as berries,apples, asparagus, or bell peppers	Brassica vegetables such as cauliflower, broccoli, kale, and cabbage
Non-gluten grains such as quinoa, millet, rice, amaranth, oats, and buckwheat	Gluten and refined carbs such as bread, cereal, baked goods, pizza, and pastas
Probiotic-rich foods such as kimchi, kombucha, sauerkraut, natto, and	Conventional dairy such as cow's milk, cheese, and other dairy products

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Clean and filtered water	Tap water, which contains chlorine and fluorine
Bone broths from beef, chicken, or fish bones	Sugar and sugar products, and processed food in general
Wild-caught fish such as salmon, trout, mackerel, and sardines	Fatty foods such as butter, margarine, mayonnaise, and fatty cuts of meat
Coconut oil	Alcohol

Life style changes for Hypothyroidism

Daily exercise

Exercise will help to activate thyroid gland secretion and increase tissue sensitivity to thyroid hormone. Exercise basically helps to improve overall thyroid function and assist with weight loss.

Yoga

The shoulder stand pose helps to stimulate the parathyroid and thyroid glands by increasing blood flow while having a firm chin locked position during the pose.

Prevention & Treatment :-

1. Exercise Regularly – Includes fast walking and swimming.
2. Follow a healthy – eating plan :- Focus on low calorie, nutrient – dense foods, such as fruits, vegetables and whole grains.
3. Monitor weight Regularly.
4. Sticking to your Healthy weight plan during the week.
5. Calculating your BMI
6. Blood test i.s. include cholesterol test, LFT, TFT, & a fasting Glucose.
7. Anti-obesity medications approved by food & drugs administration (FDA) includes – orlistat.

Phentermine & topiramate etc.

8. Wt loss surgeries :-Gastric by pass surgery.

Adjustable gastric banding. Gastric sleeve.

Biliopancreatic diversion with duodenal switch. Liposuction.

Sign and Symptoms

Weight gain

Dry, rough skin.

Hair loss with rough, thin and brittle hairs.

Thin and brittle finger nails.

Decreases sweating.

Puffy face, hand and feet.

Issues in balance and co-ordination.

Thin or missing eyebrows. Symptoms-

Fatigue, sluggishness, weakness.

Cold intolerance.

Slowed movement, heart rate and speech also.

Constipation.

Irritability, mood swings.

Mental depression and insomnia.

Less concentration and loss of memory.

Loss of libido.

Joints pain, muscular pain and cramps.

Irregular menses, heavy periods or menorrhagia.

High cholesterol levels.

Anaemia.

Frequent miscarriage and infertility.

Puffiness and swelling of face and feet.

Swelling of thyroid gland.

Hoarseness of voice.

Hearing loss in chronic hypothyroidism.

In Children and Teenagers- Due to below mentioned conditions in childhood some people suffered from hypothyroidism in age group of 20-50 years.

Slow, stunted growth.

Late development of teeth.

Slow mental development with dullness.

Delayed learning and poor memory.

Delayed puberty.

Diagnosis Of Hypothyroidism-

1) Diagnosis is based on the thyroid hormones T3, T4, and TSH level in body. Generally T3 and T4 hormone level is elevated or high in primary hypothyroidism but TSH decreased in case of secondary hypothyroidism.

2) USG of thyroid gland for detecting any nodule or swelling etc.

3) Anti-TPO antibodies test in case of autoimmune thyroiditis.

Complications of Hypothyroidism-

1) Birth defects.

2) Goiter.

3) Heart problems.

4) Infertility.

5) Mental health issues, depression.

6) Myxoedema.

Peripheral neuropathy.

1) Calcarea acetica :- glandular enlargement, coldness in head.

2) *Calcarea arsenicosa* :- complaints in fat women around climacteric period ,fleshy women,slightest touch causes palpitation ,anger,anxiety & great depression

3) *calcarea carbonica* :- person of scrofulous type, children who grow fat are large bellied,leuco-phlegmatic temperament ,pituitary & thyroid dysfunction ,who takes cold easily ,anxiety with palpitation.

4) *calcarea fluorica* :- goiter , great depression.

5) *calcarea iodata*:- thyroid enlargement at the time of puberty
.scrofulous affection ,flabby children ,subject to colds,swellings of glands.

6) *calcarea phosphorica* :- anaemic children who are peevish ,flabby & tendency to perspiration and glandular enlargement .

7) *calcarea silicata* :-absent minded,lack of self-confidence ,patient is weak & emaciated
calcarea sulphurica :- glandular swelling ,dry heat at night ,averse to covers when cold

Foods to eat

Following a diet rich in nutritious foods can help improve overall health and promote healthy body weight maintenance.

Plus, a nutrient-dense diet can help reduce the risk of health conditions linked with hypothyroidism, such as heart disease Trusted Source, obesity, and type 2 diabetes Trusted Source.

A diet high in fiber can also help lower the risk of constipation, which is a common symptom of hypothyroidism.

If you have hypothyroidism, try incorporating the following nutritious foods into your diet:

Non-starchy vegetables: greens, artichokes, zucchini, asparagus, carrots, peppers, spinach, or mushrooms

Fruits: berries, apples, peaches, pears, grapes, citrus fruits, pineapple, or bananas

Starchy vegetables: sweet potatoes, potatoes, peas, or butternut squash

Fish, eggs, meat, and poultry: fish and shellfish, eggs, turkey, or chicken

Healthy fats: olive oil, avocados, avocado oil, coconut oil, unsweetened coconut, or full fat yogurt

Gluten-free grains: brown rice, rolled oats, quinoa, or brown rice pasta

Seeds, nuts, and nut butters: almonds,

cashews, macadamia nuts, pumpkin seeds, or natural peanut butter

Beans and lentils: chickpeas, kidney beans, or lentils

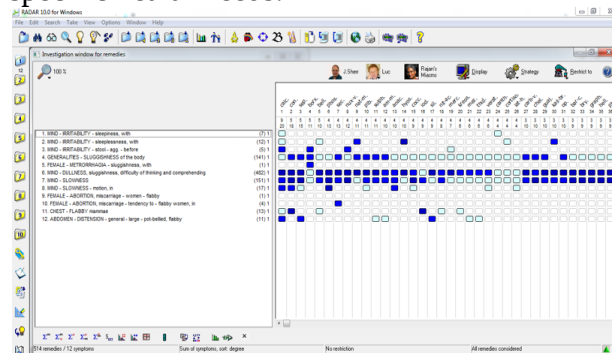
Dairy and nondairy substitutes: coconut milk, cashew milk, coconut yogurt, almond milk, unsweetened yogurt, or cheese

Spices, herbs, and condiments: spices like paprika, saffron, or turmeric, fresh or dried herbs like basil or rosemary, and condiments salsa or mustard.

Beverages: water, unsweetened tea, coffee, or sparkling water

Keep in mind that some people with hypothyroidism may benefit from avoiding gluten and other ingredients like dairy. Others may not need to cut these foods from their diet and may be able to consume gluten and dairy without an issue. (45)(50)

This is why it's important to develop an eating plan that works for you and your specific health needs.



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