A novel imaging method for non-exudative Age-Related Macular Degeneration (AMD) identifies novel features and phenotypes of disease

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The PROBLEM

Age Related Macular Degeneration (AMD) is a complex disease with over 50 genetic variants & significant environmental overlays.

But disease classification based on current “Imaging Biomarkers” remains overly simple with just four major subtypes of disease defined.

BACKGROUND

Biomarkers are measures of health, disease, diagnosis, prognosis, response to treatment and safety.

In the eye, biomarkers are image based, so-called “Imaging Biomarkers”. These can be difficult to describe and quantify.

AMDi is a novel, dye-based, non-angiographic method.

Based on laboratory studies, we suggest that AMDi can identify new features and phenotypes of dry AMD making it a potentially useful tool for improved patient classification & prediction.

HYPOTHESIS: AMDi (AMD imaging) provides new Imaging Biomarkers to describe AMD, and is safe & technically valid.

RESULTS

Baseline cohort

<table>
<thead>
<tr>
<th>CLINICAL CLASSIFICATION</th>
<th>OD</th>
<th>OS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early AMD eyes</td>
<td>56</td>
<td>58</td>
<td>114</td>
</tr>
<tr>
<td>Late Dry AMD eyes</td>
<td>24</td>
<td>28</td>
<td>52</td>
</tr>
<tr>
<td>Late wet AMD eyes</td>
<td>14</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Control eyes</td>
<td>14</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>Family history</td>
<td>2</td>
<td>2</td>
<td>4</td>
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<tr>
<td>Comparator</td>
<td>9</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>119</td>
<td>120</td>
<td>239</td>
</tr>
</tbody>
</table>

Median ETDRS visual acuities at enrollment:

Early AMD: 75 letters (range 18-93, Snellen 20/32)
Late dry AMD: 54 letters (range 4.84, Snellen 20/63)

AMDi is safe

With no excess allergic reactions

AMDi is technically repeatable at our single site

93% of fixed feature data fall within 1.96 standard deviations

AMDi identifies & makes quantifiable (ie, segmentable) previously unseen features of early AMD

AMDi identifies more disease, potentially prior to irreversible tissue loss

CONCLUSION

AMDi was successfully translated from the lab to the clinical setting and found to identify new features and phenotypes of dry AMD. Based on these early translational data, larger, multisite studies are proposed to evaluate AMDi’s clinical utility.

FUNDING & DECLARATIONS

Funding Support: Vision Science Research Program (VSRP), Natural Science & Engineering Research Council (NSERC) 20/20 Network, SOSCIP (Southern Ontario Smart Computing & Innovation Platform), SOSCIP/Ontario Centres of Excellence (OCE), MITACS. Dr MVPdS is funded in part by the CNIB, Dr NH is funded in part by Tracery Ophthalmics inc. SB is founding President & CEO. SB, MVPdS are shareholders of Tracery Ophthalmics inc, an Ontario health technology corporation. SB is founding President & CEO. SB, NP and NH hold intellectual property pertaining to the technology. AK, MR, EM, MB, DW, RM and AB have no relevant declarations.