Pilot study examining internal jugular vein stenosis in MS, CIS, and healthy controls with a blinded MRV protocol

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Objective

- To evaluate the presence of venous stenosis of >50% in at least one of the internal jugular veins on MRV in people with MS, clinically isolated syndrome (CIS), and age- and gender-matched healthy controls using blinded and independent reads; and to examine inter-reader correspondence.
Background

- The prevalence and significance of venous stenosis on MRV are unknown. MRV has been proposed as a screening modality for evaluating venous stenosis.\(^1\)

- Stenosis is proposed to be associated with MS\(^2\) and stenosis >50% on catheter venography has been suggested as a threshold for venoplasty in people with MS.\(^3\)
Methods - Subjects

- 5 subjects with MS
- 10 subjects with CIS
- 15 age- and gender-matched healthy controls

Disease group
Time-of-flight MRV with contrast was performed on 1.5T scanners (Vision; Siemens, Erlangen, Germany).

Images were independently read by two experienced radiologists.

Measured axial diameter at narrowest segment and reference segment where vessel has parallel walls.
Results

- Median ages were
  - 47.0 (MS)
  - 44.1 (CIS)
  - 44.6 (controls)
- Median duration of disease since symptom onset were 27.7 (MS) and 2.9 (CIS) years
Results:
Stenosis in at least one IJV >50% (2 groups)

![Bar chart showing disease and control groups for Reader 1 and Reader 2]
Results:
Stenosis in at least one IJV >50% (3 groups)

<table>
<thead>
<tr>
<th></th>
<th>MS</th>
<th>CIS</th>
<th>controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reader 1</td>
<td>2 (40%)</td>
<td>7 (70%)</td>
<td>10 (67%)</td>
</tr>
<tr>
<td>Reader 2</td>
<td>4 (80%)</td>
<td>8 (80%)</td>
<td>10 (67%)</td>
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Results:
Reader agreement

<table>
<thead>
<tr>
<th>Agreement no stenosis</th>
<th>Agreement stenosis in LIJV only</th>
<th>Agreement stenosis in RIJV only</th>
<th>Agreement stenosis in both IJVs</th>
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<tbody>
<tr>
<td>6</td>
<td>1</td>
<td>3</td>
<td>8</td>
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Disagreement in 12/30 cases
Overall Kappa for agreement per vessel was 0.45
Conclusions

- Results support that at least one stenosis of >50% is common in persons with MS, CIS, and healthy controls. Narrowing of >50% may represent normal anatomic variability.

- Results suggest variability in the identification of venous anomalies on MRV even among experts.

- Our results, similar to others, challenge the previously-reported patho-physiological significance of stenosis >50% related to MS or CIS.
References


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