**Introduction & Research question**

Neuroimaging techniques have improved over the last years

"empty sella" is more often incidentally diagnosed

Is a routine neuroendocrine assessment necessary in patients with primary empty sella syndrome (PES) without clinical suspicion or history of neuroendocrine disorders?

**Methods: Systematic literature research**

1398 studies in PubMed with the search term "empty sella" - 606 studies between 1995 and 2015

65 studies excluded, i.a.
- text not available in English
- no endocrine assessment
- no incidental finding

4 studies included

Fig 1. PRISMA four phase flow diagram

**Results**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Year</th>
<th>Country</th>
<th>Study design</th>
<th>Period</th>
<th>N with PES</th>
<th>Age</th>
<th>quality*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannavo 1</td>
<td>2002</td>
<td>Italy</td>
<td>Case-Control-Study</td>
<td>-</td>
<td>43</td>
<td>48±12</td>
<td>8</td>
</tr>
<tr>
<td>Colao 2</td>
<td>2013</td>
<td>Italy</td>
<td>Case-Control-Study</td>
<td>-</td>
<td>94</td>
<td>50.1±19.3</td>
<td>10</td>
</tr>
<tr>
<td>Lupi 3</td>
<td>2011</td>
<td>Italy</td>
<td>Case-Control-Study</td>
<td>2006-2009</td>
<td>85 (PES), 16 (SES)</td>
<td>48±1</td>
<td>10</td>
</tr>
<tr>
<td>Zuhur 4</td>
<td>2014</td>
<td>Turkey</td>
<td>Prospective cohort study</td>
<td>2011-2012</td>
<td>81</td>
<td>49.9±14.5</td>
<td>9</td>
</tr>
</tbody>
</table>

*assessed with the quality appraisal tool (0 poor quality -10 high quality)

Fig. 2 Study characteristics

<table>
<thead>
<tr>
<th>Reference</th>
<th>Year</th>
<th>Hypopituitarism N (estimated risk; 95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannavo 1</td>
<td>2002</td>
<td>23 (0.54; 95% CI 0.39-0.68)</td>
</tr>
<tr>
<td>Colao 2</td>
<td>2013</td>
<td>64 (0.68; 95% CI 0.58-0.77)</td>
</tr>
<tr>
<td>Lupi 3</td>
<td>2011</td>
<td>42 (0.49; 95% CI 0.39-0.59)</td>
</tr>
<tr>
<td>Zuhur 4</td>
<td>2014</td>
<td>7 (0.15; 95% CI 0.07-0.28)</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>159 (0.50; 95% CI 0.33-0.67)</td>
</tr>
</tbody>
</table>

Fig. 3 Meta-analysis

**Discussion & Recommendation**

- pooled prevalence of hypopituitarism: 50%
- only 4 studies included in meta-analysis
- somatotropic and gonadotropic axes are most often impaired (data not shown)

**References**


**Fig. 1. PRISMA four phase flow diagram**

**Fig. 2 Study characteristics**

**Fig. 3 Meta-analysis**

CI = confidence interval

**Exclusion of secondary causes**

- morning cortisol
- ft4
- testosterone
- estradiol
- IGF-I
- prolactin

**Basal endocrine assessment:**