Prevalence of, and predictors for, vascular cognitive impairment in CADASIL.

Amy A Jolly1, Stefania Nannoni1, Robin G Morris2 and Hugh S Markus1

1 Stroke Research Group, University of Cambridge, Cambridge, UK. 2 Department of Psychology, King’s College Institute of Psychiatry, London, UK

Background

CADASIL is the most common monogenic form of stroke and is associated with recurrent stroke and early onset dementia.

Methods

We determined the prevalence of VCI in CADASIL and its associations with: clinical risk factors, mutation location (EGFr 1-6 versus EGFr 7-34), and MRI markers (lacunes, white matter hyperintensity volume, brain volume and cerebral microbleeds). Cognition was assessed in genetically confirmed CADASIL patients (n = 176) and healthy controls (n = 265) using the Brief Memory and Executive Test (BMET, score of ≤13 = VCI, www.bmet.info) and Montreal Cognitive Assessment (MoCA, score of ≤25 = VCI).

Results

• VCI was present in 39.8% (BMET) and 48.9% (MoCA) of the CADASIL group (M(SD) age 50.95 (11.3)).
• In controls VCI was present in 10.2% (BMET) and 21.1% (MoCA) (M(SD) age 52.37 (7.93)).
• CADASIL patients had significantly worse performance on total MoCA and across all domains of the BMET.
• Stroke was the only significant predictor of VCI on the MoCA.
• Stroke and Lacune count were significant predictors of VCI on the BMET.

![Figure 1. Z-scores of CADASIL patients overall, with and without stroke and controls on the individual BMET tasks.](image)

Table 1. Odds ratios for significant variables. All analyses controlled for age and sex.

<table>
<thead>
<tr>
<th></th>
<th>VCI as defined by the BMET</th>
<th>VCI as defined by the MoCA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR [95% CI]</td>
<td>p value</td>
</tr>
<tr>
<td>History of Stroke</td>
<td>2.10 [1.06, 4.17]</td>
<td>p = 0.03</td>
</tr>
<tr>
<td>Lacune Count</td>
<td>1.67 [1.14, 2.44]</td>
<td>p = 0.008</td>
</tr>
</tbody>
</table>

Conclusions

VCI is present in 40-50% of CADASIL patients with a mean age of 50 years. Reductions were seen across all cognitive domains. Stroke and lacune count on MRI were both independent predictors of VCI.