



**MEDICAL UNIVERSITY – PLEVEN**

**FACULTY OF MEDICINE - DISTANCE LEARNING CENTRE**

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**DIVISION OF ENDOCRINOLOGY AND METABOLIC DISEASES**

**Lecture №2**

# **Thyroid Hypofunction (Hypothyroidism)**

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**Clinical condition, opposed to hyperfunction,  
resulting from a deficiency of thyroid  
hormones**

**First it was described in 1873,  
and the term “myxedema” (mucous dermal  
edema),  
applied with respect to heavy  
hypothyroidism forms,  
has been widely used since 1878**

# Etiology

## Primary hypothyroidism

Thyroid failure, decreased secretion of **T4 and T3**

## Secondary hypothyroidism

Hyposecretion of thyroid stimulating hormone (**TSH**), due to primary TSH deficiency.

## Tertiary hypothyroidism

Hyposecretion of thyroid releasing hormone (**TRH**), due to hypothalamic TRH deficiency.

## Others

Peripheral resistance to the action of thyroid hormones.

A Hypothyroidism also classified as

**goitrous and nongoitrous,**

but this classification is unsatisfactory .

# **Etiology-**

## **Primary hypothyroidism**

- 1. Autoimmune thyroiditis -Hashimoto' thyroiditis,**
- 2. Radioactive iodine therapy - for Graves' disease**
- 3. Subtotal thyroidectomy - for Graves' disease, nodular goiter or thyroid cancer.**
- 4. Excessive,or low iodide intake**
- 5. Subacute thyroiditis**
- 6. Drugs; lithium, interferon Alpha, amiodarone**
- 7. Congenital – embryonic thyroid dysmorphogenesis, inborn errors of thyroid hormone syntesis**
- 8. Neonatal - transient placental transmission of TSH-R blocking antibodies**

# **General clinical symptoms**

**Fatigue**

**Depression**

**Modest weight gain**

**Cold intolerance**

**Excessive sleepiness**

**Dry, coarse hair**

**Constipation**

**Dry skin**

**Muscle cramps**

**Swelling of the legs**

# Diagnosis

## Primary Hypothyroidism

High TSH-hormonal level and  
Low thyroid hormones levels T3 and T4 free.  
TPO and TAG autoantibodies - Hashimotos' thyroiditis

## Secondary Hypothyroidism

Low or normal TSH- level and  
Low thyroid hormones levels T3 and T4 free.

Increased cholesterol levels

# Treatment

**Levothyroxine – 1 tabl. once daily,  
early morning 30 min. before breakfast**

Replacement dose of T4 in adults range from **0.05 to 0.20 mg/d**  
with a mean of about 0.125 mg/d.

The dose varies according to patient' age and body weight.

Mean replacement dose is **1.7 mkg /kg/d**

# **Classification of the degree of severity of iodine deficiency on the basis of iodine excretion in urine (WHO)**

**Grade I excretion of 50-150 g iodine/g creatinine**

**Grade II excretion of 25-50 g iodine/g creatinine**

**Grade III excretion below 25 g iodine/g creatinine**

**An iodine deficiency of grade I or grade II is prevalent in Europe.**



# **Iodine Deficiency Goiter**

**Categorisation of goiter size on the basis of palpitation findings according to the recommendation of the WHO**

**Grade I - palpable goiter**

**Grade Ia - not visible when bending head back**

**Grade Ib - visible when bending head back**

**Grade II - visible goiter when neck is in a normal position**

**Grade III - very large goiter, visible even from a distance**

# Thyroiditis

Thyroiditis is a group of disorders that all cause thyroidal inflammation.

Classification:

**Acute thyroiditis – bacterial**

**Subacute thyroiditis - viral**

**Chronic thyroiditis - autoimmune**

**Hashimoto's thyroiditis**, the most common cause of hypothyroidism

**Postpartum thyroiditis**

**Silent thyroiditis**

**Invasive fibrotic thyroiditis - Riedel's thyroiditis**

**Post Radiation induced thyroiditis**

# Diagnosis

**Measurement on the levels of:**

- **TSH, FT3, FT4**
- **and antithyroid antibodies TPO (antithyreoperoxidase) and TAT (antithireoglobulin ).**

**Biopsy**

# Treatment

Treatment for this disease depend on the type of thyroiditis that is diagnosed

bed rest and

**In subacute thyroiditis use corticosteroids to reduce inflammation in moderate and severe forms and**

non steroidal and anti-inflammatory medicaments  
– in mild forms.

## **Diagnostic algorithm in thyroid disorders :**

- **P, RR**
- **ECG, rhythmus**
- **Palpation and auscultation**
- **Eye's Examination**
- **Cardiovascular Examination**
- **Skin Examination**
- **Lymph nodules , Splein**

AMERICAN ASSOCIATION OF CLINICAL ENDOCRINOLOGISTS  
MEDICAL GUIDELINES FOR CLINICAL PRACTICE  
FOR THE EVALUATION AND TREATMENT OF  
HYPERTHYROIDISM AND HYPOTHYROIDISM