The vestibular ocular reflex (VOR) maintains gaze stability during head movements by initiating an equal but opposite movement of the eyes.

- Vestibular dysfunction affects about 35% of the population over 40 years of age.
- Vestibular hypofunction can be unilateral or bilateral and cause impairments to the functioning of the VOR leading to dizziness, gait unsteadiness, and oscillopsia.
- Dizziness is estimated to affect 20% to 30% of the general population.
- It is estimated that the medical costs of physician visits for dizziness or vertigo is over four billion dollars.

Systematic Review of the Computerized Dynamic Visual Acuity Test: A Meta-Analysis

Purpose

- Systematically examine the literature regarding the diagnostic accuracy of the computerized dynamic visual acuity test to assess hypofunction of the horizontal canals.

Methods

- Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used in the design of the study.
- 2-stage process of title and abstract screening/eligibility and inclusion of full text.
- Quality assessment conducted by duplicate reviewers using the Quality Assessment of Diagnostic Accuracy Studies tool (QUADAS 1).

Methods

- Records identified through database searching (n = 596)
- Additional records identified through other sources (n = 5)
- Records after duplicates removed (n = 207)
- Records excluded (n = 269)
- Records screened (n = 210)
- Full-text articles assessed for eligibility (n = 26)
- Full-text articles excluded, with reasons (n = 25)
- Studies included in qualitative synthesis (n = 3)
- Studies included in quantitative synthesis (meta-analysis) (n = 3)

Results

<table>
<thead>
<tr>
<th>Author</th>
<th>Patients</th>
<th>Controls</th>
<th>Reference Test</th>
<th>CDVA Parameters</th>
<th>QUADAS Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goebel et al. (2006)</td>
<td>14 patients with U VH seen by principal investigators</td>
<td>14 control subjects from university community</td>
<td>Caloric testing (head velocity: 120-140 degrees/second; Opotype: orientation of letter E)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Hardman et al. (1998)</td>
<td>29 patients with U VH, 26 patients with BVH</td>
<td>42 control subjects</td>
<td>Caloric testing or rotary chair and positive head thrust test</td>
<td>Head velocity: 120-180 degrees/second; Opotype: orientation of letter E</td>
<td>10</td>
</tr>
<tr>
<td>Rine et al. (2012)</td>
<td>15 patients with vestibular pathology</td>
<td>195 control subjects</td>
<td>Caloric testing or rotary chair</td>
<td>Head velocity: 180 degrees/second; Opotype: ETDRS</td>
<td>7</td>
</tr>
</tbody>
</table>

Conclusions

- There is heterogeneity in how the CDVA is performed.
- The CDVA has good pooled sensitivity, specificity, and negative likelihood ratio.
- Based on these studies, the CDVA is better used as a test to rule out vestibular hypofunction than as a test to rule it in.

References