

Abstract 128

COMPARISON OF SYSTEMIC RISK FACTORS FOR HRVO WITH BRVO AND CRVO

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Whilst the risk factors for branch retinal vein occlusion (BRVO) and central retinal vein occlusion (CRVO) are well studied, little is known about systemic risk factors for hemiretinal vein occlusion (HRVO), possibly due to relatively rarer presentation. The aim of this study is to identify differences in ocular, systemic and biochemical risk factors for patients presenting with HRVO compared with CRVO patients, BRVO patients and a control group.

This retrospective, London-based, multi-centre observational case-control study identified patients with HRVO over a 5-year period. Risk factors based on previous studies, common ocular and systemic comorbidities were collected, alongside vital observations and blood test results. These values were compared to randomised CRVO, BRVO and control groups.

Data was analysed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). Categorical variables were compared between groups using the Chi-square test. Continuous variables were assessed using one-way ANOVA or the Kruskal-Wallis test. Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated to estimate the strength of association between risk factors and retinal vein occlusion subtypes compared to a control group. A p-value of ≤ 0.05 was considered statistically significant.

A total of 217 RVO patients (67 HRVO, 75 CRVO, 75 BRVO) and 70 controls were analysed.

Visual acuity at diagnosis was significantly worse in CRVO than HRVO and BRVO groups. Glaucoma was significantly more prevalent in the HRVO group (40.3%, OR 5.23, $p < 0.001$), and prior RVO in the same eye was most common in BRVO patients (33.3%, OR 34.5, $p = 0.001$). Systemic hypertension and diabetes were strongly associated with all RVO types compared to controls ($p < 0.001$), with BRVO showing the highest odds (hypertension OR 8.58; diabetes OR 4.57).

Biochemical parameters revealed significantly higher HbA1c and CRP levels across all RVO groups. Triglycerides were elevated, and paradoxically, total cholesterol was lower in RVO patients. ALT and AST levels were also significantly increased in RVO groups, particularly HRVO and BRVO. No significant group differences were observed in BMI, LDL, or HDL cholesterol.

Medication use reflected the systemic burden: antihypertensive, statin, and antiplatelet usage were significantly higher among RVO patients ($p < 0.001$ for all).

These results suggest that glaucoma and certain haematological factors may influence the risk of HRVO compared to CRVO or BRVO. Understanding the associated risk factors is important to understand pathophysiology. Future prospective studies with larger cohorts are required to consolidate this work.