Background

Nonspecific, atypical and/or asymptomatic presentations of hypothyroidism is common in older adults

- The estimated prevalence of overt hypothyroidism in older adults ranges from 0.5% to 5%; tends to be more common in iodine-deficient countries
- The incidence of hypothyroidism increases with age due to a rising incidence of autoimmune thyroiditis (Hashimoto Disease)
- Symptoms in older adults can be:
  - Atypical
  - Have insidious onset
  - Often mimic other disease
  - Fatigue, weakness, constipation, dry skin, cold intolerance, and depression
- Only 10-20% of cases are recognized by physical exam

Thyroid Physiology

- In normal aging, a decrease in T4 secretion is balanced by a decrease in T4 clearance, resulting in an overall unchanged serum T4 concentration
- The decrease in T4 clearance leads to lower hormone replacement requirements with increasing age (average levothyroxine dose is 110 mcg)
- TSH concentrations naturally increase with age. Over 97% of patients > 80 years old will have TSH level between 6.3-7.5 mIU/L (whereas reference range used for most labs is between 0.27-4.20 mIU/L)
### Background Continued

#### Subclinical Hypothyroidism
- The incidence of subclinical hypothyroidism increases with age and is characterized by elevated TSH with a normal free T4.
- Up to 15% of people > 65 years old are diagnosed with subclinical hypothyroidism, and it is more common in women.
- Up to 70% of older adults diagnosed with subclinical hypothyroidism have a TSH within the age-specific normal reference range.
- Treatment of subclinical hypothyroidism has no apparent benefit and some studies show increased mortality in older adults with higher endogenous free T4 levels.

### Evaluation

#### Healthy Patients
- Laboratory testing showing elevated TSH is sufficient to diagnose hypothyroidism, particularly in outpatient setting.

#### Acutely Ill Patients
- TSH can be transiently elevated in acute illness. Thus, the diagnosis of hypothyroidism should be confirmed by persistently elevated TSH and decreased free T4 levels.

*There is no consensus on screening recommendations for asymptomatic older adults, but thyroid testing is warranted on any patient with a decline in clinical, cognitive, or functional status.*

#### Risks & Complications

### Cognitive Impairment
- Hypothyroidism can cause impairment in memory, attention, concentration, language, executive function and visuospatial function. Severe hypothyroidism can mimic dementia.

### Myxedema Coma
- A severe and life-threatening consequence of longstanding primary hypothyroidism with mortality rate of 40%.
- Symptoms include:
  - Stupor
  - Seizure
  - Respiratory depression
  - Coma
- Hallmark signs include:
  - Hypothermia
  - Bradycardia
  - Hyponatremia
  - Hypoglycemia

### Cardiovascular Effects
- Cardiac complications of hypothyroidism stem from a reduction in stroke volume and heart rate, leading to symptoms such as exertional dyspnea, exercise intolerance, and edema.
Management

- There are no clear guidelines for the treatment of hypothyroidism in older adults, but most specialists agree that patients should be treated if they have a TSH > 10 mIU/L, have clear signs/symptoms of thyroid failure, severe hyperlipidemia or family history of thyroid disease.
- Hormone replacement with levothyroxine should be started at low doses such as 25-50mcg, and increased by 12.5-25mcg every 4-6 weeks until the TSH concentration reaches a normal age-specific range.
- To avoid cardiac complications in patients with known cardiovascular disease it may be prudent to consider starting hormone replacement at the lowest possible dose (12.5mcg).
- The goal TSH should be higher in older individuals, around 4-7mIU/L.
- Levothyroxine should be taken fasting (at least 30 minutes before breakfast) to avoid reduced absorption due to food or other medications (eg calcium, iron or soy).

The Bottom Line

- Hypothyroidism is prevalent in older adults and may be associated with significant morbidity if misdiagnosed or untreated.
- Subclinical hypothyroidism is often misdiagnosed in older adults. To avoid this, an age-specific reference range of TSH should be used. Hormone replacement has no known benefits in subclinical hypothyroidism.
- There are no clear guidelines for the treatment of hypothyroidism in older adults, but most specialists agree that patients should be treated if they have a TSH >10 mIU/L, have clear signs/symptoms of thyroid failure, or have a family history of thyroid disease.
- In older adults hormone replacement with levothyroxine should be started at low doses such as 25-50mcg, and increased by 12.5-25mcg every 4-6 weeks until the TSH concentration reaches a normal age-specific range (around 4-7mIU/L).

References:

1. Geriatric Review Syllabus. 9th edition