OBJECTIVES
- Thyroid function is associated with hypertension, atherosclerosis, and inflammation (1 – 4)
- Retinal arterial narrowing (RAN)
  - A marker of microvascular damage
  - Accompanied by media thickening and development of sclerotic plaques
  - Caused by long-term hypertension, atherosclerotic processes, and inflammation (5 – 8)
- No population-based data on the association between thyroid function and RAN

AIM: To investigate associations of TSH and 3,5-dioiodothyronine (3,5-T2) with RAN in population-based data

MATERIALS AND METHODS
- **Population:** n = 4420 individuals; 3189 available for present analysis
- **Exposures:**
  - TSH full range; high TSH (> 3.0 mIU/L); low TSH (≤ 0.3 mIU/L); TSH within the reference range; 3,5-T2
- **Outcomes**
  - Retinal artery equivalent; retinal vein equivalent;
  - retinal arterio-venous ratio (AVR); AVR < 0.8
- **Statistical methods**
  - Linear and Poisson regression adjusted for age, sex, smoking, alcohol consumption, and intake of β-blockers

RESULTS
- Significant association between TSH full range and AVR < 0.8
- Significant association between TSH full range and AVR < 0.8
- Significant association between high TSH and AVR < 0.8

⇒ Significant associations only in females (Figure 3)
- Significant association between 3,5-T2 and AVR < 0.8 (Figure 4)
- No significant associations for:
  - Low TSH and AVR
  - TSH in reference range and AVR

CONCLUSIONS
- Results substantiate evidence for an association between hypothyroidism and RAN
- Potential mechanisms explaining this association are long-term hypertension, atherosclerotic processes, and inflammation.
- Sex differences might be explained by sexual hormones and genetic differences, which might influence associations of thyroid hormones with blood pressure, atherosclerotic processes, and inflammation.

REFERENCES

Table 1. Association between TSH and RAN

<table>
<thead>
<tr>
<th>TSH Group</th>
<th>Retinal Arteriolar Narrowing (AVR &lt; 0.8)</th>
<th>Retinal Arteriolar Narrowing (AVR &lt; 0.8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low TSH (≤ 0.3 mIU/L)</td>
<td>-0.049*</td>
<td>1.21*</td>
</tr>
<tr>
<td>High TSH (&gt; 3.0 mIU/L)</td>
<td>-3.22</td>
<td>-3.22</td>
</tr>
<tr>
<td>TSH in reference range</td>
<td>-0.008</td>
<td>-0.008</td>
</tr>
</tbody>
</table>

Table 2. Association between 3,5-T2 and AVR < 0.8

<table>
<thead>
<tr>
<th>3,5-T2 Level</th>
<th>AVR &lt; 0.8 Relative Risk (95%-CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low 3,5-T2 (&lt; 0.8 mIU/L)</td>
<td>1.08 (0.71; 1.65)</td>
</tr>
<tr>
<td>High 3,5-T2 (&gt; 0.8 mIU/L)</td>
<td>1.37 (1.08; 1.76)</td>
</tr>
</tbody>
</table>