**The Efficacy of Intravitreal Bevacizumab Injection in Patients with Acute Central Serous Chorioretinopathy**

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### Introduction

- Central serous chorioretinopathy (CSC) is one of the most common diseases of the posterior segment of the eye characterized by serous detachment of the neurosensory retina and frequently causes mild to moderate visual impairment.
- The mechanism for the development of CSC remains unclear. It is likely that choroidal hyperpermeability is an early event in the development of symptomatic CSC where, under the appropriate circumstances, it may lead to retinal pigment epithelial detachment followed by neurosensory retinal detachment.
- As acute CSC is, in most cases, self-limiting with spontaneous resolution of the subretinal fluid, observation without additional treatment for the first 3 months is usually an appropriate first approach to handling this disease.
- Further management of risk factors includes discontinuation of steroids in patients taking these for other reasons, as well as reduction and avoidance of stress.
- PDT and laser photocoagulation are not usually recommended in acute cases because they have some serious side effects. RPE alterations, CNV and the development of CNV must be considered in laser photocoagulation.
- CSC may begin with the change in choroidal permeability. Therefore bevacizumab, an antibody to VEGF may be utilized as a treatment to reduce the choroidal hyperpermeability and reverse the changes seen in CSC.
- Intravitreal bevacizumab injection (IVB) has been reported to have no long-term effect on acute CSC in several studies. However, its occurrence has mainly been associated with men in their 30s to 40s and many patients wish to accelerate the healing process.
- In this study, we evaluated the short-term (1 month) efficacy of intravitreal bevacizumab injection (IVB) as a treatment for patients with acute CSC.

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### Method

- This was a retrospective analysis of the medical records of patients who were diagnosed with acute CSC in the Daegu Nune Eye Hospital between March 2011 and July 2014.
- At the first visit, all patients received a complete ophthalmic examination, including bestcorrected visual acuity (Snellen chart), intraocular pressure, slit lamp examination, indirect ophthalmoscopy, fundus photograph, fluorescein angiography, indocyanine green angiography, and SD-OCT (Heidelberg Spectralis; Heidelberg Engineering, Heidelberg, Germany).
- 11 patients received the intravitreal bevacizumab injection (8 eyes: 1.25 mg/0.05 ml, 2 eyes: 2.0 mg/0.06 ml, 1 eye: 2.5 mg/0.1 ml) and 17 patients did not receive any treatment.
- After 1 month, patients received an ophthalmic examination, including best-corrected visual acuity (Snellen chart), intraocular pressure, slit lamp examination, indirect ophthalmoscopy, fundus photograph, and SD-OCT.
- Central macular thickness (CMT) was obtained from each OCT.
- CMT = central macular thickness.

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### Result

#### 1. Demographics of patients

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Intravitreal anti-VEGF</th>
<th>Observation</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of patients</td>
<td>17</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Age(yr)</td>
<td>43.09±3.94</td>
<td>42.64±7.18</td>
<td>0.517*</td>
</tr>
<tr>
<td>Gender(M/F)</td>
<td>9/2</td>
<td>13/4</td>
<td>1.000*</td>
</tr>
<tr>
<td>Symptom duration (wk)</td>
<td>3.64±3.17</td>
<td>2.24±1.71</td>
<td>0.208*</td>
</tr>
<tr>
<td>Mean BCVA(decimal no.)</td>
<td>0.68±0.26</td>
<td>0.74±0.25</td>
<td>0.458*</td>
</tr>
<tr>
<td>Mean CMT (μm)</td>
<td>472.2±165.5</td>
<td>490.9±114.1</td>
<td>0.853*</td>
</tr>
</tbody>
</table>

Values are presented as mean ± SD or number unless otherwise indicated. VEGF = vascular endothelial growth factor; BCVA = best-corrected visual acuity; CMT = central macular thickness. *Mann-Whitney U-test; †Fisher exact test

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#### 2. CMT change at 1 month

- anti-VEGF: 472.2±165.5 μm → 286.2±79.7 μm (p=0.003)
- observation: 490.9±114.1 μm → 333.7±99.4 μm (p=0.001)

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#### 3. BCVA change at 1 month

- anti-VEGF: 0.68±0.24 → 0.79±0.16 (p=0.02)
- observation: 0.74±0.25 → 0.79±0.21 (p=0.204)

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#### 4. The amount of BCVA change

- Improved BCVA >0.1
  - 3/11(27.3%)(anti-VEGF), 5/17(29.4%)(observation)
  - Improved BCVA ≤0.1
    - 5/11(45.5%)(anti-VEGF), 4/17(23.5%)(observation)
  - No change
    - 2/11(18.1%)(anti-VEGF), 5/17(29.4%)(observation)
- Loss BCVA
  - 1/1(10.1%)(anti-VEGF), 3/17(17.6%)(observation)

  In the observation group:
  - pt1 617 → 256 (CMT), 0.9 → 0.6 (BCVA)
  - pt2 597 → 195 (CMT), 0.8 → 0.7 (BCVA)

#### 5. Complete resolution of SRF

- Anti-VEGF: 1/11
- Observation: 0/17

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### Summary

- BCVA improved significantly only in anti-VEGF group even though CMT decreased significantly in both group.
- BCVA decreased in 4 patients (1: anti-VEGF, 3: observation) even though CMT decreased in these patients.

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### Conclusion

- Anti-VEGF treatment can be a good treatment option in acute CSC patients who wish to accelerate the healing process.