Case Series Report of Safety of Serial Vitreous Needle Taps in Patients with Proliferative Diabetic Retinopathy (PDR) and Central Retinal Vein Occlusion (CRVO)

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Introduction

• Vitreous fluid analysis can potentially add crucial information to our understanding and treatment strategies for many retinal diseases.¹⁻³
• Several concerns prevent researchers and clinicians from performing vitreous needle aspirations.⁴
  • Patient discomfort.
  • Low yield.
  • Risk of retinal detachment.
• This report describes the safety profile of a standardized technique for serial vitreous needle aspirations performed by multiple physicians.

Materials and Methods

• Serial vitreous taps were performed in patients with proliferative diabetic retinopathy and central retinal vein occlusion
  • Baseline, 1 month, 4 months, 6 months, and 12 months.
  • Procedures were performed at bedside
• Multiple physicians
• Oral or intravenous conscious sedation
• Office or outpatient surgery setting

• Technique
  • 25 gauge needle.
  • Inferotemporal quadrant with bevel down.
  • Maximum volume aspirated was 200uL.
  • When applicable, patients received an intravitreal injection of aflibercept or dexamethasone implant after the vitreous tap.

Results

• As of April 2017, 43 patients
  • 30 with PDR and 13 with CRVO
  • Available follow-up
    • 1 month to 2 years
    • Average of 9 months
  • 174 vitreous aspirations performed:
    • 1-7 serial vitreous taps per eye
    • 75% (n=32 patients) had more than 3 vitreous taps and
    • 98% (n=42 patients) had more than 1 vitreous tap.

• Sedation:
  • 82% under intravenous conscious sedation at an outpatient surgery center (n=142 taps)
  • 18% under oral sedation at the office (n=32 taps)
• Only one unsuccessful attempt
• No cases of rhegmatogenous retinal detachments, retinal breaks, or endophthalmitis within 2 months of vitreous taps.

Conclusions

• This technique is reliable with high yield for vitreous fluid and no safety concerns. In addition,
  • It allows serial vitreous sampling on a large scale and at different stages of disease.
  • It can help yield invaluable molecular understanding, treatment targets, and prognostic markers.

References


Acknowledgements

We acknowledge Stephen Copson for his help in data collection and management.

Table 1. Subject Information

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of subjects (%)</th>
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</thead>
<tbody>
<tr>
<td>&lt;49</td>
<td>17 (40%)</td>
</tr>
<tr>
<td>50-79</td>
<td>23 (53%)</td>
</tr>
<tr>
<td>&gt;79</td>
<td>3 (7%)</td>
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</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of subjects (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>23 (53%)</td>
</tr>
<tr>
<td>Female</td>
<td>20 (47%)</td>
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<table>
<thead>
<tr>
<th>Baseline Visual Acuity – ETDRS (Snellen equiv)</th>
<th>Number of subjects (%)</th>
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</thead>
<tbody>
<tr>
<td>&lt; 50 (20/200 or worse)</td>
<td>8 (19%)</td>
</tr>
<tr>
<td>50 - 68 (20/50 to 20/200)</td>
<td>13 (30%)</td>
</tr>
<tr>
<td>&gt; 68 (20/50 or better)</td>
<td>22 (51%)</td>
</tr>
</tbody>
</table>

Table 2. Serial taps count

<table>
<thead>
<tr>
<th>Number of serial taps</th>
<th>Number of subjects (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5 (12%)</td>
</tr>
<tr>
<td>3</td>
<td>5 (12%)</td>
</tr>
<tr>
<td>4</td>
<td>16 (37%)</td>
</tr>
<tr>
<td>5</td>
<td>14 (33%)</td>
</tr>
<tr>
<td>7</td>
<td>2 (5%)</td>
</tr>
</tbody>
</table>

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