

# Efficacy of single bevacizumab injection as adjuvant therapy to laser photocoagulation in macular edema secondary to branch retinal vein occlusion

Arief S Kartasasmita  
Siska Takarai  
Astriviani Switania  
Sutarya Enus

Department of Ophthalmology,  
Universitas Padjadjaran/Cicendo  
National Eye Hospital, Bandung,  
Indonesia

**Background:** Macular grid laser photocoagulation remains the standard treatment for macular edema secondary to branch retinal vein occlusion (BRVO). One possible strategy for treating macular edema is to inhibit VEGF activity by competitive binding of VEGF with an anti-VEGF antibody, suggesting the therapy option with bevacizumab. However, multiple injections of anti-VEGF may lead to complications and high cost.

**Purpose:** The aim of this study was to evaluate the improvement in visual acuity and central macular thickness after combination therapy of laser photocoagulation with single intravitreal bevacizumab injection in macular edema secondary to BRVO.

**Methods:** Nineteen patients with macular edema secondary to BRVO were assigned to either the group of nine patients in combination therapy of laser photocoagulation with intravitreal bevacizumab or the group of ten patients in the laser photocoagulation therapy. Complete ophthalmologic examinations were performed just before the therapy and at 1 month following the therapy. Changes in visual acuity were tested with the logarithm of minimum angle of resolution (logMAR), and central macular thickness was measured by optical coherence tomography (OCT).

**Results:** Combination therapy of laser photocoagulation and single intravitreal bevacizumab injection resulted in a significantly better visual acuity compared to laser photocoagulation therapy (0.35 versus 0.13 logMAR;  $P=0.041$ ) and reduced macular thickness by 120.33  $\mu\text{m}$  versus 71.50  $\mu\text{m}$  ( $P=0.277$ ), although this difference was not significant.

**Conclusion:** Laser photocoagulation combined with a single intravitreal bevacizumab has a substantial effect on increasing visual acuity in macular edema secondary to BRVO.

**Keywords:** bevacizumab, branch retinal vein occlusion, grid laser photocoagulation, macular edema, vascular endothelial growth factor

## Introduction

Branch retinal vein occlusion (BRVO) is one form of retinal vascular disease and is the second leading cause of loss of vision after diabetic retinopathy.<sup>1</sup> According to Klein Population Study (Beaver Dam Study), the incidence of BRVO was approximately 1.8% and the prevalence of BRVO was 0.3%–1.1%.<sup>2,3</sup> According to Blue Mountain Eye Study, the incidence of BRVO was 1.6%.<sup>3,4</sup> The most common symptom among BRVO patients is decreased visual acuity and sudden loss of vision due to macular edema.<sup>1,2</sup>

Since the Branch Vein Occlusion Study has been published, grid laser photocoagulation has been the standard treatment for macular edema in BRVO patients. The Branch Vein Occlusion Study reported that the mean increase in visual

Correspondence: Arief S Kartasasmita  
Department of Ophthalmology,  
Universitas Padjadjaran, Jl Cicendo No 4,  
Bandung 40141, Indonesia  
Email a.kartasasmita@unpad.ac.id