TSH measurement

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Definition of elevated TSH

- 18-70 Jahre: > 4.0 mU/l
- > 70-80 Jahre: > 5.0 mU/l
- > 80 Jahre: > 6.0 mU/l

No routine TSH screening in asymptomatic adults or in women without known thyroid disease who are pregnant or planning pregnancy.

Pregnant women (with or without known hypothyroidism): > 4.0 mU/l

Pregnancy affects the metabolism: β-hCG binds to the TSH receptor, mimicking a weak effect. The upper limit of the normal TSH range in pregnancy is 0.5-1.0 mU/l below the upper limit for non-pregnant women. Due to the lack of evidence of benefit of therapeutic interventions, the normal TSH range in pregnancy has not been adjusted.

Diagnosis

- No measurement of TPO antibodies when TSH is in the normal range (this applies to pregnant women as well). No routine ultrasonography.
- Repeat measurement of TSH for further verification after discharge from hospital.
- Abnormal findings in medical history:
  - TSH ≤ 10.0 mU/l
  - TSH > 10.0 mU/l

- Elevated TSH (see above)
- Measurement of fT4
  - fT4 ↑
  - fT4 ↓
  - fT4 ≥

- Secondary causes
  - Overt primary hypothyroidism
  - Subclinical primary hypothyroidism

- Measurement of TPO antibodies:
  - TPO Antibodies
  - Hashimoto thyroiditis

- Evaluation of individual TSH values should take into account:
  - Patient age
  - fT4 values
  - Clinical symptoms and health-related quality of life
  - BMI
  - Patient medication
  - General condition of the patient

- If no therapy is started, TSH measurement after 6-12 months.

- Pathologisation based solely on TSH or TPO values that are outside the reference range is not justified.

Therapy

- Indications: 1) Overt hypothyroidism
  - Initial dose: Overt: 1,6μg/kg bodyweight
  - Subclinical: 25-50μg/day

- Overt primary hypothyroidism
  - Hormone replacement after 8 weeks

- TSH measurement after 6/12/24 month

- Dose administration:
  - Dose ↓
  - Dose ↑

- Subclinical primary hypothyroidism
  - TSH > 10.0 mU/l

- Levothyroxin monotherapy → Goal: Achievement of euthyroid state

- It is important to educate the patient about hypothyroidism and potential consequences of lack of treatment, as well as the nature and intention of hormone replacement therapy.

- Relative Contraindications
  - Coronary heart disease
  - Tachycardic arrhythmias

- Interactions
  - Oestrogens, phenytoin, oral anticoagulants, high dose furosemide, salicylates

- An increase in TSH is to be expected without dose adjustment in pregnant women with pre-existing hypothyroidism under hormone replacement therapy.

- A lack of increased need for levothyroxine during pregnancy should prompt critical reassessment of the indication for hormone replacement therapy postpartum.

- Comparison of TSH values is only possible with same method of measurement
- Repeat blood draws are to be performed in a constant setting to enable comparison

- Factors that increase the likelihood of hypothyroidism:
  - History of thyroid disease or thyroid surgery
  - History of autoimmune thyroid disease in first-degree relative
  - History of radiation therapy in head and neck area or radiiodine therapy for hyperthyroidism
  - Psychiatric disorders
  - Autoimmune diseases
  - Other somatic disorders such as adrenal/cardiac insufficiency, pernicious anaemia, coronary heart disease
  - Long-term amiodarone/lithium therapy

- Symptoms are non-specific and as such do not guide clinical action

- In the case of long-term hormone replacement therapy without clear indication: gradual discontinuation of therapy, taking into account patient preferences

- Prerequisite for refraining from hormone replacement therapy with TSH values > 10 mU/l:
  - Regular monitoring of TSH and patient education about the potential dangers of TSH > 20 mU/l

- Pathologisation based solely on TSH or TPO values is not justified.

- At least once per trimester during pregnancy

- In the case of repeated TSH measurements > 4.0 mU/l → Assess therapy adherence, consider referral to endocrinologist

- Age-adjusted: > 70 bis 80 Jahre: > 5.0 mU/l, > 80 Jahre: > 6.0 mU/l

- Dose administration:
  - Dose ↓
  - Dose ↑

- Subclinical primary hypothyroidism
  - TSH > 10.0 mU/l

- TSH measurement after 6/12/24 month

- The time interval can be adjusted based on clinical symptoms and patient preferences. Prerequisite: Comprehensive patient education